006482

CERTIFICATION REPORT FOR AREA 6 SITEWIDE RAIL LINE SYSTEM

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JANUARY 2007

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

20600-RP-0011
REVISION 0
FINAL

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	analytical support level
CDL	Certification Design Letter
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
ECOC	ecological constituent of concern
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	final remediation level
FS	Feasibility Study
FTF	Fire Training Facility
MDL	minimum detectable level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
PAHs	polyaromatic hydrocarbons
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RI/FS	Remedial Investigation/Feasibility Study
RLS	Rail Line System
ROD	Record of Decision
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
UCL	Upper Confidence Limit
V/FCN	Variance/Field Change Notice
VSL	validation support level
WAC	waste acceptance criteria

EXECUTIVE SUMMARY

This Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that soils and areas of old ballast underneath the railroad track in the Area 6 Sitewide Rail Line System meet established final remediation levels (FRLs). This Certification Report includes details of the certification sampling, analysis, validation, and statistical analysis that took place in the Sitewide Rail Line System. Figure 1-1 depicts the layout and location of the area covered by this document.

Consistent with the Sitewide Excavation Plan (DOE 1998), these areas underwent predesign, excavation, and precertification activities, including the use of real-time instrumentation as well as physical sampling and analysis. As a result of these activities, it was determined that no further remediation was necessary prior to certification.

This document discusses certification of the 20 CUs created for this area. The Area 6 Sitewide Rail Line System Area was made up of sixteen (16) group 1 CUs. CUs RLS-C01 through RLS-C05 were areas that required a stratified certification effort due to the presence of fill at some locations. Those areas where fill was sampled were treated collectively as 1 CU. CU delineation for these 17 CUs is described in the CDL for the Area 6 Sitewide Rail Line System (DOE 2006) and Variance/Field Change Notice (V/FCN) 200600-PSP-0016-48 written to the Project Specific Plan for Excavation Control of Area 6 – Waste Pits and General Area (Supplement to 20300-PSP-0011, DOE 2005). Additionally, two CUs were created from samples collected of ballast located under the railroad tracks to demonstrate that the ballast was not a source of site related contamination. These sampling activities are discussed in the CDL for the Area 6 Sitewide Rail Line System (DOE 2006) as well as V/FCNs 20600-PSP-0016-101, 20600-PSP-0016-107, and 20600-PSP-0016-109 written to the Project Specific Plan for Excavation Control of Area 6 – Waste Pits and General Area (Supplement to 20300-PSP-0011, DOE 2005). Finally, one CU was constructed from sampling activities associated with the soil under the trestle spanning Paddys Run Creek. This sampling event is described in the CDL for the Area 6 Sitewide Rail Line System (DOE 2006) and V/FCN 200600-PSP-0016-110 written to the Project Specific Plan for Excavation Control of Area 6 – Waste Pits and General Area (Supplement to 20300-PSP-0011, DOE 2005).

Although it followed the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998), this certification effort differed in that it was of both the soil as well as the old ballast located underneath the rail line and it relied on previously collected precertification data. Initially, all soil and ballast sampling done under the above-mentioned V/FCNs were designated as precertification samples utilizing the certification design criteria from the SEP. Upon review, the results were considered to be on the whole consistent with certification requirements.

The Area 6 Sitewide Rail Line System certification units (CUs) were sampled and statistical analysis

conducted as necessary to ensure certification criteria were met for all 20 CUs. These criteria state that: 1) the mean concentration or activities of the primary area-specific constituents of concern (ASCOCs) within a CU must be less than the final remediation levels (FRLs) at the 95 percent upper confidence level (UCL) or the 90 percent UCL for the secondary ASCOCs; and 2) no certification result can exceed two times the FRL (i.e., the hotspot criterion). If either of these criteria is not met, then further investigation and possible excavation is required. If both of these criteria are met for a CU, then it can be released to restoration for development of the final land use.

The Area 6 Sitewide Rail Line System underwent the certification process in the fall of 2006. All samples related to this effort were collected in 2006 and analyzed at an off-site laboratory that is on the FCP Approved Laboratories List, per the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 2003). The data were subjected to the required validation and verification process.

On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this portion of the site. The area will be considered certified when the U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency concur that certification criteria have been met.

1.0 INTRODUCTION

1.1 PURPOSE

This Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that soil and areas of old ballast under the Sitewide Rail Line System meet established final remediation levels (FRLs). On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this portion of the site.

1.2 BACKGROUND

In the Operable Unit (OU) 5 Record of Decision (ROD, DOE 1996a), DOE made a commitment to excavate soil that exceeds health-based FRLs. The excavated material may be disposed of at the On-Site Disposal Facility (OSDF) or at an off-site disposal facility if it does not meet OSDF waste acceptance criteria (WAC). The OU5 Remedial Investigation Report (RI, DOE 1995a) defined the extent of above-FRL soil contamination and, in general, indicated widespread contamination occurring in approximately 430 acres of the 1,050-acre FCP.

In the OU5 Remedial Action Work Plan (RAWP, DOE 1996b), DOE agreed to prepare a Sitewide Excavation Plan (SEP, DOE 1998) that defined the overall approach to cleaning up soil and at- and below-grade debris in accordance with the OU2 ROD (DOE 1995b), OU3 ROD (DOE 1996c), and OU5 ROD. In the SEP, the FCP was divided into distinct remedial areas and phases for soil remediation, based on the operable units' remediation schedule. After all necessary remediation is completed within each area/phase, the soil is certified as having attained all clean up goals (i.e., FRLs). No excavations were required of the soil under the Sitewide Rail Line System.

1.3 SCOPE AND AREA DESCRIPTION

The scope of this Certification Report includes details of certification sampling, analysis and validation that took place in the Sitewide Rail Line System. The Sitewide Rail Line System is approximately 17.6 acres, and includes both the soil and areas of old ballast underneath the railroad track as well as the soil underneath the rail trestle. The Sitewide Rail Line System is comprised of the Operable Unit (OU) 1 Railyard, which is situated in the northeast portion of Area 6, and the rail lines located in Area 6 and Area 7. A small portion of the rail line that leads to and from the FCP is located in the northern portion of the Area 6 Triangle Area, located just west of Paddys Run Road. Figure 1-1 depicts the layout of the Sitewide Rail Line System.

1.4 OBJECTIVES

The objectives of this Certification Report are to:

- Summarize the precertification and remedial activities,
- Describe the analytical methods, data validation processes, data reduction and statistical processes used to support the certification process,
- Present certification sampling results for all certification units (CUs), and
- Present the statistical analysis showing that all CUs have passed the certification criteria, including FRL attainment and hotspot criteria.

1.5 REPORT FORMAT

This Certification Report is presented in five sections with supporting documentation and data in the appendices. These sections are as follows:

Section 1.0	Introduction: Purpose, background, area description, scope, and objectives of the report
Section 2.0	Certification Approach: The approach for certification sampling and analysis
Section 3.0	Overview of Field Activities: Historical data evaluation, precertification, area preparation, excavation and changes to work scope
Section 4.0	Analytical Methodologies, Data Validation Processes and Data Reduction
Section 5.0	Certification Evaluation and Conclusions
Appendix A	Soil Precertification Samples, Analytical Results and Final Statistics Tables
Appendix B	Ballast Precertification Samples, Analytical Results and Final Statistics Tables
Appendix C	Correction of 7-Day Radium-226 Results
Appendix D	Variances Associated with the Site Wide Rail Line System Certification Effort

1.6 FCP MASTER CERTIFICATION MAP

In order to track certification and characterization at the FCP, DOE updates a controlled map (Figure 1-2) showing the status of the soil remediation areas and phased areas with all Certification Reports. This map has been updated to include certification of the Sitewide Rail Line System.

