

WASTE SITE RECLASSIFICATION FORM		
Date Submitted: <u>3/13/08</u>	Operable Unit(s): <u>100-DR-1</u>	Control Number: 2007-023
Originator: <u>J. M. Capron</u>	Waste Site Code: <u>100-D-33</u>	
Phone: <u>372-9227</u>	Type of Reclassification Action:	
	Closed Out <input type="checkbox"/> Interim Closed Out <input type="checkbox"/> No Action <input type="checkbox"/>	
	RCRA Postclosure <input type="checkbox"/> Rejected <input checked="" type="checkbox"/> Consolidated <input type="checkbox"/>	

This form documents agreement among parties listed authorizing classification of the subject unit as Closed Out, Interim Closed Out, No Action, RCRA Postclosure, Rejected, or Consolidated. This form also authorizes backfill of the waste management unit, if appropriate, for Closed Out and Interim Closed Out units. Final removal from the NPL of No Action and Closed Out waste management units will occur at a future date.

Description of current waste site condition:

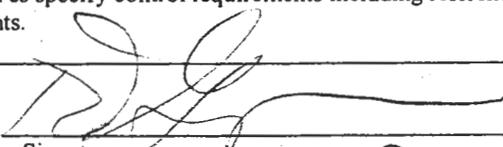
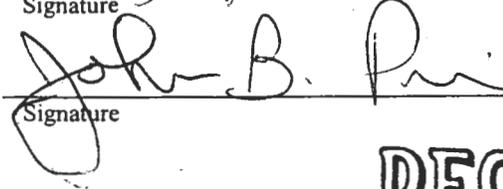
The 100-D-33 site is described in the Waste Information Data System (WIDS) as a 30-m (100-ft)-long by 15-m (50-ft)-wide trench running in a north to south direction. The trench was assumed to receive low-level construction wastes from the 105-D Reactor. The site is located east/southeast of the 105-D Reactor, just south of the rail spur to the fuels transfer bay, and east of the 100-D-35 site. The 100-D-33 waste site was evaluated to determine a decision in accordance with the remedial action objectives and goals established by the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds ROD), Benton County, Washington, U. S. Environmental Protection Agency, Region 10, Seattle, Washington.* The evaluation included historical research, geophysical investigation, and trench excavation, and the conclusion was derived that this site does not contain waste. As no waste was found within the predetermined WIDS boundary, it should be assumed that the waste described in association with the 100-D-33 site is at another location within the 100-D Area. The waste was likely disposed of in 100-D-47 and/or 118-D-4. As such, the site was not used for the disposal of hazardous/dangerous materials and, accordingly, no residual contamination would be present in the soil.

Basis for reclassification:

The 100-D-33, Minor Construction Burial Ground #4 East Trench site evaluation and supporting documentation demonstrates that this site meets the objectives established in the 100 Area Burial Grounds ROD. It has been determined through the analysis of historical photographs and the findings from field investigations that the 100-D-33 site trench was not used for the disposal of waste. This is supported by geophysical investigations and trench excavations that did not identify subsurface anomalies associated with burial grounds or Hanford waste sites. Based on the determination that the site was not used for the disposal of hazardous/dangerous materials or waste, the 100-D-33 site is Rejected from consideration as a waste site. The 100-D-33 site does not pose a risk to human health or the environment and will support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario, and no institutional controls are required. The basis for reclassification is described in detail in the Attachment to Waste Site Reclassification Forms 2007-023 and 2007-024: 100-D-33 and 100-D-35 Minor Construction Burial Ground #4 Trenches (attached).

Waste Site Controls:

Engineered Controls: Yes No Institutional Controls: Yes No O&M requirements: Yes No
If any of the Waste Site Controls are checked Yes specify control requirements including reference to the Record of Decision, TSD Closure Letter, or other relevant documents.

S. L. Charboneau DOE Federal Project Director (printed)		<u>3/18/08</u> Date
J. Price Ecology Project Manager (printed)		<u>3/20/2008</u> Date
N/A EPA Project Manager (printed)	Signature	

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EDMC

**100-D-33 AND 100-D-35 MINOR CONSTRUCTION
BURIAL GROUND #4 TRENCHES**

Attachment to Waste Site Reclassification Forms 2007-023 and 2007-024

March 2008

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EDMC

100-D-33 AND 100-D-35 MINOR CONSTRUCTION BURIAL GROUND #4 TRENCHES

STATEMENT OF PROTECTIVENESS

The 100-D-33, Minor Construction Burial Ground #4 East Trench and 100-D-35, Minor Construction Burial Ground #4 West Trench site evaluations and supporting documentation demonstrate that these sites meet the objectives established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005) and the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington* (EPA 2000). The evaluations show that the sites do not contain buried wastes. As such, there are no hazardous/dangerous materials present at the sites and, accordingly, no residual contamination in the soil. Therefore, the sites are protective of human health, groundwater, and the Columbia River.

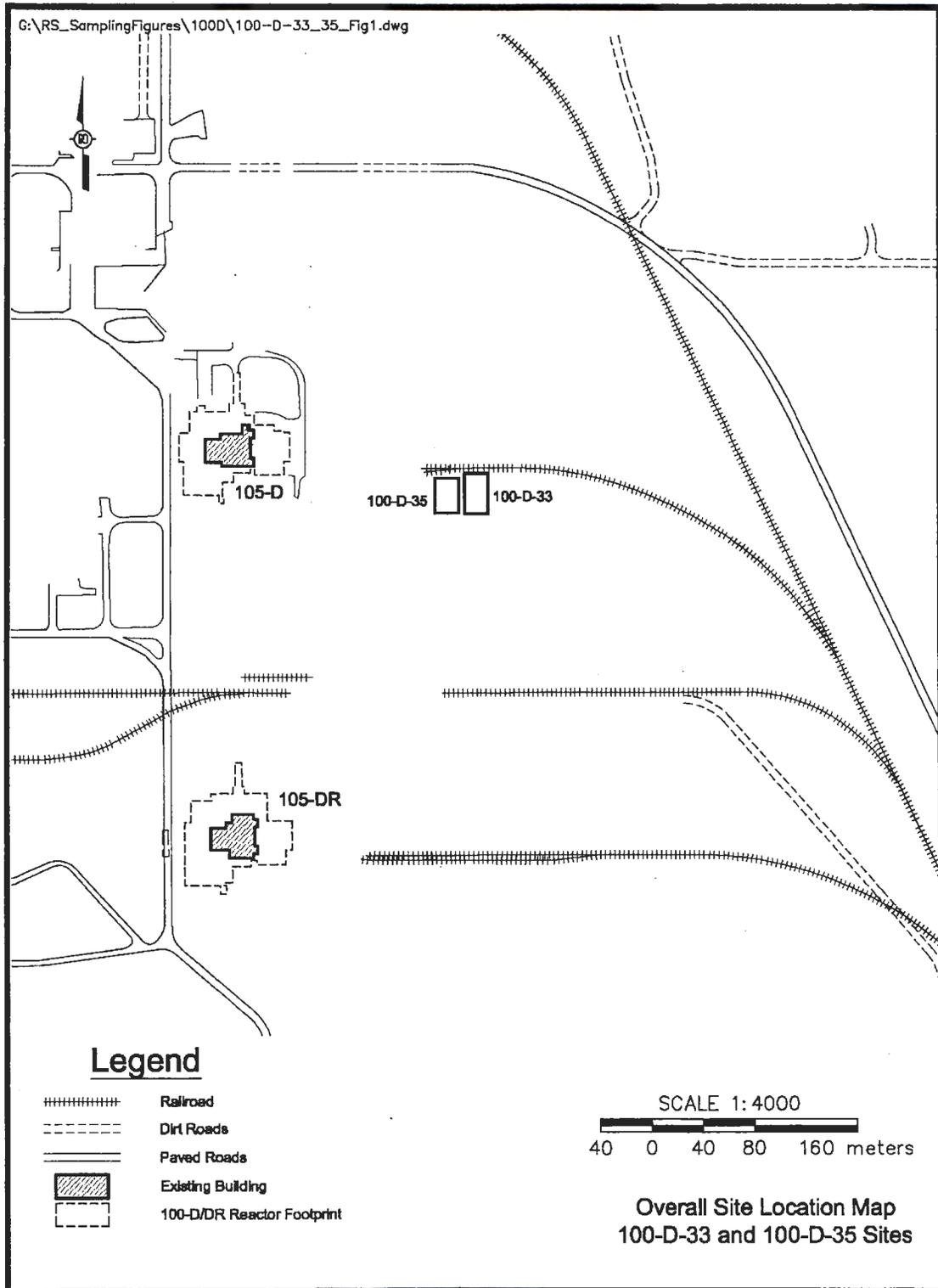
GENERAL SITE INFORMATION AND BACKGROUND

The 100-D-33 and 100-D-35 sites are located east/southeast of the 105-D Reactor, just south of the rail spur to the fuels transfer bay (Figure 1). The Waste Information Data System (WIDS) General Summary Reports describe both sites as burial ground trenches within the Minor Construction Burial Ground #4, each approximately 30 m (100 ft) long by 15 m (50 ft) wide. During a March 31, 1999, visit to the sites, each site appeared as a vegetation-free, cobble-covered field, with no evidence of the trenches visible.

According to WIDS, both sites were first used in the fall of 1954. The 100-D-35 site was reportedly used for the disposal of reactor thimbles, rod guides, and miscellaneous waste during the Ball 3X conversion project. However, it is documented that the waste removed from the Ball 3X outage was sent to 100-D-6, Minor Construction Burial Ground #1 in 1953 (WHC 1993). The references cited in WIDS for the 100-D-33 and 100-D-35 site (GE 1956, WHC 1993) each state that both sites were used for disposal of low-level construction wastes from the reactors. Because the 100-D-33 and 100-D-35 sites have almost identical site descriptions and nearby locations, the sites are addressed together in this document.