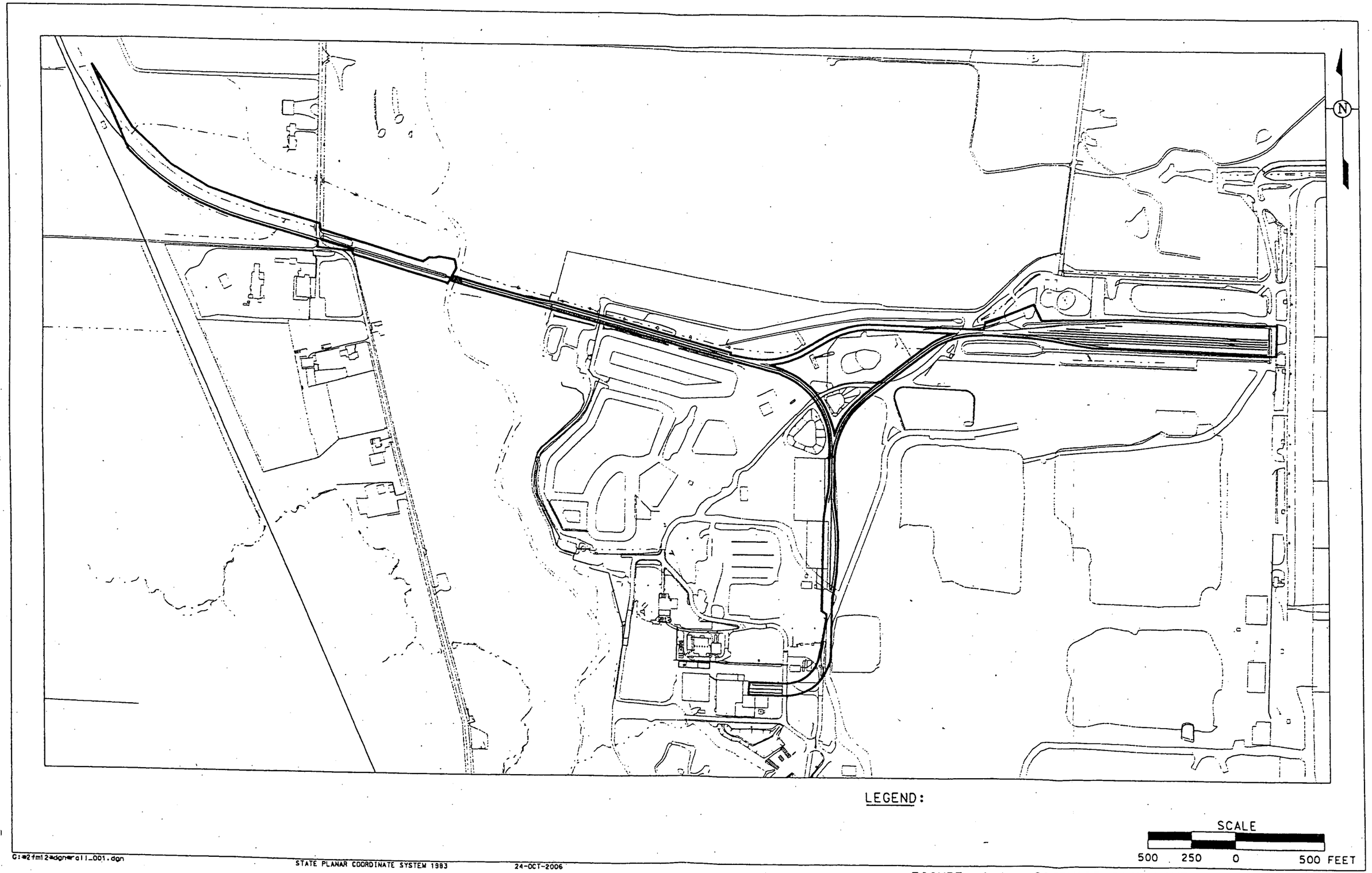
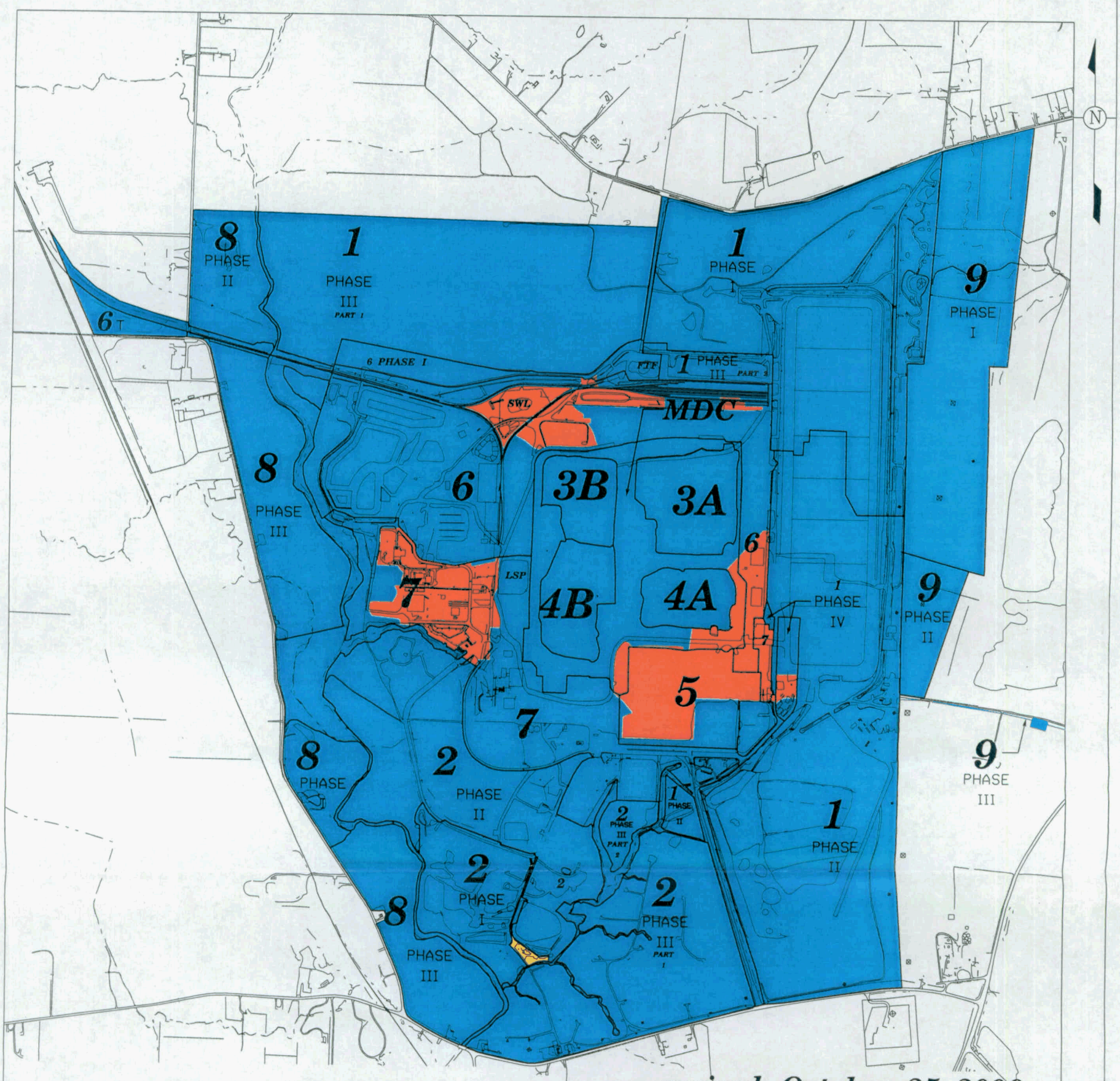


FIGURE 1-1. SITEWIDE RAIL LINE SYSTEM LOCATION MAP



revised October 25, 2006

AREAS	TOTAL ACRES	APPROVED CERT. ACRES	CERT. ACRES IN PROGRESS	REMEDIATION ACRES IN PROGRESS	PREDESIGN ACRES IN PROGRESS	REMAINING ACRES
AREA 1	395.1	394.0	1.0	0	0	0
AREA 2	173.9	173.9	0	0	0	0
AREA 3A/4A	29.3	29.3	0	0	0	0
AREA 3B/4B	25.4	25.4	0	0	0	0
AREA 5	26.9	8.9	18.0	0	0	0
AREA 6	148.9	130.3	18.6	0	0	0
AREA 7	77.0	55.5	21.5	0	0	0
AREA 8	98.9	98.9	0	0	0	0
MDC	39.8	34.3	5.5	0	0	0
PR/SSOD/PPDD	33.3	33.3	0	0	0	0
TOTAL ON SITE	1048.6	983.9	64.6	0	0	0
AREA 9	85.6	85.6	0	0	0	0
TOTAL OFF SITE	85.6	85.6	0	0	0	0

AREA 10 INCLUDES PIPELINES RELATED TO GROUNDWATER REMEDIATION AND OTHER UTILITIES NOT SPECIFICALLY LISTED.

SCALE

1100 550 0 1100 FEET

FIGURE 1-2. FCP CONTROLLED CERTIFICATION MAP

v:\5cj31\dgn\brp\certmap_102606.dgn

STATE PLANAR COORDINATE SYSTEM 1983

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2.0 CERTIFICATION APPROACH

This section summarizes the area-specific constituent of concern (ASCOC) selection process and the certification approach, including CU establishment, sampling design, and statistical analysis. The general certification strategy is described in Section 3.4 of the SEP, and the specific strategy for the Sitewide Rail Line System is described in the Certification Design Letter (CDL) For Area 6 Sitewide Rail Line System.

2.1 AREA-SPECIFIC CONSTITUENTS OF CONCERN

Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary constituents of concern (COCs) and were retained as ASCOCs for this remediation effort. The selection of secondary ASCOCs retained for the Sitewide Rail Line System is discussed in section 2.1.2.

2.1.1 ASCOC Selection Criteria

The selection process for retaining ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant is retained as an ASCOC if:

- It is listed as a soil COC in the OU5 ROD and, it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest;
- It is listed as a COC for a hazardous waste management unit (HWMU) or underground storage tank (UST) that lies within the certification area boundary;
- It can be traced to site use in the remediation area of interest, either through process knowledge or known release of the constituent to the environment;
- Analytical results indicated that a contaminant is present above its FRL, and the above-FRL concentrations are not attributed to false positives or elevated Contract Required Detection Limits (CRDLs);
- Physical characteristics of the contaminant, such as degradation rate or volatility, indicated it is likely to persist in the soil between time of release and remediation; or
- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-238, and thorium-232).

Using the above process, the ASCOCs were refined to those listed in Table 2-7 of the SEP.

2.1.2 ASCOC Selection Process

Since the Sitewide Rail Line System boundary falls within both Area 6 and Area 7, and is situated adjacent to certified Area 1 (Phase I and Phase III Part 2) and Area 8 (Phase II and III), each COC on the Remediation Area 1, Remediation Area 6, Remediation Area 7, and Remediation Area 8 ASCOC list was evaluated for its relevance to the Sitewide Rail Line System. Additionally, portions of the rail line run near

the former Fire Training Facility (FTF) and former Solid Waste Landfill (SWL), both of which are included in Remediation Area 6. Table 2-1 presents the ASCOCs for Remediation Area 1, Remediation Area 6, Remediation Area 7, and Remediation Area 8, and also lists the reasoning for retaining each ASCOC. The ASCOCs carried through the Sitewide Rail Line System CUs reflect the ASCOCs for adjacent Remediation Areas as well as the FTF and SWL. Table 2-2 presents the final list of ASCOCs that will be retained for the soil certification units in the Sitewide Rail Line System.

2.2 CERTIFICATION APPROACH

The certification design for the Sitewide Rail Line System differs from the typical certification effort, as physical certification soil samples have been collected from this area per Variance/Field Change Notices (V/FCNs) 20600-PSP-0016-48 and 20600-PSP-0016-110. Physical certification ballast samples have been collected from this area per V/FCNs 20600-PSP-0016-101, 20600-PSP-0016-106, 20600-PSP-0016-107, and 20600-PSP-0016-109. These V/FCNs are provided in Appendix D.

The soil sampling approach was consistent with the certification criteria established in the SEP, including CU size, minimum distance between points, analytical support levels as well as validation of all analytical data. Based upon the consistency with the SEP, the precertification physical samples that have been collected will be used for final certification. This approach is consistent with other approved certification efforts, such as the former Impacted Material Haul Road in Area 2, Phase II – Subarea 3. All previously collected precertification data will be used for the statistical analysis.

2.2.1 SOIL SAMPLES

The certification soil samples were collected under V/FCNs 20600-PSP-0016-48 and 20600-PSP-0016-110, and discussed in the Sitewide Rail Line System CDL. The intent of this certification effort is to certify that ASCOC concentrations of the soil in the Area 7 Rail Line System Area meet the certification criteria in Section 3.4 of the SEP. Sixteen group 1 CUs were designed as shown in Figures 2-1 and 2-2. One CU was created from fill in the stratified sampling area encompassed by CUs RLS-C01 through RLS-C05. Also, one CU was constructed from soil samples collected under the trestle spanning Paddys Run Creek as shown in Figure 2-12. The 18 soil CUs associated with this document are as follows:

- 16 CUs - Native soil under the rail line and rail yard – CUs RLS-C01 through RLS-C16
- 1 CU - Stratified Fill under the rail yard – Selected sample points in CUs RLS-C01 through RLS-C05 (See Section 2.2.1.1)
- 1 CU – Native soil samples from under the trestle spanning Paddys Run Creek – CU A6-UT (See Section 2.2.1.2)

2.2.1.1 V/FCN 20600-PSP-0016-48

Certification Unit Design

The certification design for the samples collected under V/FCN 20600-PSP-0016-48 follows the general approach outlined in Section 3.4 of the SEP. The CU design for V/FCN 20600-PSP-0016-48 is depicted on Figures 2-1 and 2-2. The following factors were taken into consideration when determining the boundaries for each CU: historical land use, proximity to other areas of the site, and residual COC data. Additionally, some areas along the Sitewide Rail Line System are considered to be impacted areas. Therefore, this design will be comprised of 16 Group 1 CUs to allow for more concentrated sampling and ensure activities that took place within the Sitewide Rail Line System had no effect on the soil.

Certification Sample Design

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. The sub-CUs and certification sampling locations are shown on Figures 2-3 through 2-11.

Physical Soil Sample Collection

All CUs, with the exception of RLS-01 through RLS-05, required sampling of native soil. Due to evidence of fill in the western half of the railyard, CUs RLS-01 through RLS-05 required stratified certification; where both the fill material and the native soil were sampled. Based on topography evaluations completed during predesign, the sampling depth for the native soil was defined for each sample location, as noted in V/FCN 20600-PSP-0016-48 (Appendix D). The top 0 to 6 inches of each soil type was collected. Four of the 16 sample locations were designated with a "V," indicating archive sample locations, which were not collected. One sample location in each CU was designated with a "D," indicating a field duplicate sample collection location.

2.2.1.2 V/FCN 20600-PSP-0016-110

V/FCN 20600-PSP-0016-110 was written to certify the soil under the rail trestle that was built over Paddys Run Creek. Six locations on each side of the Paddys Run bank were identified for sampling. The sample locations were field located in an effort to avoid concrete and any sand/silt material deposited due to stream flows. The top 0 to 6 inches of soil was sampled from locations shown on Figure 2-12.

2.2.2 BALLAST SAMPLES

The ballast samples were collected under V/FCNs 20600-PSP-0016-101, 20600-PSP-0016-106, 20600-PSP-0016-107, and 20600-PSP-0016-109, and are discussed in the Sitewide Rail Line CDL.

Unlike soil samples collected along the Sitewide Rail Line System, the ballast sampling was originally designed as a means to characterize the areas of old ballast for disposition options. There was not a set CU design established prior to sampling. Upon review of the sample locations, it was determined that

there would be two CUs, one on the west side of Paddys Run and one on the east side of Paddys Run, shown on Figures 2-13 and 2-14, respectively.

Samples collected from the new ballast in the railyard area (Figure 2-15) were collected to assess arsenic and PAH levels in ballast, and not for the purpose of certification.

2.2.2.1 V/FCN 20600-PSP-0016-101

Samples collected under V/FCN 20600-PSP-0016-101 were of ballast situated along the portions of track that ran north from the northwest corner of the former Lime Sludge Pond and then northwest to Paddys Run Road. The sample locations were chosen randomly prior to sampling. The data objective for this sampling event was to characterize the ballast to assess disposition options.

Sampling was completed using a Geoprobe® to core through the entire depth of ballast. The core of ballast material was then scanned using a beta/gamma frisker. If an interval scanned greater than 450 ccpm, the sample was collected from the 12-inch interval with highest ccpm. If the ballast contained visible staining, a sample was biased towards the 12-inch interval around the stained ballast. If the core of ballast scanned less than 450 ccpm, and there was no evidence of staining, the sample was collected from the 12-inch interval that represented the middle of the core. These samples were analyzed at ASL B. Sample location BLST-1 was not sampled as no ballast was at that location.

2.2.2.1 V/FCN 20600-PSP-0016-106

V/FCN 20600-PSP-0016-106 was written to collect twelve ballast samples from the surface of the railyard. The sample locations were field located due to accessibility issues. The samples were collected for arsenic and polyaromatic hydrocarbons (PAHs), based upon discussion with OEPA at a TIE Meeting held on July 28, 2006. These samples were analyzed at ASL B. See Figure 2-15 for the sample locations.

2.2.2.2 V/FCN 20600-PSP-0016-107

Samples collected under V/FCN 20600-PSP-0016-107 were to characterize the ballast located between the Paddys Run Trestle and the FCP Gate, to assess the possibility of disposition of the ballast to a local company. Again, due to obstacles in the area designated for sampling, the 16 sample locations were field located. The sample collection method was similar to that listed under V/FCN 20600-PSP-0016-101.

2.2.2.3 V/FCN 20600-PSP-0016-109

Due to accessibility issues for samples collected under V/FCN 20600-PSP-0016-107, four surface ballast samples were collected under V/FCN 20600-PSP-0016-109 from the section of track that is west of the FCP Gate, and four surface ballast samples were collected from the section of track that is just north of the former Solid Waste Landfill.

2.3 STATISTICAL ANALYSIS

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent upper confidence limit (UCL) on the mean of each primary COC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL (for primary ASCOCs) or 90 percent UCL (for secondary ASCOCs) above the FRL results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the first criterion. The *a posteriori* test will the performed to determine whether the sample size is sufficient for a meaningful conclusion of this comparison. The second criterion is the hotspot criterion, which states that primary or secondary ASCOC results must not exceed two times the FRL. When the given UCL on the mean for ach COC is less that its FRL and the hotspot criterion is met, the CU will be considered certified.

In the event that a CU passes the *a posteriori* test but fails certification, the following two scenarios will be evaluated: 1) localized contamination, and 2) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP.

TABLE 2-1
ASCOC LIST FOR REMEDIATION AREAS 1, 6, 7, AND 8[a]

ASCOC	Retained as ASCOC?	Justification
Radionuclides		
Total Uranium	Yes	Is a Sitewide primary COC
Radium-226	Yes	Is a Sitewide primary COC
Radium-228	Yes	Is a Sitewide primary COC
Thorium-228	Yes	Is a Sitewide primary COC
Thorium-232	Yes	Is a Sitewide primary COC
Cesium-137	Yes	Is an ASCOC in adjacent Waste Pits, FTF
Lead-210	No	Not detected near rail line
Neptunium-237	Yes	Is an ASCOC in adjacent FTF and SWL
Technetium-99	Yes	Is an ASCOC in adjacent Waste Pits, FTF and SWL
Thorium-230	Yes	Is an ASCOC in adjacent Waste Pits, FTF
Organics		
1,1-Dichloroethene	Yes	Is an ASCOC in adjacent Waste Pits, FTF
Aroclor-1254	Yes	Is an ASCOC in adjacent Area1, Waste Pits, FTF, SWL
Aroclor-1260	Yes	Is an ASCOC in adjacent Area1, Waste Pits, FTF, SWL
Benzo(a)anthracene	Yes	Is an ASCOC in adjacent SWL
Benzo(a)pyrene	Yes	Is an ASCOC in adjacent FTF and SWL
Benzo(b)fluoranthene	Yes	Is an ASCOC in adjacent FTF and SWL
Bromodichloromethane	Yes	Is an ASCOC in adjacent Waste Pits
Carbazole	Yes	Is an ASCOC in adjacent SWL
Dibenzo(a,h)anthracene	Yes	Is an ASCOC in adjacent FTF and SWL
Dieldrin	Yes	Is an ASCOC in adjacent Waste Pits, FTF, SWL
Heptachlorodibenzo-p-dioxin	Yes	Is an ASCOC in adjacent Waste Pits and SWL
Indeno(1,2,3-cd)pyrene	Yes	Is an ASCOC in adjacent FTF and SWL
Octochlorodibenzo-p-dioxin	Yes	Is an ASCOC in adjacent Waste Pits and SWL
Tetrachloroethene	Yes	Is an ASCOC in Waste Pits, FTF
Inorganic		
Arsenic	Yes	Is an ASCOC in adjacent Area1, Waste Pits, FTF, SWL
Beryllium	Yes	Is an ASCOC in adjacent Area1, Waste Pits, FTF, SWL
Fluoride	Yes	Is an ASCOC in adjacent Waste Pits and SWL
Lead	No	Not detected near rail line
Manganese	No	Not detected near rail line
Ecological		
Antimony	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Cadmium	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Lead	No	Not an ECOC per Appendix C of the SEP
Molybdenum	No	Not an ECOC per Appendix C of the SEP
Silver	Yes	Is an ECOC in Area 6 per Appendix C of the SEP