The information for the 100-D-33 and 100-D-35 sites supplied in WIDS and in the *100-D Area Technical Baseline Report* (WHC 1993) does not correspond with the evidence provided by historical photographs, area surface features, geophysical data, and excavation findings for the actual sites.

Figure 1. Location of the 100-D-33 and 100-D-35 Suspect Burial Grounds.



The 100-D-33 and 100-D-35 sites are included in the *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan* (DOE-RL 2001) with a list of contaminants of potential concern categorically assumed to be associated with burial grounds containing construction debris and reactor hardware found in the 100 Areas at Hanford. However, based on historical research and site inspection and excavation, it has been determined that these sites were not used as burial grounds or for other waste disposal. The photographic review shows the presence of a roadway over the northeast corner of the 100-D-33 waste site during the timeframe the waste disposal was supposed to have been occurring. In all the photographic reviews 100-D-35 looks like an undisturbed area. As such, neither site was used for the disposal of hazardous or dangerous materials and, accordingly, no residual contamination would be present in the soil.

BASIS FOR REJECTION

Historical Photographs

Historic aerial photographs were reviewed to determine changes in the landscape of the Minor Burial Ground #4 trenches over time. Indications of recent ground disturbances at the expected waste site locations would include the absence of vegetation; signs of re-contouring of the ground surface from grading and filling operations; the presence of temporary access routes; and other fresh and obvious disturbances to the ground surface. Indications of such activities would be manifested on aerial photographs as areas with a smooth texture indicating the absence of vegetation; a very light colored or white photo tone caused the high reflectivity of newly-exposed soil; rows of linear or curvilinear grading tread marks from heavy equipment; and obvious access routes for ingress and egress.

A formal evaluation was performed to assess the existence of former solid waste burial sites in the 100-D Area as depicted in 100-D Area aerial photographs taken in 1948, 1957, and 1964 (WCH 2008). The evaluation was performed through review of 14 historical black and white photographs provided to Washington Closure Hanford (WCH) by the Washington State Department of Ecology (Ecology). The photographs are large-scale vertical stereo images taken by the U.S Air Force.

Waste Information Data System (WIDS) coordinates were used to plot the reported location of the waste sites onto the enlargement of the photographs to aid in defining the area to be reviewed. Using the resulting plots as guidance, each individual aerial photograph was inspected without magnification, and pairs of aerial photographs were viewed stereographically without magnification and with 2X and 4X magnification to look for signs of obvious ground disturbances at the expected locations of the waste sites.

There were no disturbances to the ground surface at the subject locations on the 1948 aerial photographs, with the exception of a roadway that bisects the apparent location of waste site 100-D-33. The 1957 and 1964 photographs display some texture at the expected waste site locations, indicating the presence of some vegetation. The photo tone

is medium gray and there are no tread marks or grading lines suggesting recent grading activity. There are access routes leading to sites 100-D-33 and 100-D-35. Topography is generally flat at 100-D-33 and 100-D-35, and this area appears that it may have been previously graded at one time, but not recently. The same conclusions can be drawn for areas on the north side of the spur.

The appearance of the expected locations of the waste sites on the 1957 air photos is in sharp contrast to nearby areas that display clear signs of having been recently covered and graded (e.g., 100-D-47) or were currently active and had been heavily disturbed (e.g., 118-D-4). These other sites also show clear access routes for heavy equipment and other vehicles. Therefore, if the areas of interest had been recently disturbed, it is expected that this would be revealed on the air photos. Because there are no such indications it is concluded that the waste sites were not developed, operated, and closed at the expected locations in the years immediately before 1957.

This conclusion is further supported by the existence of a roadway that bisects the apparent location of waste site 100-D-33. The road clearly appears on the 1948 air photos indicating that, if waste site 100-D-33 had been established sometime during or somewhat before 1954, it would have been constructed directly in this roadway, which is unlikely. The roadway appears to have been a well-used route that provided vehicle and equipment access to operations at 118-D-4 and also had likely previously provided access to 100-D-47, which appears covered and closed on the 1957 air photos.

Based on the results of air photo interpretation of air photos provided by Ecology, as described above, the following conclusions are drawn:

- None of the four waste sites existed at the expected locations in 1948.
- There is no evidence that the waste sites were developed, operated, or closed at the expected locations in the years immediately before 1957.
- There is no evidence that one or more of the waste sites was developed, operated, or closed at other locations on either side of the 105-D rail spur.
- It is likely that the waste described as being disposed at 100-D-33 and 100-D-35 was disposed of in 100-D-47 and/or 118-D-4.

Historical photographs from 1955 and 1966 (Figures 2 and 3) corroborate the evaluation of the 100-D Area aerial photographs taken in 1957, showing the 100-D-35 site as undisturbed, and the 100-D-33 site bisected by a road. Currently, the road at the 100-D-33 site is not in use, and appears as a vegetation-free, cobble-covered field. However, a field investigation photograph (Figure 4) taken in September 2007 confirms that the 100-D-33 site was bisected by a road, with the presence of a railroad crossing sign at the road intersection with the railroad tracks.

Figure 2. Aerial Photograph of 100 D-Area. (Dated 1955)

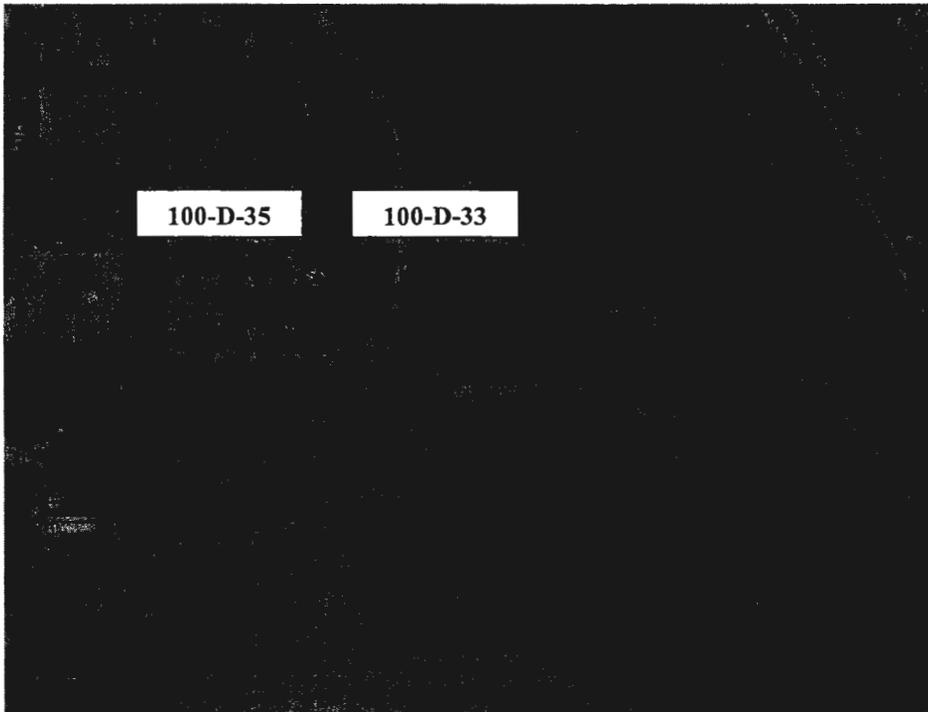


Figure 3. Aerial Photograph of 100-D Area. (Dated 1966)

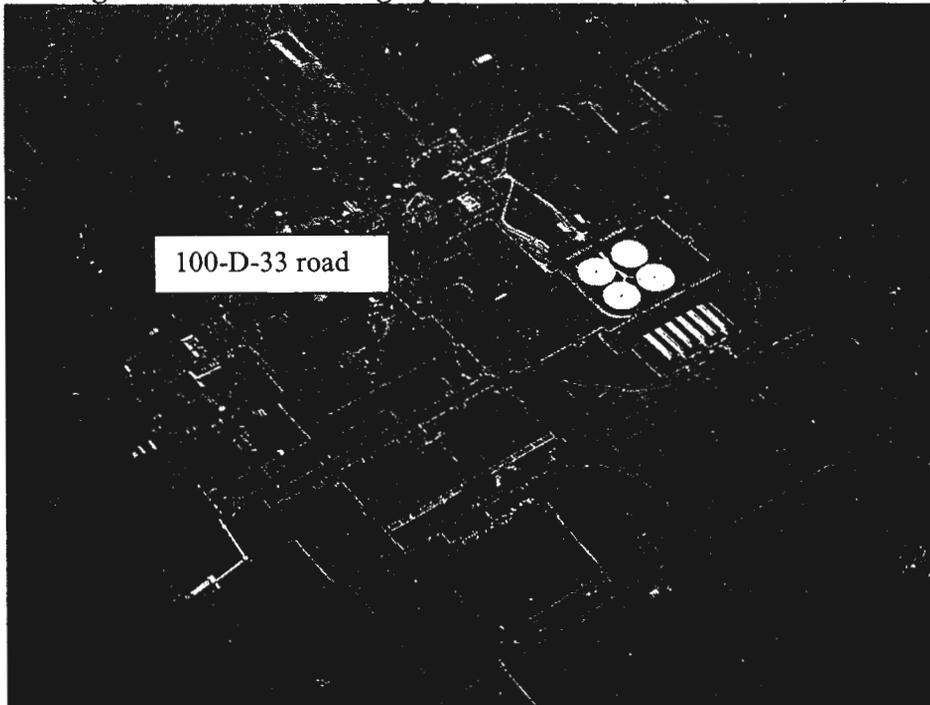


Figure 4. September 2007 Photograph of the 100-D-33 Site.



Geophysical Investigation

A geophysical investigation was conducted in June 2004 to locate and map any surface and buried debris/material at the 100-D-33 and 100-D-35 sites (BHI 2004). Electromagnetic induction (EMI), magnetometer, ground-penetrating radar (GPR) methods, as well as time domain electromagnetics were used in the geophysical investigations.