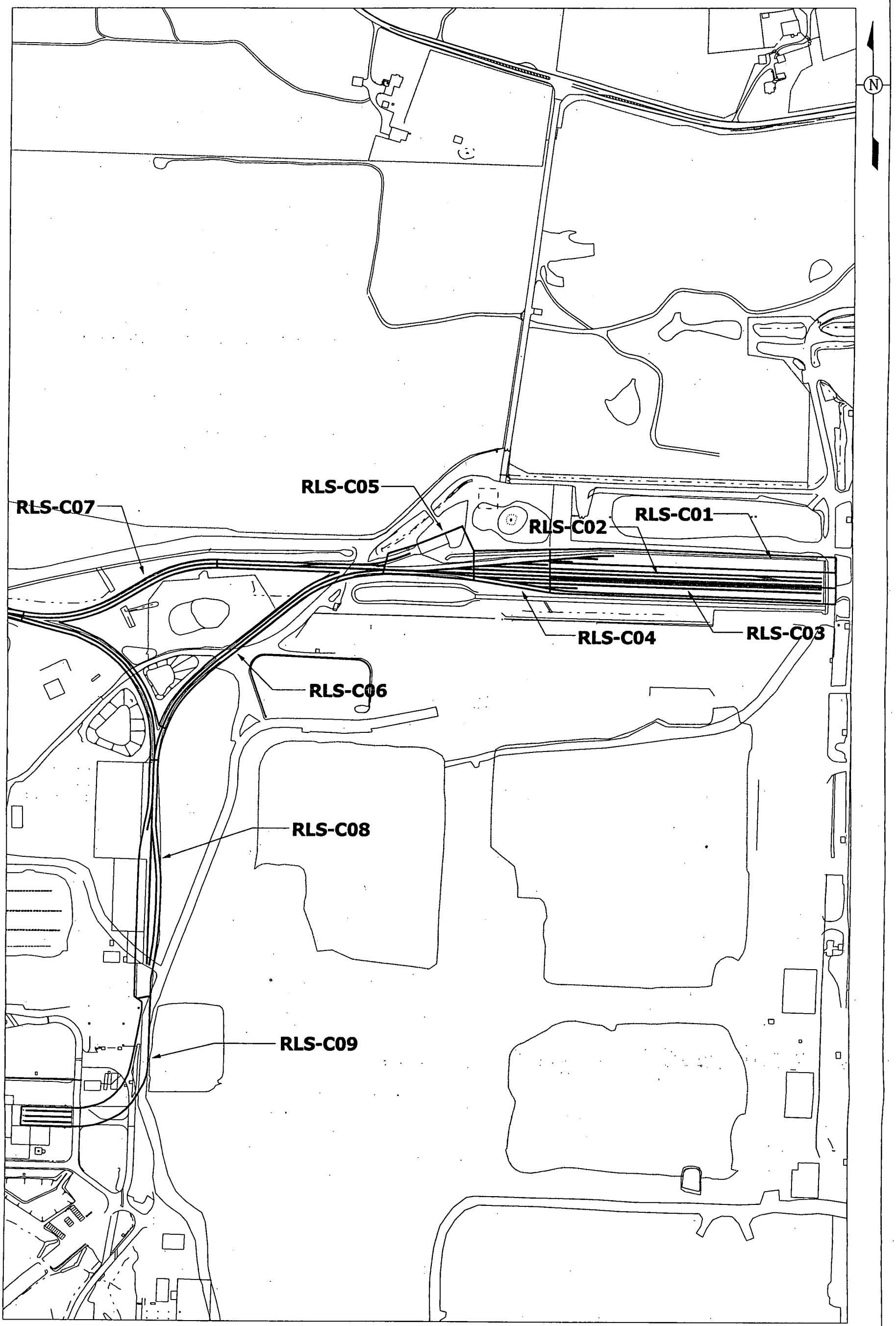
TABLE 2-1
ASCOC LIST FOR REMEDIATION AREAS 1, 6, 7, AND 8[a]

ASCOC	Retained as ASCOC?	Justification
Ecological (continued)		
Benzo(a)anthracene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Benzo(a)pyrene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Benzo(b)fluoranthene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Benzo(g,h,i)perylene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Benzo(k)fluoranthene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Chrysene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Dibenzo(a,h)anthracene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Fluoranthene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Indeno(1,2,3-cd)pyrene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Phenanthrene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP
Pyrene	Yes	Is an ECOC in Area 6 per Appendix C of the SEP

[a]As listed in Table 2-7 of the SEP.

TABLE 2-2
FINAL ASCOC LIST FOR THE SITEWIDE RAIL LINE SYSTEM

	ASCOCs																																				
CU	Radium-226	Radium-228	Thorium-228	Thorium-232	Total Uranium	Lead-210	Neptunium-237	Technetium-99	Cesium-137	Thorium-230	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Fluoride	Aroclor-1254	Aroclor-1260	Dieldrin	Carbazole	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Bromodichloromethane	1,1-Dichloroethene	Tetrachloroethene
SOIL																																							
1	X	X	X	X	X							X		X								X	X																
2	X	X	X	X	X							X		X								X	X																
3	X	X	X	X	X							X		X								X	X																
4	X	X	X	X	X			X		X		X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X			X		X		X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	X	X	X	X	X			X			X	X		X						X	X	X	X		X	X	X	X				X		X					
7	X	X	X	X	X			X			X	X		X	X					X	X	X	X		X	X	X	X				X		X					
8	X	X	X	X	X			X		X	X				X							X	X																
9	X	X	X	X	X			X			X			X																									
10	X	X	X	X	X			X	X	X	X	X		X						X	X	X	X	X			X	X				X		X			X	X	X
11	X	X	X	X	X			X	X	X	X	X		X							X	X	X	X			X	X				X		X			X	X	X
12	X	X	X	X	X																																		
13	X	X	X	X	X																																		
14	X	X	X	X	X																																		
15	X	X	X	X	X																																		
16	X	X	X	X	X																																		
Stratified Fill	X	X	X	X	X			X		X		X		X								X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Under Trestle	X	X	X	X	X			X	X	X	X	X		X	X					X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
BALLAST																																							
Ballast West	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X			
Ballast East	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X			



LEGEND:

SCALE

350 175 0 350 FEET

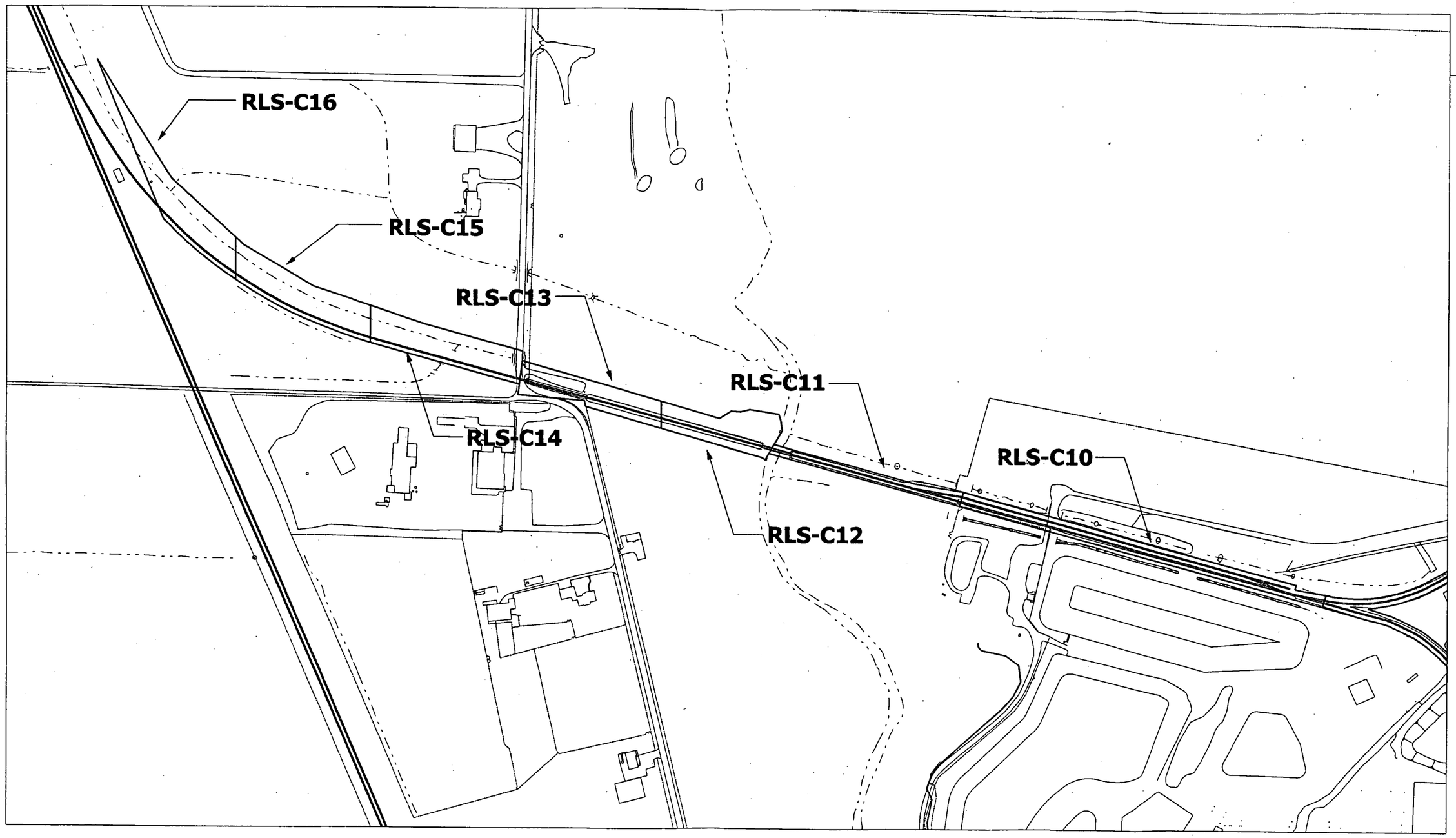
FIGURE 2-1. SITEWIDE RAIL LINE SYSTEM CERTIFICATION AREA BOUNDARIES (CUs 1-9)

v:\2fml2\dgn\r011_002.dgn

STATE PLANAR COORDINATE SYSTEM 1983

10-JAN-2007

006402



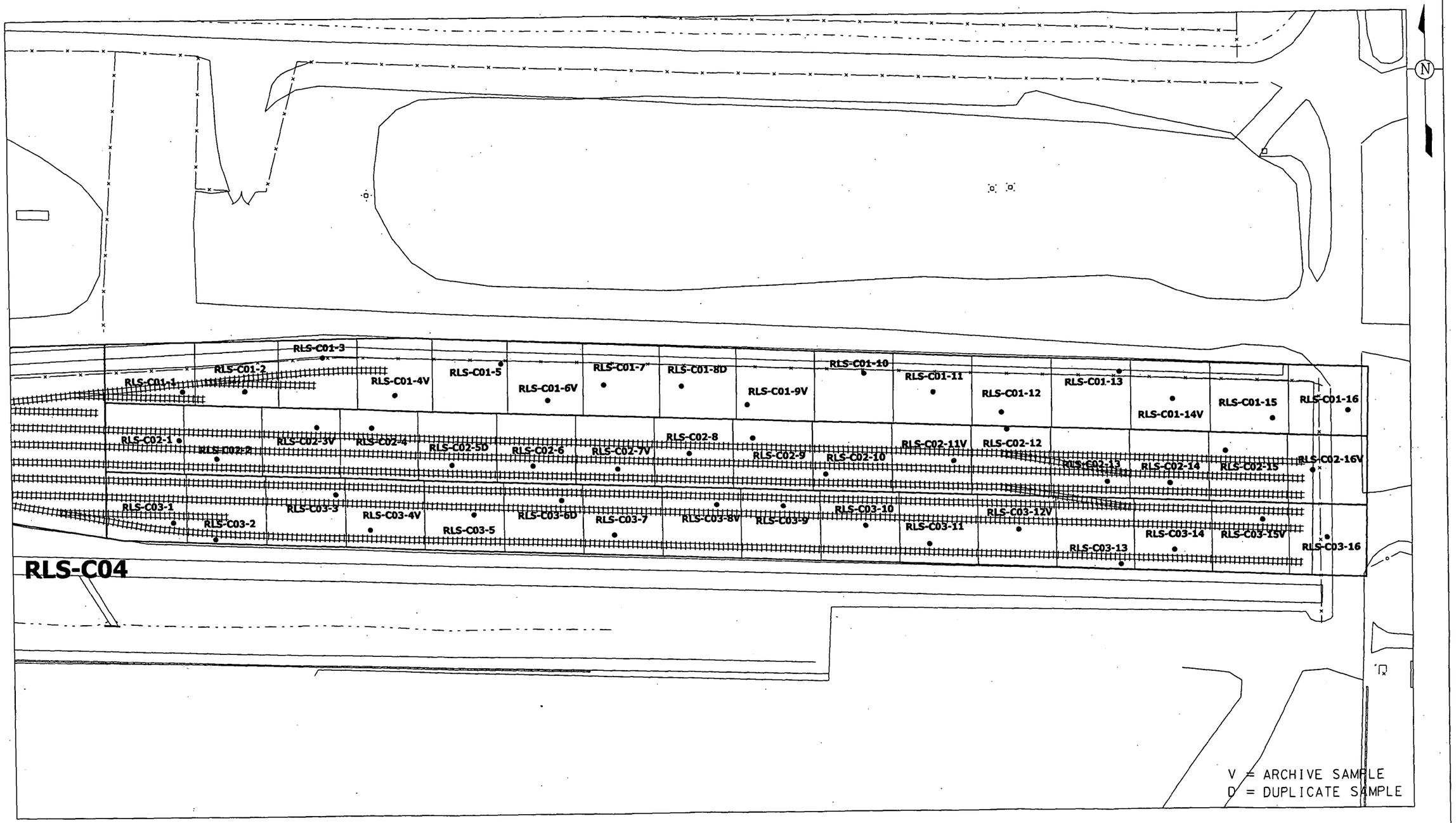
LEGEND:

SCALE

300 150 0 300 FEET

v:\2fm12\dgn\rail_003.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-2. SITEWIDE RAIL LINE SYSTEM CERTIFICATION AREA BOUNDARIES (CUs 10-16)



LEGEND:

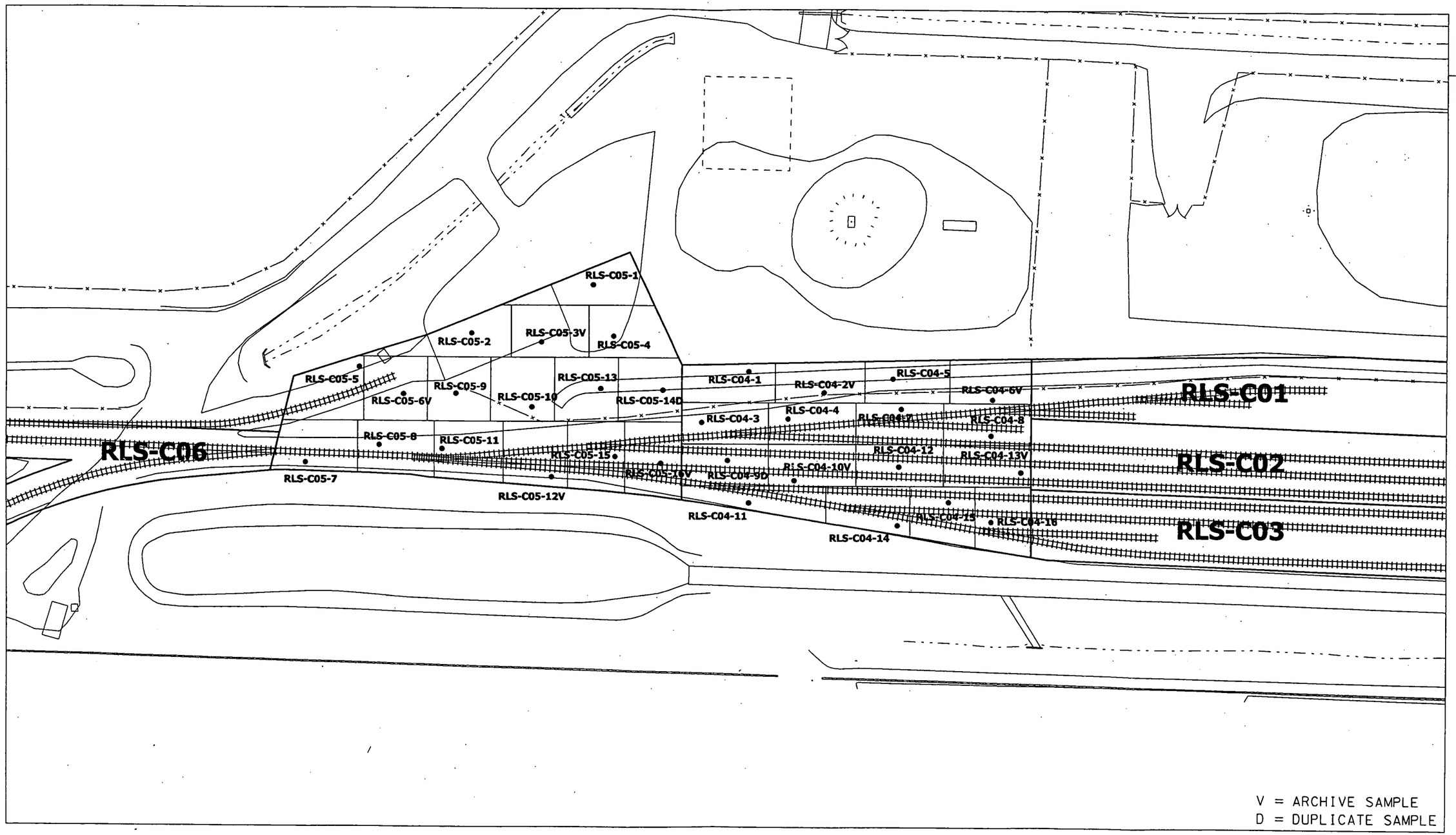
• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\2fmi2\dgn\rail_004.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS (CUs 1-3)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\2fm12\dgn\rail_005.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-4. CERTIFICATION SAMPLING LOCATIONS (CUs 4 & 5)