No trench-like features were detected within the survey area. Most of the anomalies correlate to surface features such as metal debris, monuments, or steel posts (Figure 5). The remaining subtle magnetic anomalies in the vicinity of the documented trench location have a character more typical of an old gravel road surface (Figure 6). This is highly uncharacteristic for a waste disposal site. If buried reactor hardware was present at the site, the geophysical survey instrumentation is sufficiently sensitive to detect their presence. The absence of subsurface geophysical anomalies supports the conclusion that these sites were not used as burial trenches for reactor hardware or for the disposal of other waste.

Figure 5. Detailed Surface Features Map of the 100-D-33 and 100-D-35 Sites.

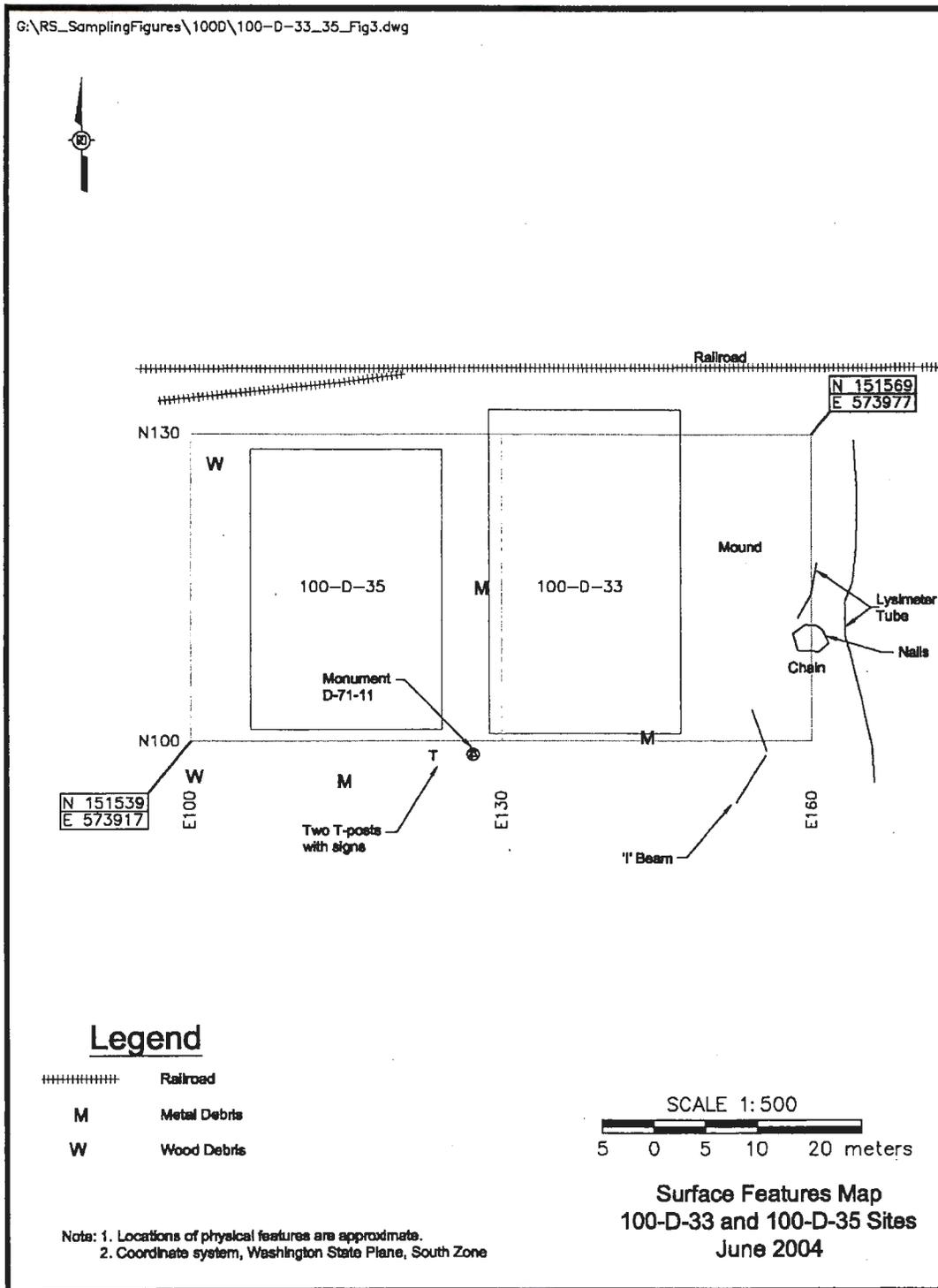
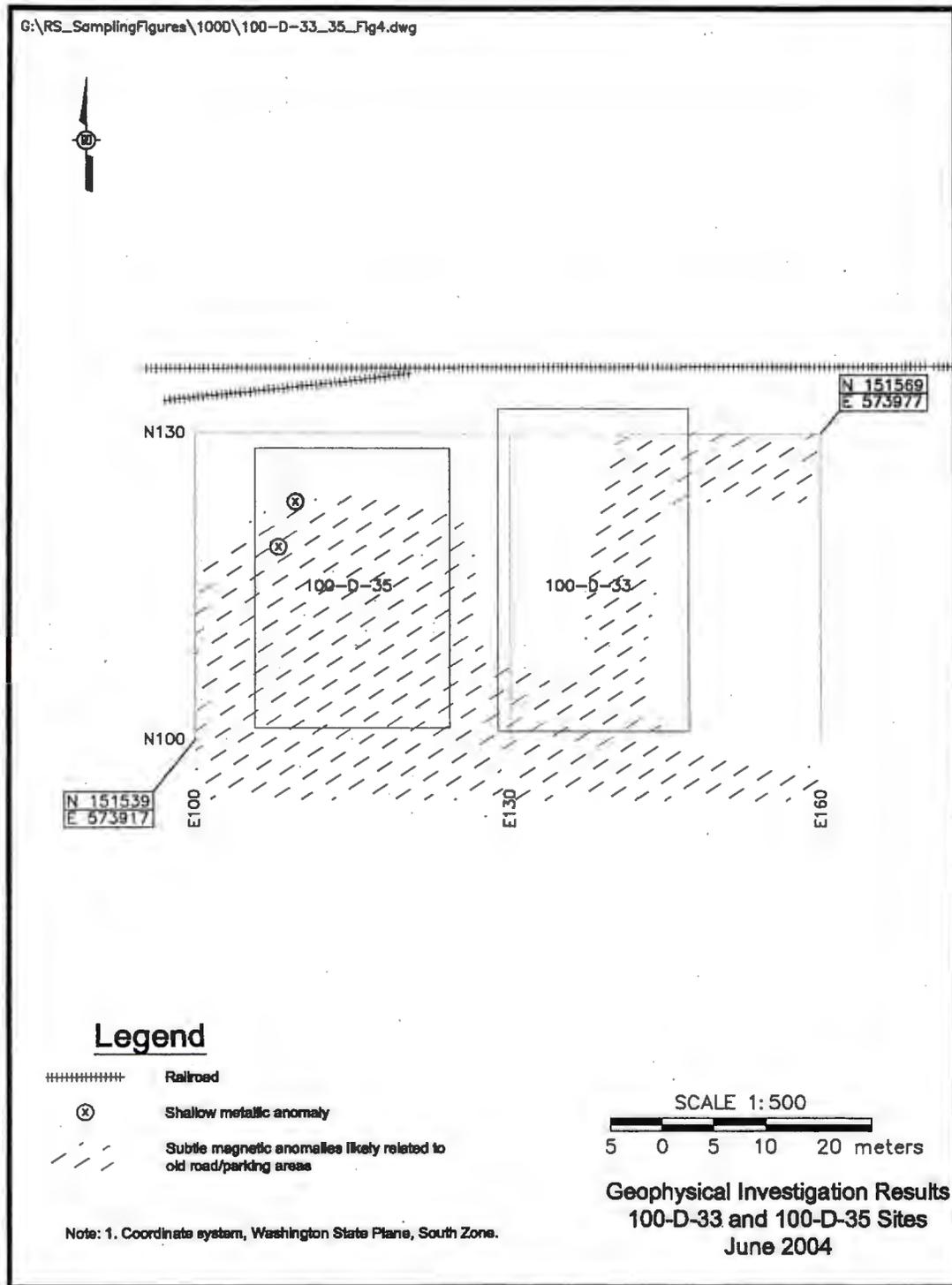


Figure 6. Geophysical Investigation Results for the 100-D-33 and 100-D-35 Sites.



Ground penetrating radar data was collected within a survey area encompassing the 100-D-33 and 100-D-35 sites. These data show subsurface reflections that are characteristic of natural geologic horizons. Overall, the interpretation of the geophysical data indicates that the sites appear to have a small amount of scattered debris that is on, and just below, the surface; the sites are otherwise undisturbed areas.

Exploratory Trenching

Exploratory trenching was conducted in April 2007 to confirm the geophysical investigation findings of no reactor hardware debris within the 100-D-33 and 100-D-35 waste sites. Two trenches were excavated at each of the sites as shown in Figure 7. The excavators were directed to dig to native soil, or to 4.6 m (15 ft), whichever was achieved first. Native soil was reached at between 2 and 3 m (6 and 10 ft) at each of the sites. It was established that the soil at this depth was undisturbed based on observations that correlated with native soil determinations elsewhere in the 100-D Area. These observations include horizontal bedding, graded bedding, and calcium carbonate deposits.

The horizontal bedding of the basaltic sand and gravel units and the internal horizontal laminations of the sand bed are displayed in the sedimentary sequence of the lower portion of the excavation, as seen in the excavation photos (Figure 8 and Figure 9). The horizontal bedding/laminations are consistent with high-energy flow associated with glaciofluvial flooding of the 100-D Area. Also, the contact between the dark basaltic coarse sand and dark pebble gravel is reverse graded. Graded beds are commonly found in glaciofluvial and fluvial sediments.