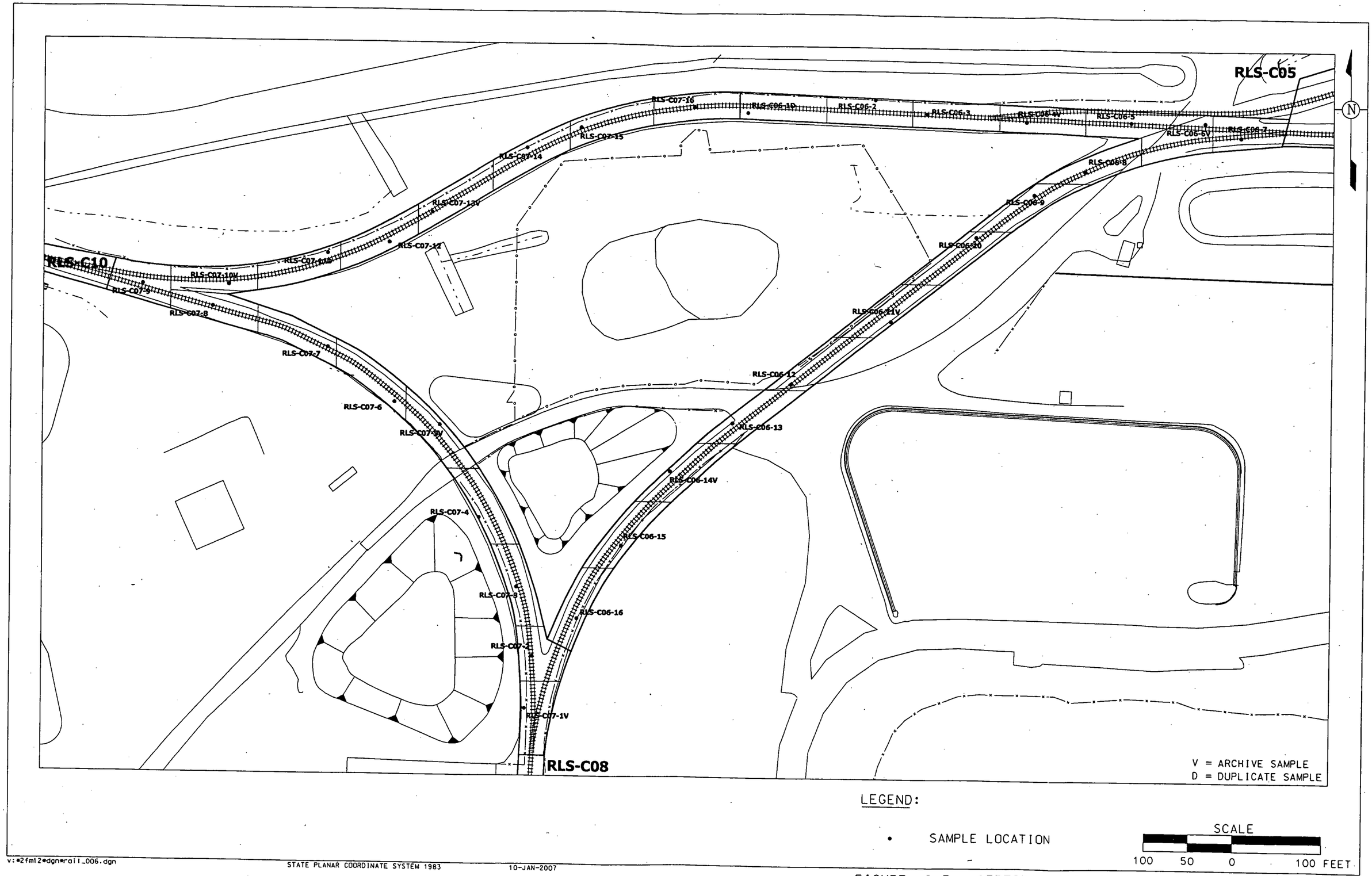
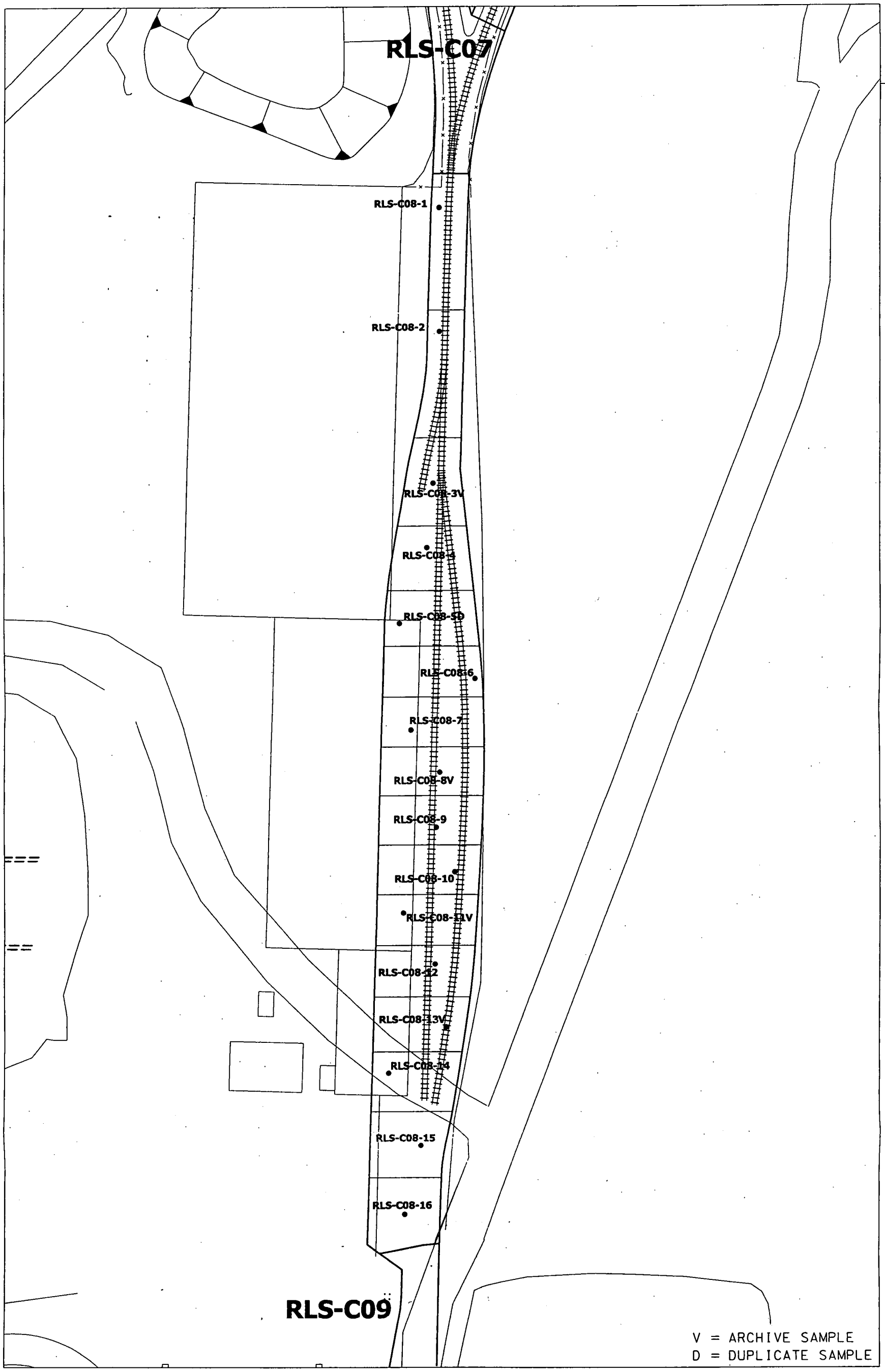


FIGURE 2-5. CERTIFICATION SAMPLING LOCATIONS (CUs 6 & 7)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

FIGURE 2-6. CERTIFICATION SAMPLING LOCATIONS (CU 8)

v:\2fml2\dgn\rrai1_007.dgn

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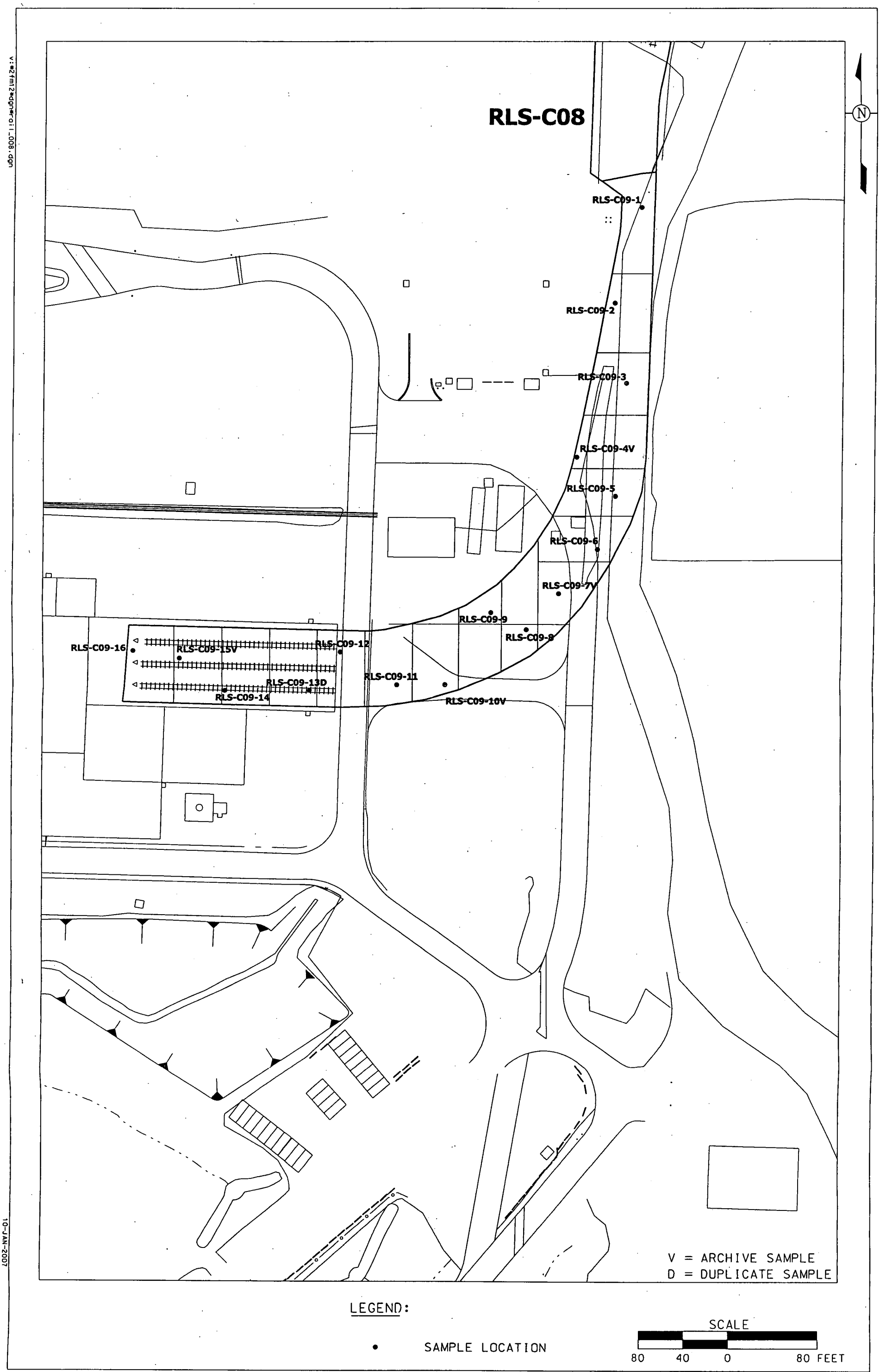
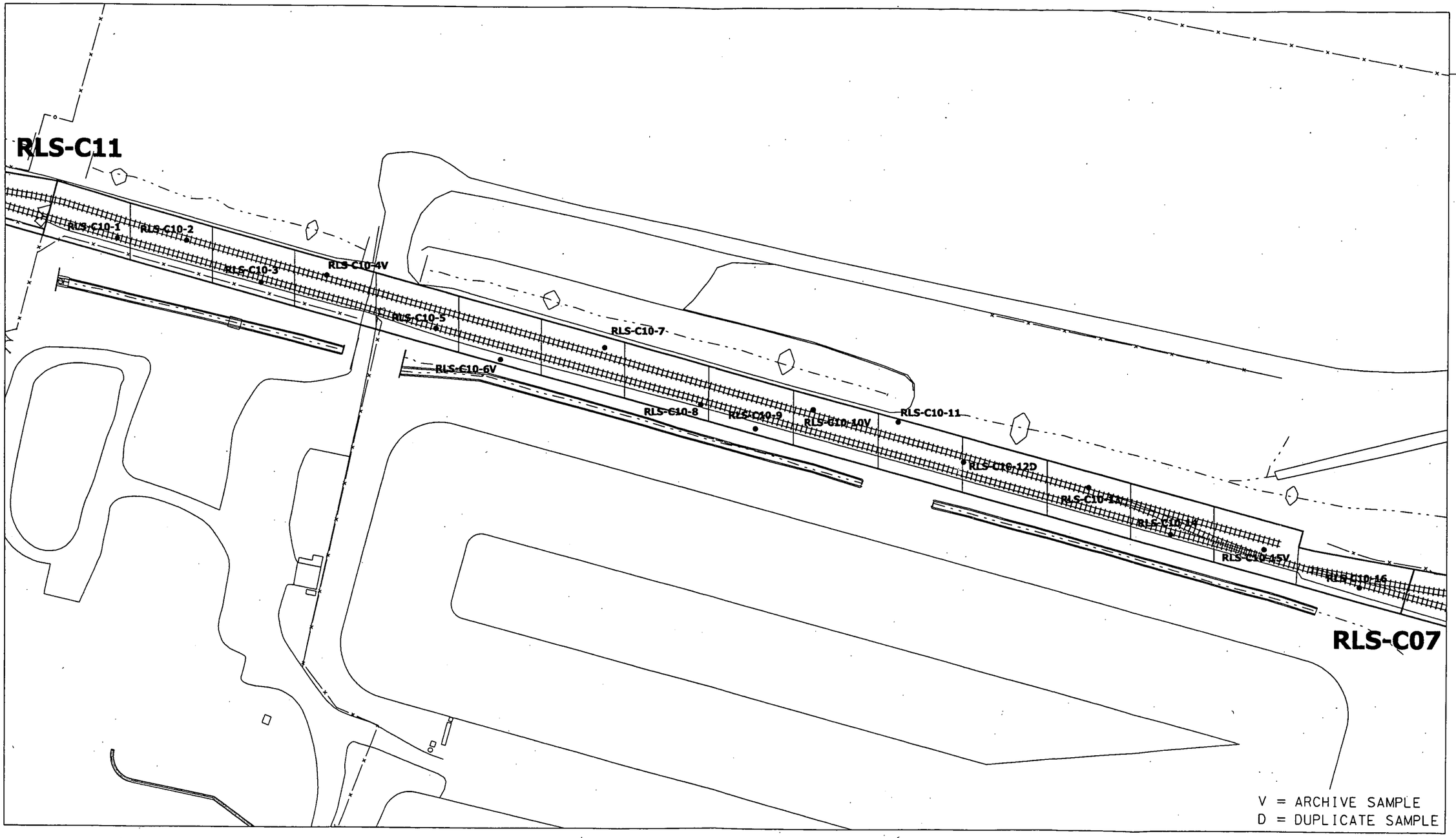