The calcium carbonate deposits at the trench sites were evaluated, and the amount of calcium carbonate accumulation is similar to other soils from the last glaciofluvial gravel deposits that are overlain by a thin veneer of finer grain sediments. The undisturbed bedforms that have been overprinted with a typical calcic soil profile suggest the excavation encountered in-place native sedimentary material. An incipient calcic soil has developed in the upper portion of the gravel unit where calcium carbonate (caliche) has concentrated at the interface between the tan fine-grain sand and dark basaltic gravel. The concentration of calcium carbonate decreases with depth, with the white carbonate precipitate first forming on the underside of pebble clasts.

The 100-D Field Remediation Project confirmed that the characteristics of an undisturbed soil profile for the geological horizon at that depth were met.

The excavation continued following the confirmation of contact with native soil, in order to be conservative, and extended to a depth of 4.6 m (15 ft). No debris was encountered within either of the trenches excavated at the 100-D-33 and 100-D-35 waste sites. The absence of debris within the exploratory trenches supports the conclusion that these sites were not used as burial trenches for reactor hardware or disposal of other waste.

Figure 7. Exploratory Trenching at the 100-D-33 and 100-D-35 Sites.

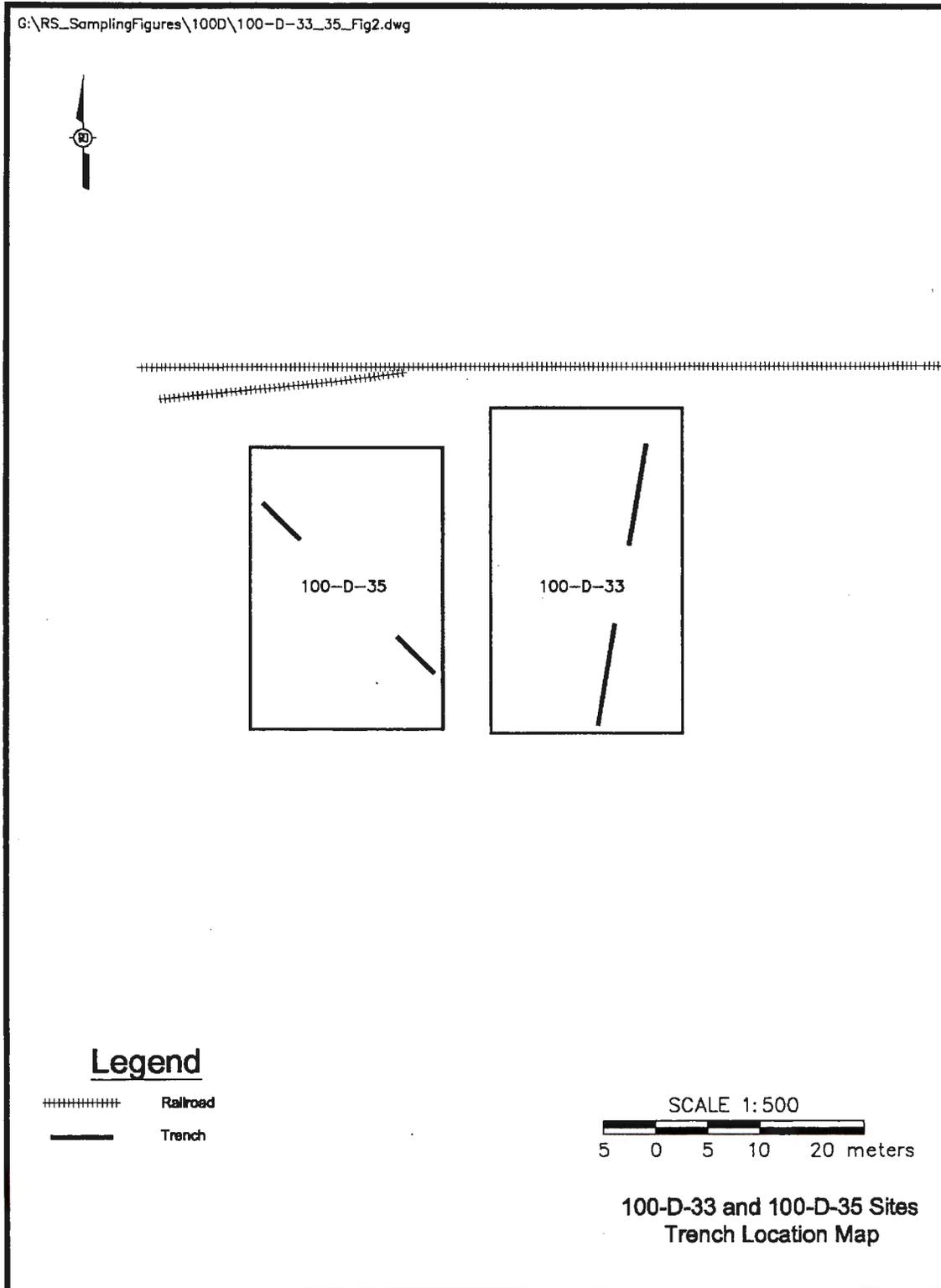


Figure 8. Photograph of Trench at the 100-D-33 Site.

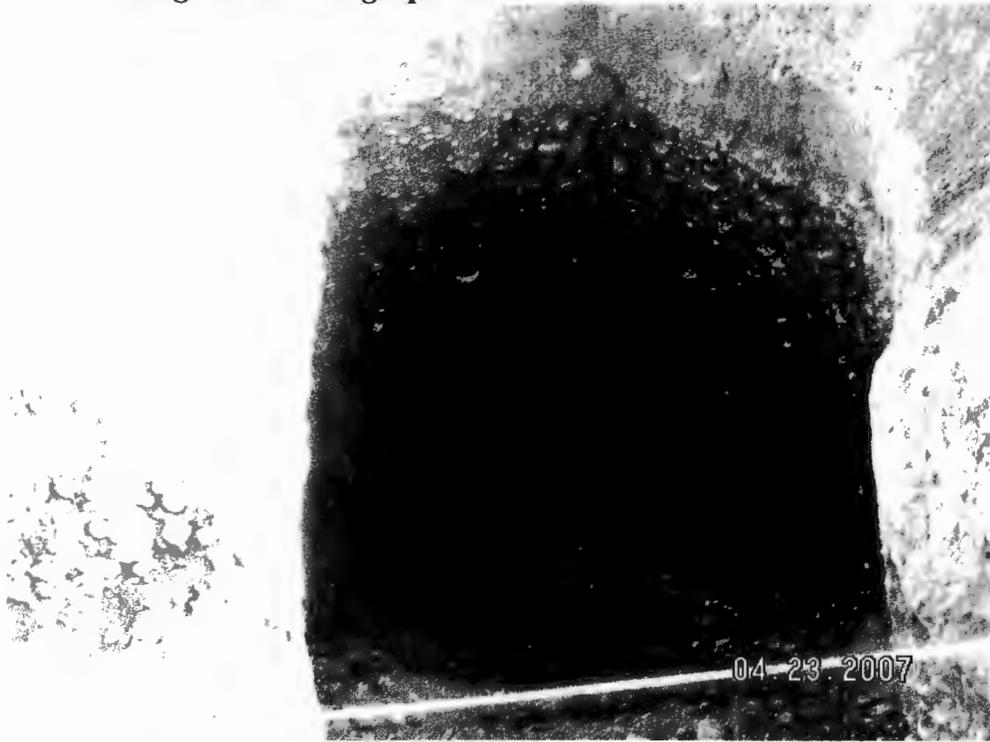
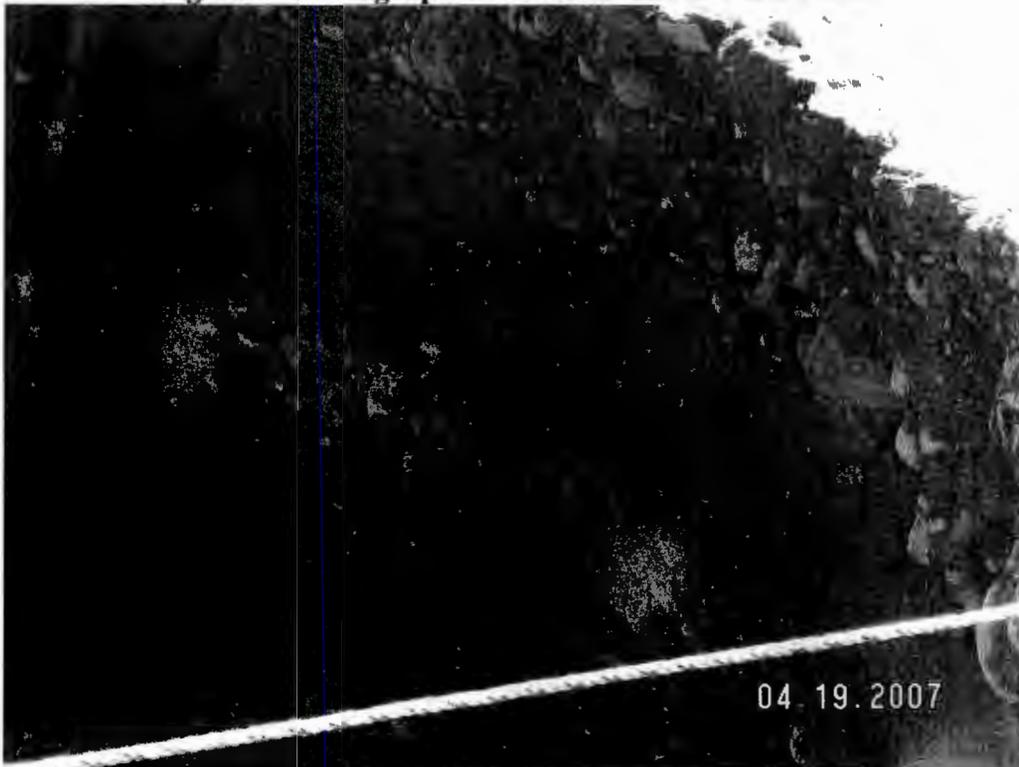


Figure 9. Photograph of Trench at the 100-D-35 Site.



SUMMARY FOR REJECTION

The basis for rejection of 100-D-33 and 100-D-35 as waste sites is supported by historical review, field inspections, geophysical data, and excavations. It has been determined through the analysis of historical photographs that the 100-D-33 and 100-D-35 sites were not burial grounds. This is further supported by the geophysical investigations; no subsurface anomalies were identified in the geophysical data, and the subsurface reflections were characteristic of natural geologic horizons. Excavation activities also did not locate any debris. The 100-D-33 and 100-D-35 sites do not pose a risk to human health or the environment and will support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario, and no institutional controls are required.

REFERENCES

- BHI, 2004, *Results of Geophysical Investigations at 100-D/DR Area, Phase II Remaining Sites*, CCN 115042, Interoffice Memorandum to R. A. Carlson, dated July 27, 2004, Bechtel Hanford, Inc., Richland, Washington.
- DOE-RL, 2001, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, DOE/RL-2001-35, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 2005, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- EPA, 2000, *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2, Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.
- GE, 1956, *Unconfined Underground Radioactive Waste and Contamination - 100 Areas*, HW-46715, Rev 0, General Electric Company, Richland, Washington.
- WCH, 2008, *Supercedes CCN 136726 Stereo Aerial Photograph Evaluation for Waste Sites 100-D-33, 100-D-35, 100-D-40, and 100-D-41*, CCN 138036 dated February 7, 2008, to J. M. Capron, Washington Closure Hanford, Richland, Washington
- WHC, 1993, *100-D Area Technical Baseline Report*, WHC-SD-EN-TI-181, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Date Submitted: <u>3-13-08</u>	WASTE SITE RECLASSIFICATION FORM	Control Number: 2007-025
Originator: <u>J. M. Capron</u>	Operable Unit(s): <u>100-DR-2</u>	
Phone: <u>372-9227</u>	Waste Site Code: <u>100-D-40</u>	
	Type of Reclassification Action:	
	Closed Out <input type="checkbox"/> Interim Closed Out <input type="checkbox"/> No Action <input type="checkbox"/>	
	RCRA Postclosure <input type="checkbox"/> Rejected <input checked="" type="checkbox"/> Consolidated <input type="checkbox"/>	

This form documents agreement among parties listed authorizing classification of the subject unit as Closed Out, Interim Closed Out, No Action, RCRA Postclosure, Rejected, or Consolidated. This form also authorizes backfill of the waste management unit, if appropriate, for Closed Out and Interim Closed Out units. Final removal from the NPL of No Action and Closed Out waste management units will occur at a future date.

Description of current waste site condition:

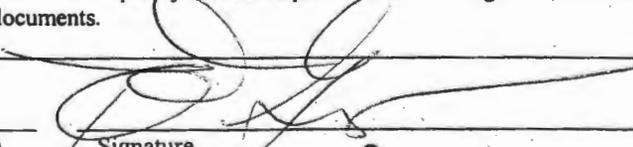
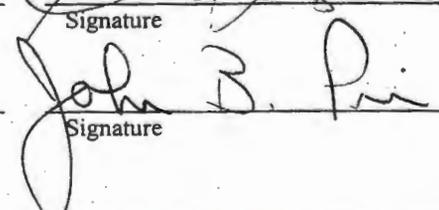
The 100-D-40, Minor Construction Burial Ground #5 Hole is described in the Waste Information Data System (WIDS) as a 12-m (40-ft)-diameter hole. The 100-D-40 site is reported to have been used for the disposal of contaminated material and equipment from the 105-D Reactor. The site is located 220 m (720 ft) east of the 105-D Reactor and 23 m (75 ft) south of the railroad tracks that serviced the 105-D Reactor. The 100-D-40 waste site was evaluated to determine if the remedial action objectives and goals established by the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds ROD), Benton County, Washington*, U. S. Environmental Protection Agency, Region 10, Seattle, Washington have been met. The evaluation included historical research, geophysical investigation, and trench excavation, and the conclusion was drawn that this site does not contain waste. As no waste was found within the predetermined WIDS boundary, it should be assumed that the waste described in association with the 100-D-40 site is at another location within the 100-D Area. The waste was likely disposed of in 100-D-47 and/or 118-D-4. As such, the site was not used for the disposal of hazardous/dangerous materials and, accordingly, no residual contamination would be present in the soil.

Basis for reclassification:

The 100-D-40, Minor Construction Burial Ground #5 Hole site evaluation and supporting documentation demonstrate that this site meets the objectives established in the 100 Area Burial Grounds ROD. Based on the evidence gathered from the review of historic aerial site photographs, area surface features, geophysical data, and test trench excavations, it has been determined that the 100-D-40 site was not used for the disposal of reactor waste and is Rejected from consideration as a waste site. The 100-D-40 site does not pose a risk to human health or the environment and will support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. No institutional controls are required. The basis for reclassification is further described in the Attachment to Waste Site Reclassification Forms 2007-025 and 2007-026: 100-D-40 and 100-D-41 Minor Construction Burial Ground #5 Hole and #5 Trench (attached).

Waste Site Controls:

Engineered Controls: Yes No Institutional Controls: Yes No O&M requirements: Yes No
 If any of the Waste Site Controls are checked Yes specify control requirements including reference to the Record of Decision, TSD Closure Letter, or other relevant documents.

S. L. Charboneau		<u>3/18/08</u>
DOE Federal Project Director (printed)	Signature	Date
J. Price		<u>3/20/2008</u>
Ecology Project Manager (printed)	Signature	Date
N/A		
EPA Project Manager (printed)	Signature	Date

WASTE SITE RECLASSIFICATION FORM		
Date Submitted: <u>3-13-08</u>	Operable Unit(s): <u>100-DR-1</u>	Control Number: <u>2007-026</u>
Originator: <u>J. M. Capron</u>	Waste Site Code: <u>100-D-41</u>	
Phone: <u>372-9227</u>	Type of Reclassification Action:	
	Closed Out <input type="checkbox"/> Interim Closed Out <input type="checkbox"/> No Action <input type="checkbox"/>	
	RCRA Postclosure <input type="checkbox"/> Rejected <input checked="" type="checkbox"/> Consolidated <input type="checkbox"/>	

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Description of current waste site condition:

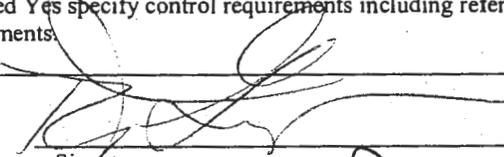
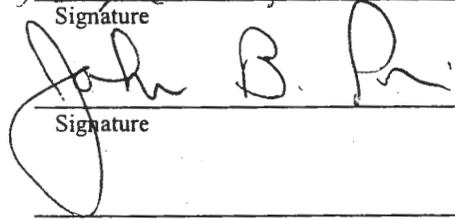
The 100-D-41, Minor Construction Burial Ground #5 Trench is described in the Waste Information Data System (WIDS) as a 23-m (75-ft)-long by 12-m (40-ft)-wide rectangular burial ground, trending north to south. The 100-D-41 site is reported to have been used for the disposal of irradiated reactor parts, dummies, thimbles, rods, gun barrels, and other contaminated solid waste. The site is located 210 m (700 ft) east of the 105-D Reactor and 23 m (75 ft) south of the railroad tracks that serviced the 105-D Reactor. The 100-D-41 waste site was evaluated to determine if the remedial action objectives and goals established by the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds ROD), Benton County, Washington*, U. S. Environmental Protection Agency, Region 10, Seattle, Washington have been met. The evaluation included historical research, geophysical investigation, and trench excavation, and the conclusion was drawn that this site does not contain waste. As no waste was found within the predetermined WIDS boundary, it should be assumed that the waste described in association with the 100-D-41 site is at another location within the 100-D Area. The waste was likely disposed of in 100-D-47 and/or 118-D-4. As such, the site was not used for the disposal of hazardous/dangerous materials and, accordingly, no residual contamination would be present in the soil.

Basis for reclassification:

The 100-D-41, Minor Construction Burial Ground #5 Trench site evaluation and supporting documentation demonstrate that this site meets the objectives established in the 100 Area Burial Grounds ROD. Based on the evidence gathered from the review of historic aerial site photographs, area surface features, geophysical data, and test trench excavations, it has been determined that the 100-D-41 site was not used for the disposal of reactor waste and is Rejected from consideration as a waste site. The 100-D-41 site does not pose a risk to human health or the environment and will support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. No institutional controls are required. The basis for reclassification is further described in the Attachment to Waste Site Reclassification Forms 2007-025 and 2007-026: 100-D-40 and 100-D-41 Minor Construction Burial Ground #5 Hole and #5 Trench (attached).

Waste Site Controls:

Engineered Controls: Yes No Institutional Controls: Yes No O&M requirements: Yes No
 If any of the Waste Site Controls are checked Yes specify control requirements including reference to the Record of Decision, TSD Closure Letter, or other relevant documents.

S. L. Charboneau DOE Federal Project Director (printed)		<u>3/18/08</u> Date
J. Price Ecology Project Manager (printed)		<u>3/20/2008</u> Date
N/A EPA Project Manager (printed)	Signature	Date

**100-D-40, MINOR CONSTRUCTION BURIAL GROUND #5 HOLE AND
100-D-41, MINOR CONSTRUCTION BURIAL GROUND #5 TRENCH**

Attachment to Waste Site Reclassification Forms 2007-025 and 2007-026

March 2008

**100-D-40, MINOR CONSTRUCTION BURIAL GROUND #5 HOLE AND
100-D-41, MINOR CONSTRUCTION BURIAL GROUND #5 TRENCH**

STATEMENT OF PROTECTIVENESS

Site evaluations and supporting documentation for the 100-D-40, Minor Construction Burial Ground #5 Hole and the 100-D-41, Minor Construction Burial Ground #5 Trench demonstrate that the objectives established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005) and the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington* (EPA 2000) are met. The evaluations show that the sites do not contain buried wastes. As such, there are no hazardous or dangerous materials present at the sites and, accordingly, no residual contamination in the soil. Therefore, the sites are protective of human health, groundwater, and the Columbia River.