FIGURE 2-7. CERTIFICATION SAMPLING LOCATIONS (CU 9)



LEGEND:

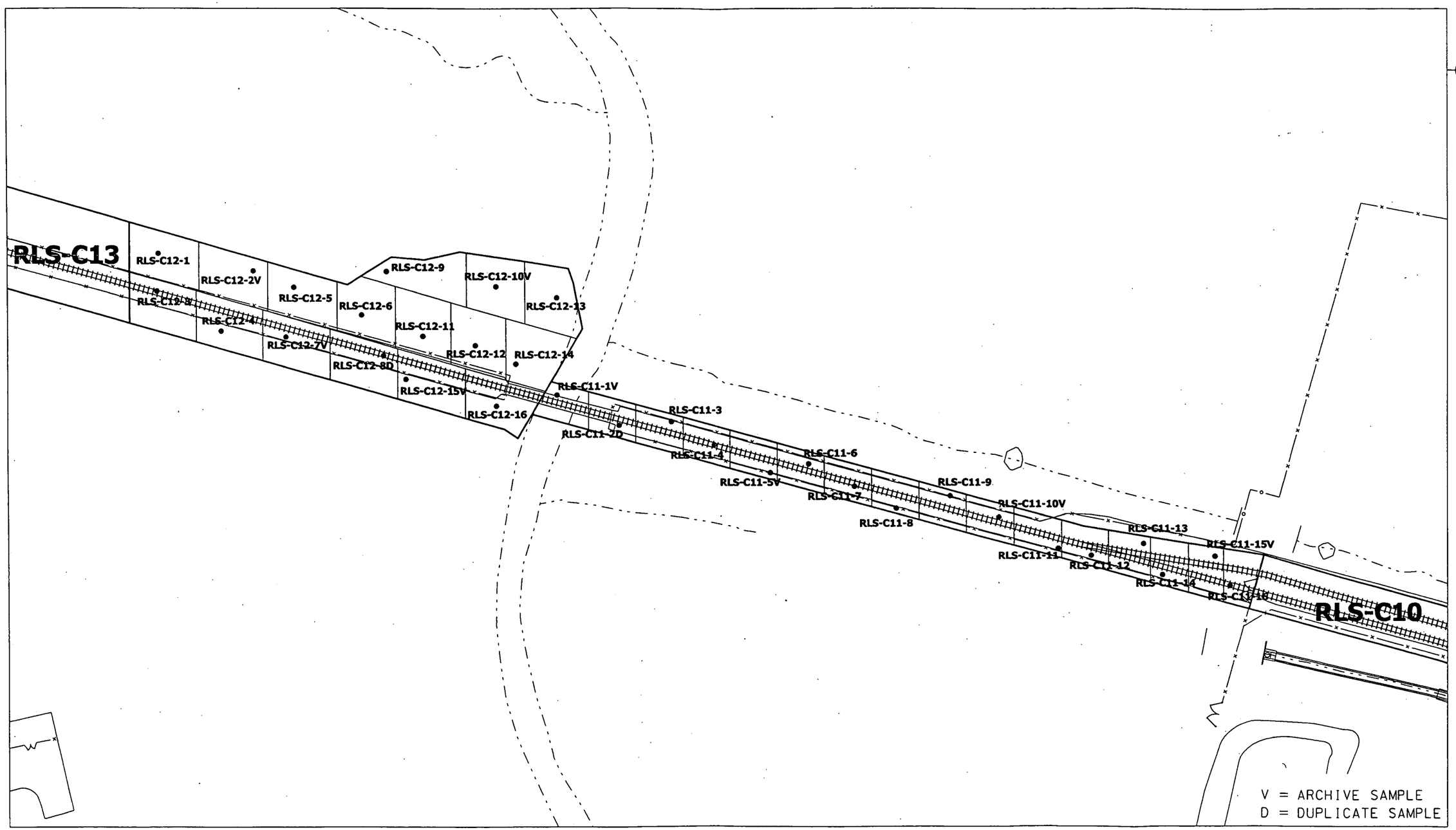
• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\2fm12\dgn\rail_009.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-8. CERTIFICATION SAMPLING LOCATIONS (CU 10)



LEGEND:

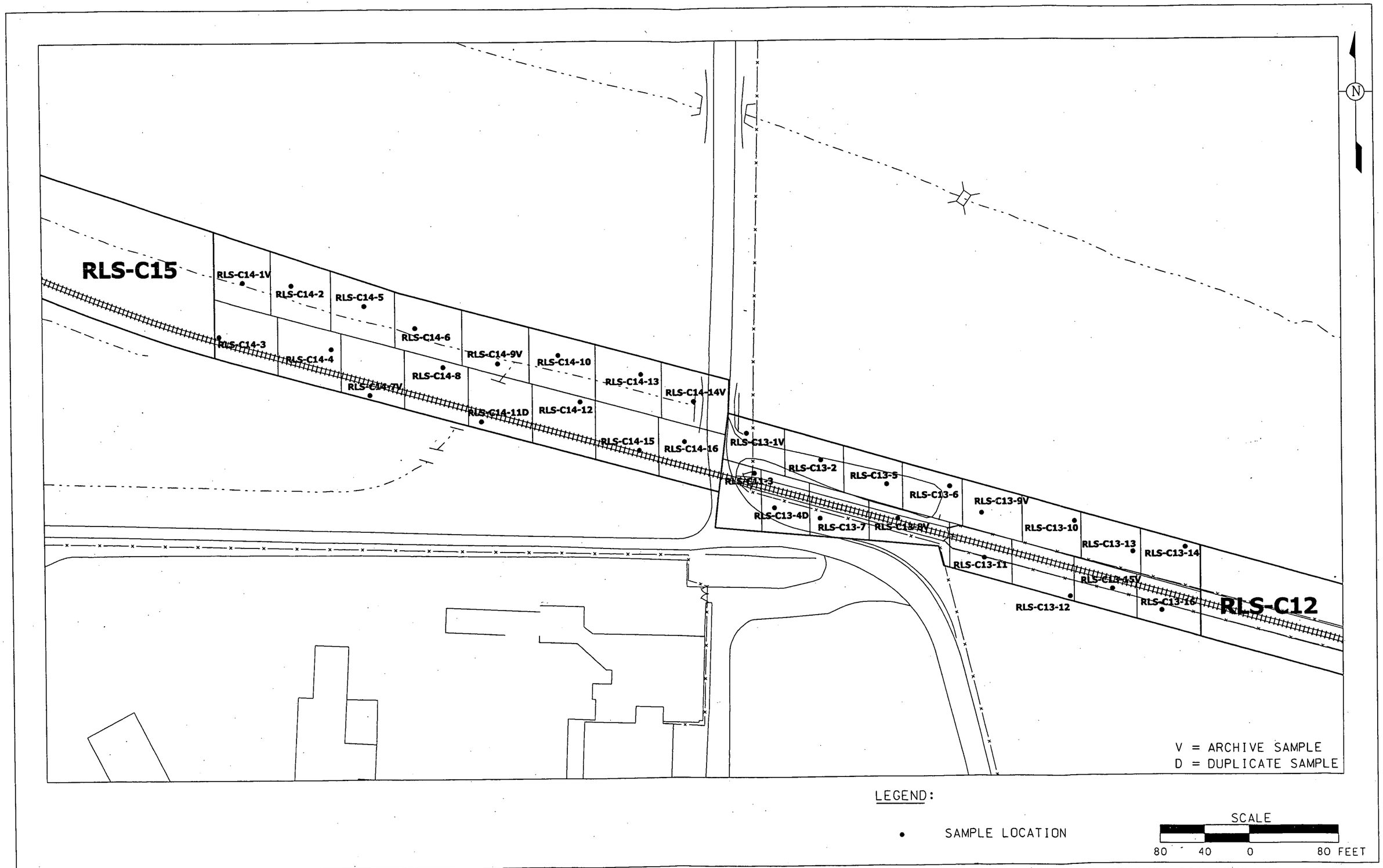
• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\2fm12\dgn\roil_010.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-9. CERTIFICATION SAMPLING LOCATIONS (CUs 11 & 12)