The evaluations show that the sites do not contain buried wastes. As such, there are no hazardous/dangerous materials present at the sites and, accordingly, no residual contamination in the soil.

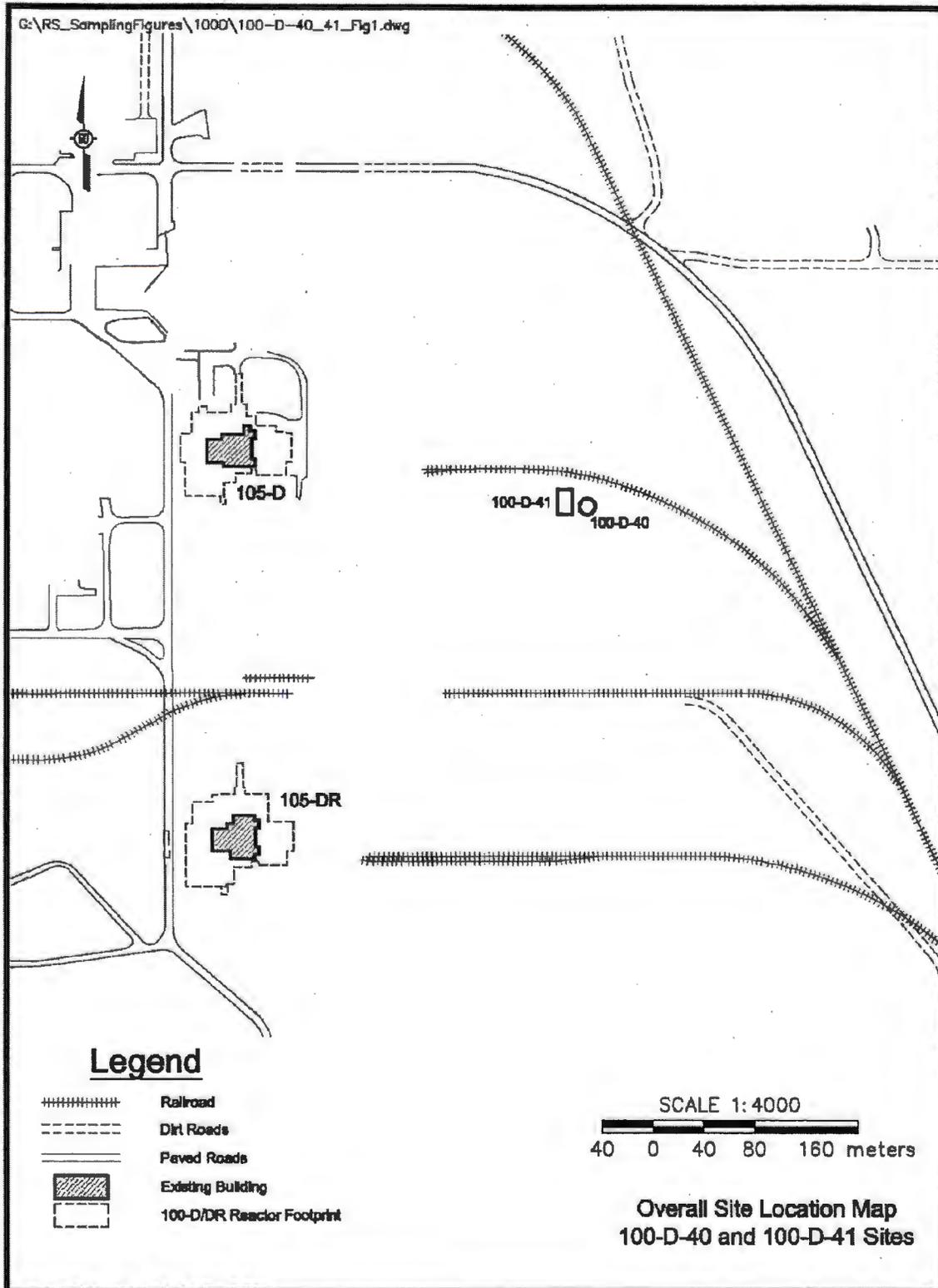
GENERAL SITE INFORMATION AND BACKGROUND

The Waste Information Data System (WIDS) General Summary Report describes the 100-D-40 and the 100-D-41 waste sites as minor construction burial grounds located 220 m (720 ft) and 210 m (700 ft) east of the 105-D Reactor Building, respectively, and both 23 m (75 ft) south of the railroad tracks that serviced the 105-D Reactor Building (Figure 1). The 100-D-40 site is reported to have been a 12-m (40-ft)-diameter pit dug to receive contaminated material and equipment from the 105-D Reactor. The 100-D-41 site is reported to have been a 23 m (75 ft) by 12 m (40 ft) trench used for the disposal of irradiated reactor parts, dummies, thimbles, rods, gun barrels, and other contaminated solid wastes. Both sites are reported to have been in operation in 1956 (DOE/RL 2001).

BASIS FOR REJECTION

The information for the 100-D-40 and 100-D-41 sites supplied in WIDS and in the *100-D Area Technical Baseline Report* (WHC 1993) does not correspond with the evidence provided by historic aerial photographs, area surface features, geophysical data, and excavation findings for the actual sites. Based on historical research and site inspection and excavation, it has been determined that these sites were not used as burial grounds or for other waste disposal.

Figure 1. Location of the 100-D-40 and 100-D-41 Suspect Burial Grounds.



Historical Photographs

Historical aerial photographs were reviewed to detect changes in the landscape where the 100-D-40 and 100-D-41 burial grounds are thought to be located. Indications of recent ground disturbances at the expected waste site locations would include the absence of vegetation; signs of recontouring of the ground surface from grading and filling operations; the presence of temporary access routes; and other fresh and obvious disturbances to the ground surface. Indications of such activities would be manifested on aerial photographs as areas with a smooth texture indicating the absence of vegetation; a very light colored or white photo tone caused the high reflectivity of newly-exposed soil; rows of linear or curvilinear grading tread marks from heavy equipment; and obvious access routes for ingress and egress.

A formal evaluation was performed to assess the existence of former solid waste burial sites in the 100-D Area as depicted in 100-D Area aerial photographs taken in 1948, 1957, and 1964 (WCH 2008). The evaluation was performed through review of 14 historical black and white photographs provided to Washington Closure Hanford (WCH) by the Washington State Department of Ecology (Ecology) for the purpose of conducting the evaluation. The photographs are large-scale vertical stereo images taken by the U.S Air Force.

Waste Information Data System (WIDS) coordinates were used to plot the reported location of the waste sites onto the enlargement of the photographs to aid in defining the area to be reviewed. Using the resulting plots as guidance, each individual aerial photograph was inspected without magnification, and pairs of aerial photographs were viewed stereographically without magnification and with 2 times and 4 times magnification to look for signs of obvious ground disturbances at the expected locations of the waste sites.

There were no disturbances to the ground surface at the subject locations on the 1948 aerial photographs. The 1957 and 1964 photographs display some texture at the expected waste site locations, indicating the presence of some vegetation. The photo tone is medium gray and there are no tread marks or grading lines suggesting recent grading activity. A dirt road that provides access to nearby waste site 118-D-4 (which was in operation at the time of the photos) is present along the south side of the 100-D-40 and 100-D-41 waste sites. There are no spurs or turnouts off of this road leading to the sites. The 100-D-40 and 100-D-41 waste sites appear to be largely undisturbed.

The appearance of the expected locations of the waste sites on the 1957 air photos is in sharp contrast to nearby areas that display clear signs of having been recently covered and graded (e.g., 100-D-47) or were currently active and had been heavily disturbed (e.g., 118-D-4). These other sites also show clear access routes for heavy equipment and other vehicles. Therefore, if the areas of interest had been recently disturbed, it is expected that this would be revealed on the air photos. Because there are no such indications, it is concluded that the waste sites were not developed, operated, and closed at the expected locations in the years immediately before 1957.

Based on the results of aerial photographic interpretation of air photos provided by Ecology, as described above, the following conclusions are drawn:

- None of the four waste sites existed at the expected locations in 1948.
- There is no evidence that the waste sites were developed, operated, or closed at the expected locations in the years immediately before 1957.
- There is no evidence that one or more of the waste sites was developed, operated, or closed at other locations on either side of the 105-D rail spur.
- It is likely that the waste described as being disposed at 100-D-40 and 100-D-41, was disposed of in 100-D-47 and/or 118-D-4.

Historic aerial photographs taken between 1956 and 1966 (Figures 2 and 3) were reviewed to determine if there were any changes in the landscape where the 100-D-40 and 100-D-41 burial grounds are thought to be located. Instead, the historical photographs show the 100-D-40 and 100-D-41 site locations as undisturbed, indicating that no excavations had occurred.

A 1956 aerial photograph (Figure 3) shows scarring in the vicinity of 100-D-47, with activity occurring in 118-D-4. There is no indication of an active burial ground in the area where the 100-D-40 and 100-D-41 burial grounds were reportedly located. The ground appears to be undisturbed with no signs of scarring on the surface.

A 1966 aerial photograph (Figure 4) shows vegetation beginning to cover the ground, as well as ground scars from the 118-D-4 and 100-D-47 burial grounds. There are no scars visible on the surface in the vicinity where the 100-D-40 and 100-D-41 burial grounds were reportedly located. The photographs indicate that the surface areas within the site boundaries are undisturbed and, therefore, show that the sites were not used as burial grounds for contaminated reactor hardware.

Geophysical Investigation

A geophysical investigation was conducted in June 2004 to locate and map surface and buried debris (BHI 2004) within the 100-D-40 and 100-D-41 waste site boundaries. The *100-D Area Technical Baseline Report* (WHC 1993) indicates that these sites contain contaminated material and equipment from the 105-D Reactor buildings. Electromagnetic induction (EMI), magnetometer, and ground-penetrating radar (GPR) methods were used in the geophysical investigations.

The results of the investigations indicate that no excavation-like features or anomalies, typical of trenches or pits containing buried debris, were detected within the 30-m (98-ft) by 60-m (197-ft) survey area. A few surface features such as metal debris and vitrified pipe were identified and are shown in Figure 4. A magnetic anomaly, with the characteristics more typical of a gravel road surface, is detected near the southern portion of the survey area (Figure 5). Also, a linear anomaly, about 0.8 m (2.6 ft) below the surface, extends across the survey area, trending toward a concrete slab located near the eastern boundary of the survey. This linear is likely a utility line servicing a structure related to the concrete pad. The absence of sub-surface geophysical anomalies supports the conclusion that these sites were not used as burial trenches for reactor hardware.

Figure 2. Aerial Photograph of 100-D Area. (Dated 1956)

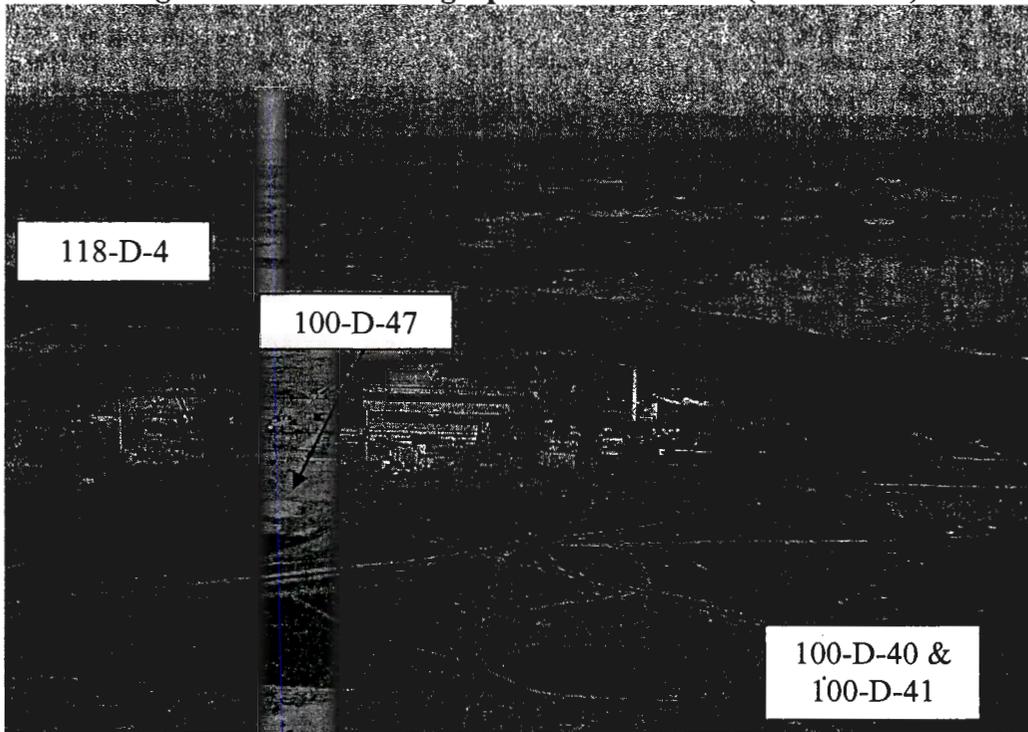


Figure 3. Aerial Photograph of 100-D Area. (Dated 1966)

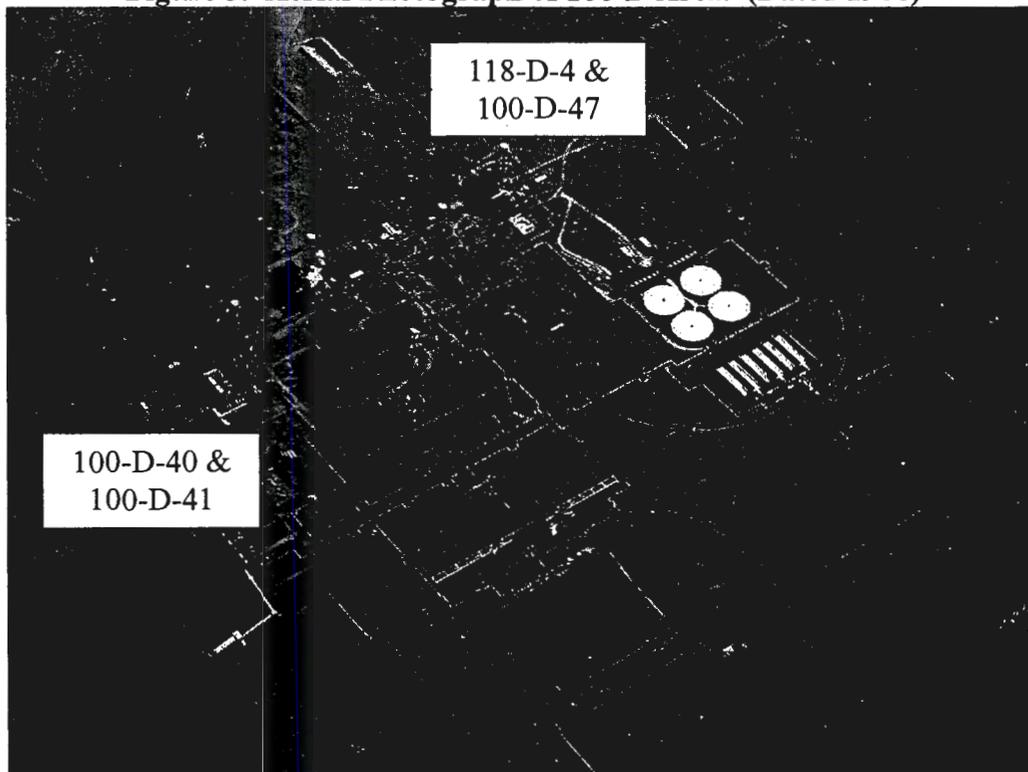


Figure 4. 100-D-40 and 100-D-41 Surface Feature Map.

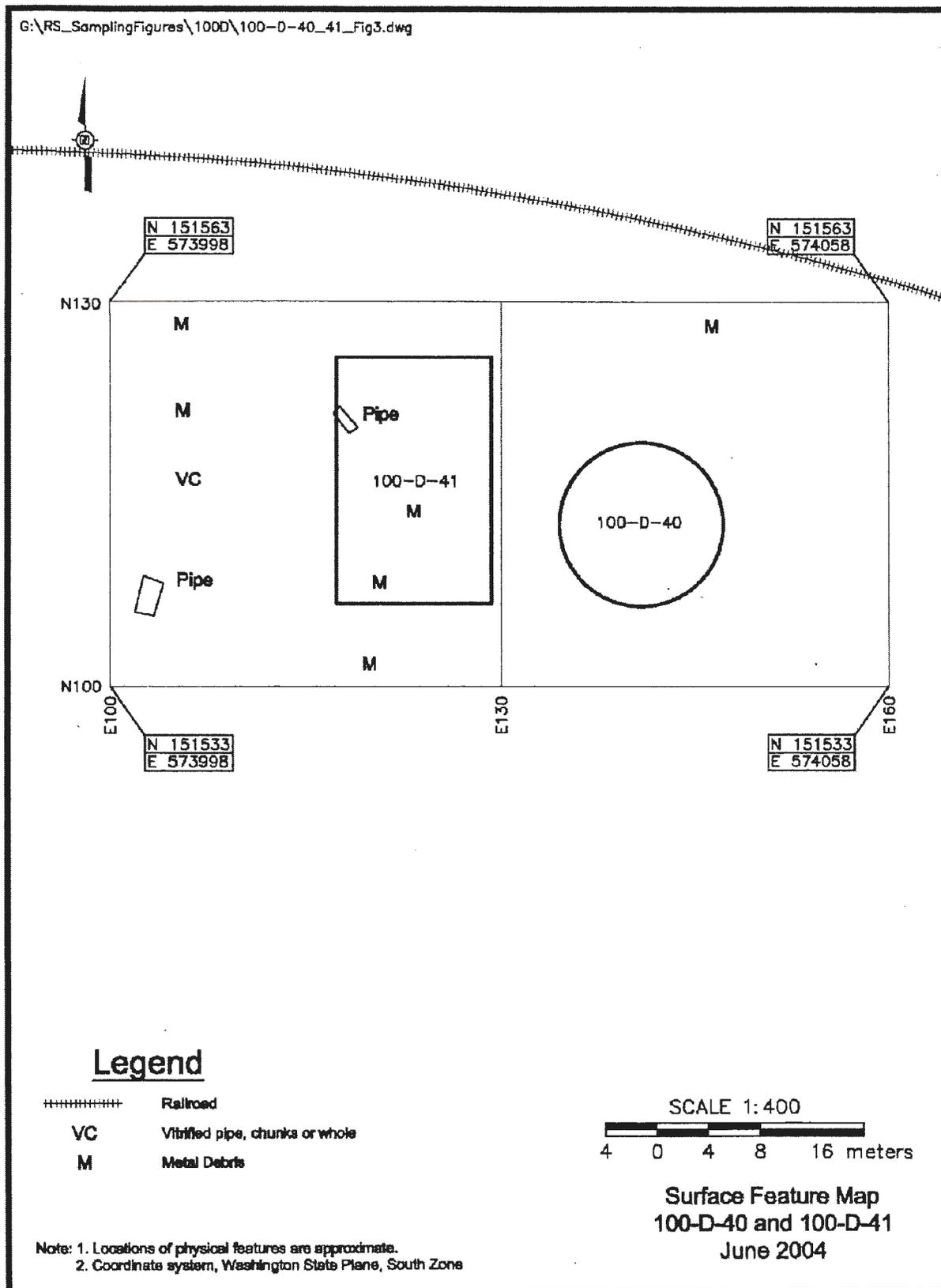
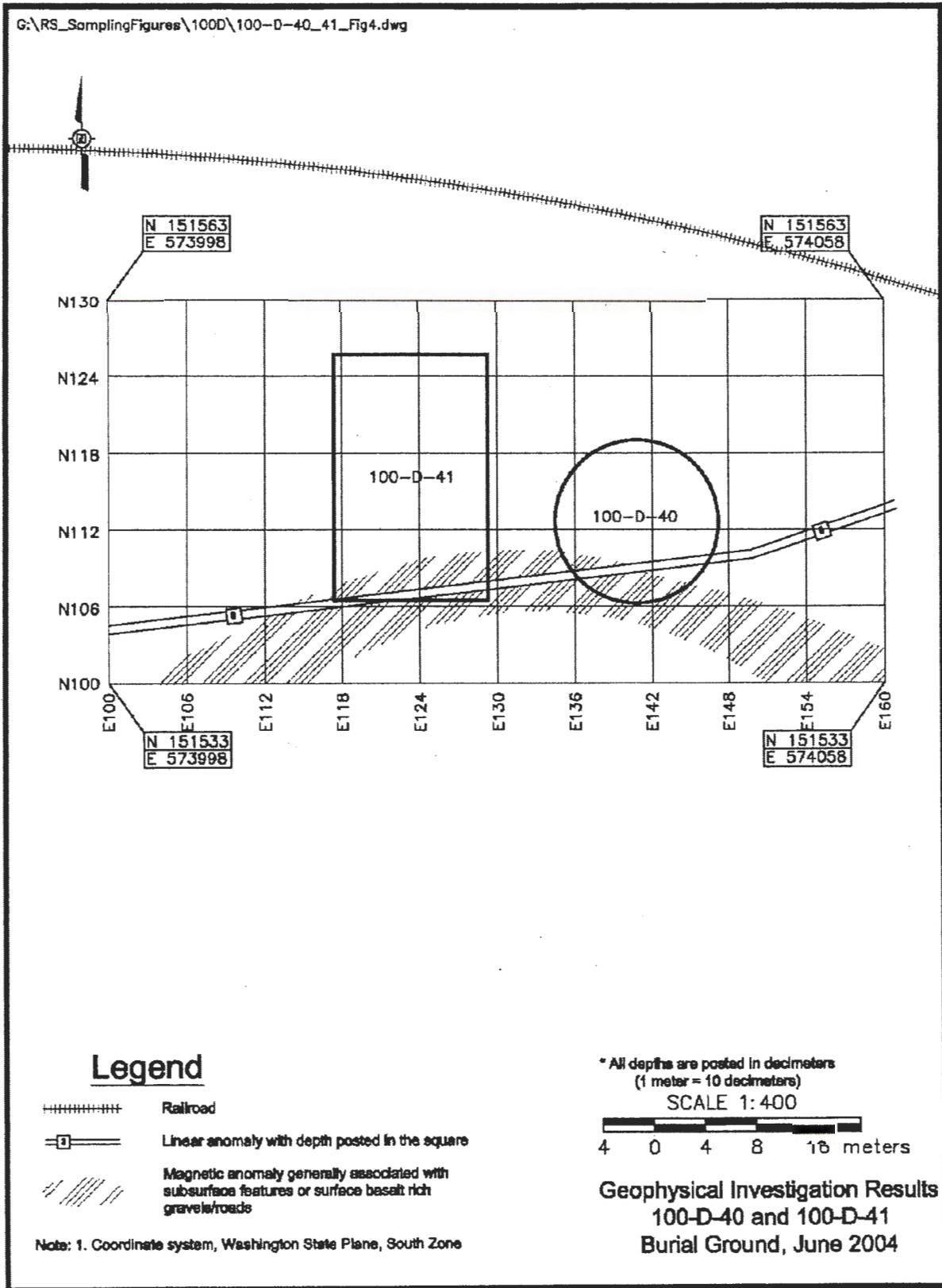


Figure 5. 100-D-40 and 100-D-41 Geophysical Investigation Results.



Exploratory Trenching

Exploratory trenching was conducted at sites 100-D-40 and 100-D-41 (Figure 6) in April 2007 to confirm the findings of the geophysical investigation. The excavation was to proceed to a depth of 4.6 m (15 ft) or to native soil, whichever occurred first. The 100-D Field Remediation Construction Subcontracts Engineer was on site to confirm that the characteristics of native soil were met. These characteristics include orientation of cobbles, calcium carbonate (caliche) formed under cobbles, and horizontal bedding in sand.

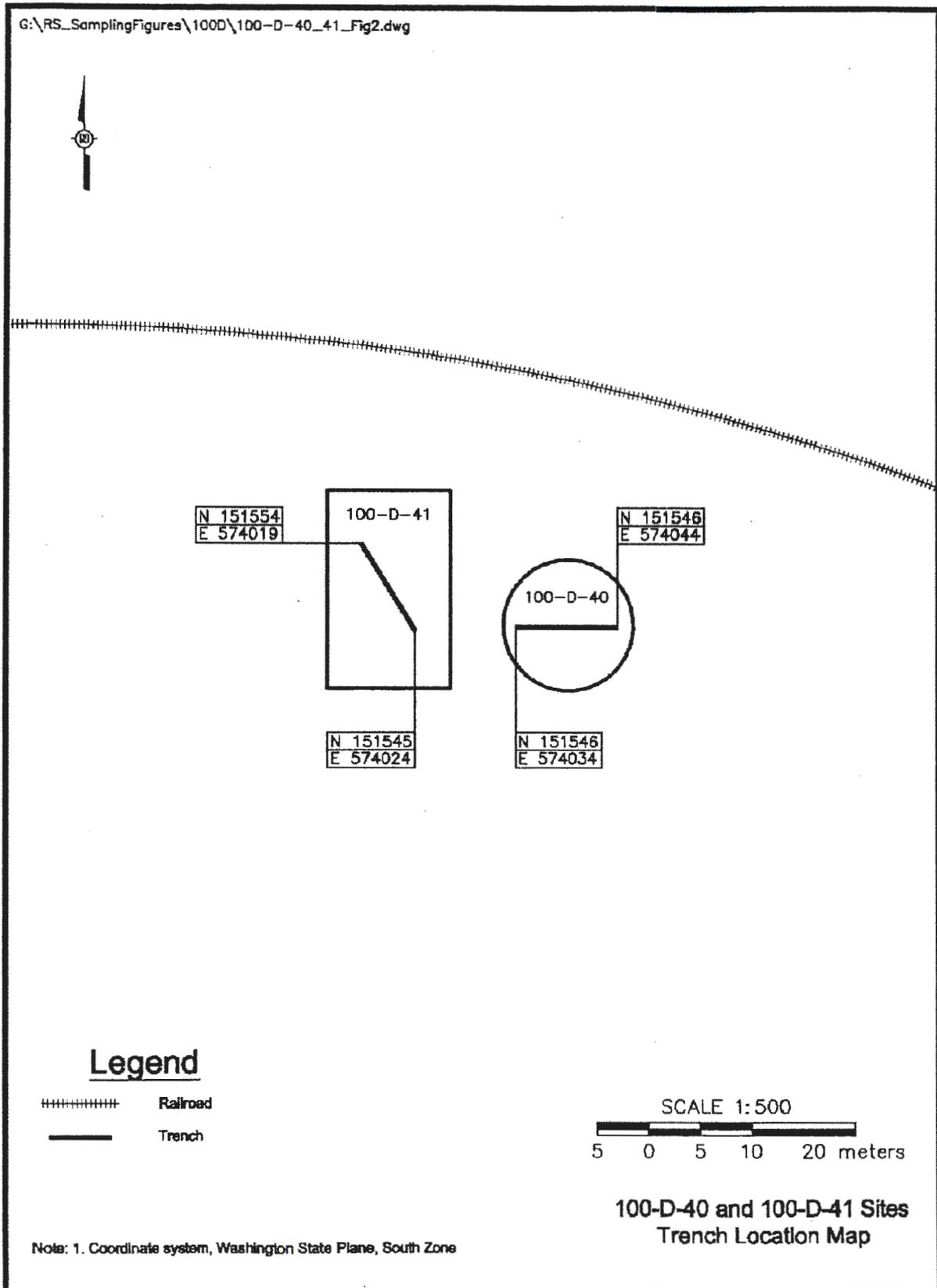
Native soil was encountered at 1.8 m (6 ft) below ground surface at the 100-D-41 site. No debris or hazardous materials were observed at this depth. Native soil was encountered at 3 m (10 ft) below ground surface at 100-D-40. The excavation continued following the confirmation of contact with native soil, and extended to 4.6 m (15 ft). No debris or hazardous materials were observed within the trench. The characteristics typical of native soil and the absence of debris within the exploratory trench supports the conclusion that these sites were not used as burial trenches for reactor hardware.

SUMMARY FOR REJECTION

The 100-D-40, Minor Construction Burial Ground #5 Hole, and the 100-D-41, Minor Construction Burial Ground #5 Trench were never used as burial grounds and can thus be reclassified as Rejected. The basis for rejection is supported by historic aerial photographs, site excavations and inspections, site geology, and geophysical data proving that contaminated reactor construction debris was not disposed of nor buried in either of these locations.

The 100-D-40 and 100-D-41 sites were never used for disposal of hazardous or dangerous materials. Therefore, these sites do not pose a risk to human health or the environment and will support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario, and no institutional controls are required.

Figure 6. 100-D-40 and 100-D-41 Trench Location Map



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