v:\2fml2\dgn\roil_011.dgn STATE PLANAR COORDINATE SYSTEM 1983 10-JAN-2007

FIGURE 2-10. CERTIFICATION SAMPLING LOCATIONS (CUs 13 & 14)

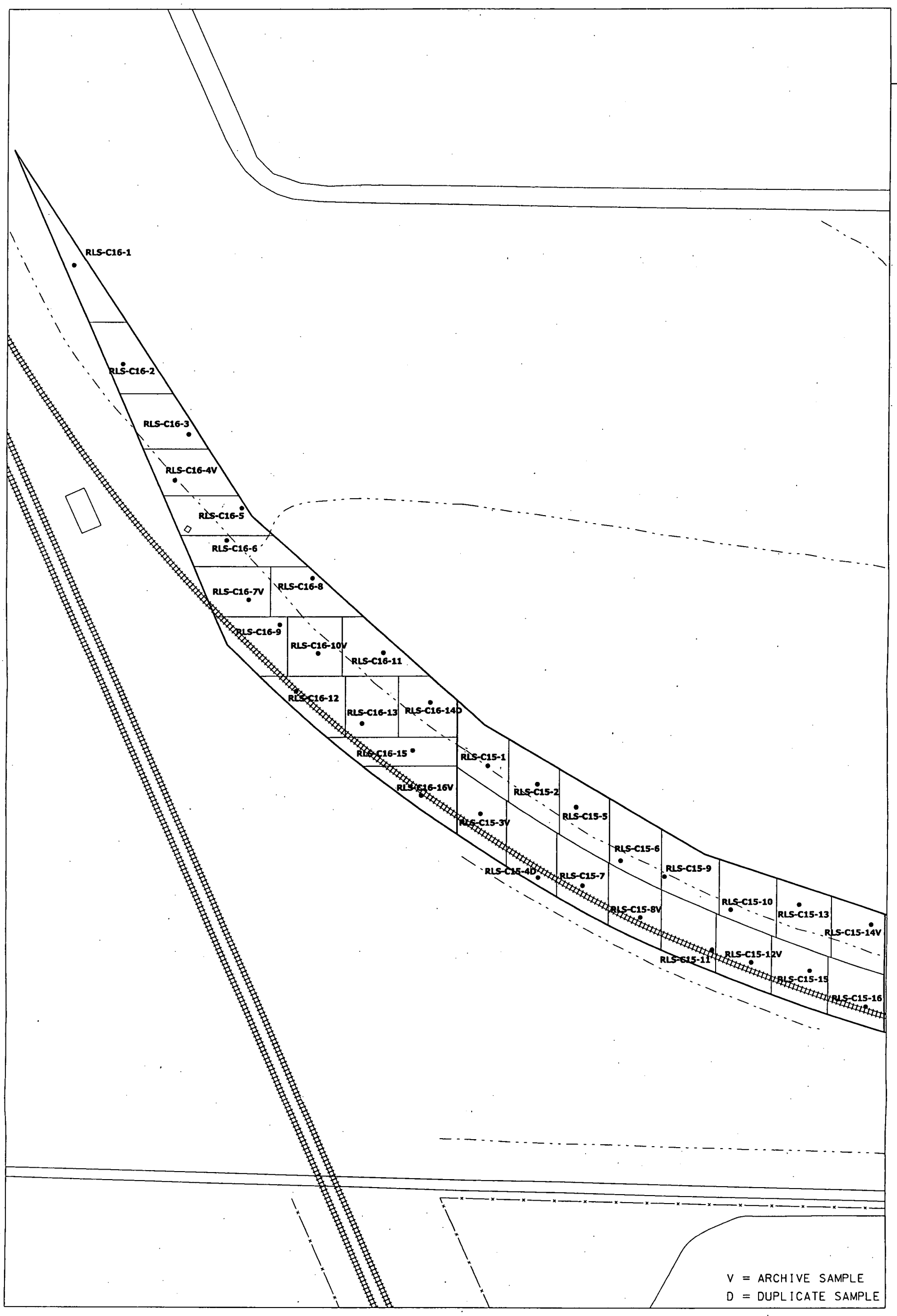


FIGURE 2-11. CERTIFICATION SAMPLING LOCATIONS (CUs 15 & 16)

v:\2fml2\dgn\rcil_012.dgn

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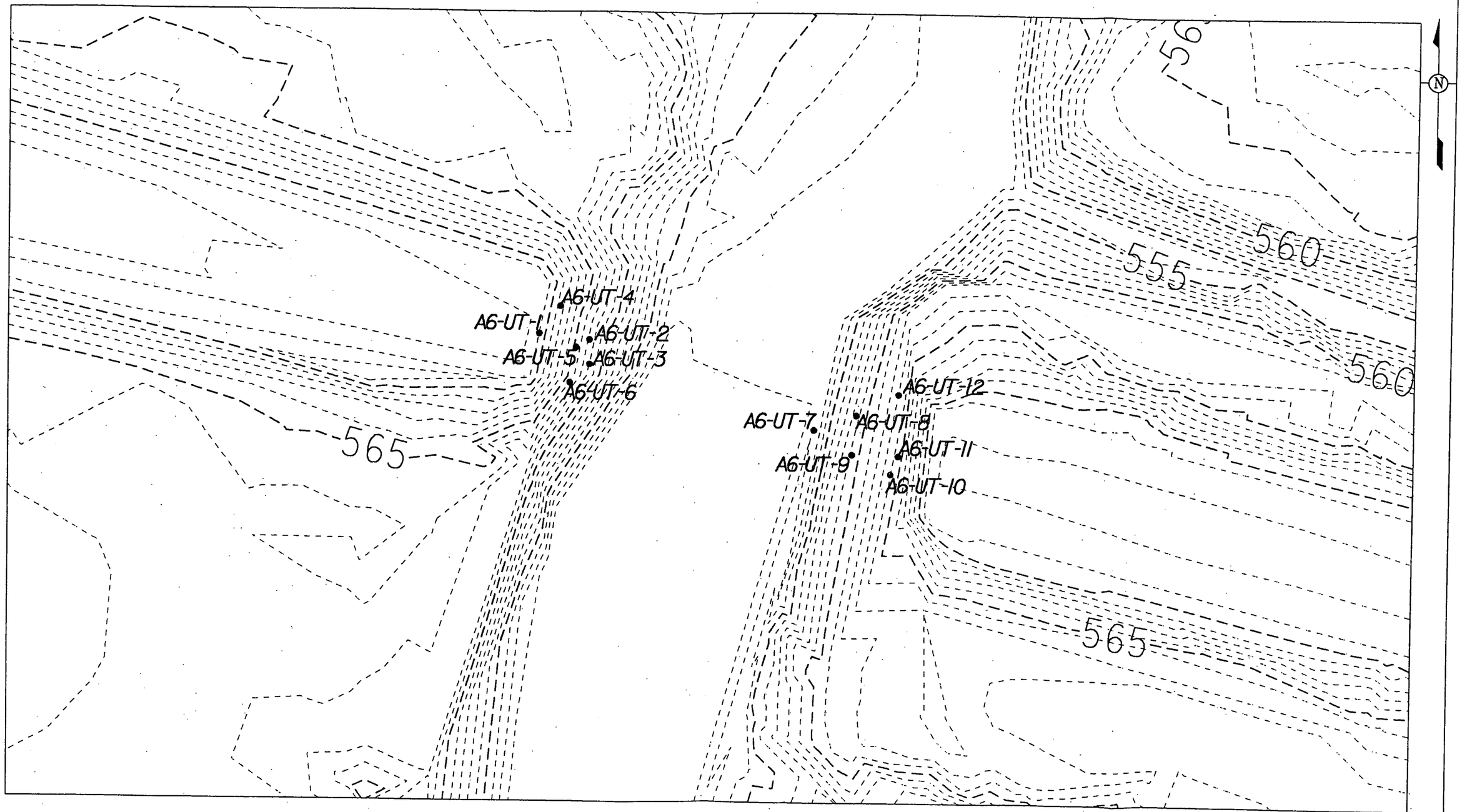


LEGEND:

● SAMPLE LOCATION

SCALE

20 10 0 20 FEET

G:\2fm12\dgn\RAIL_014 UT.dgn STATE PLANAR COORDINATE SYSTEM 1983 24-OCT-2006

FIGURE 2-12. SAMPLE LOCATIONS UNDER RAIL TRESTLE

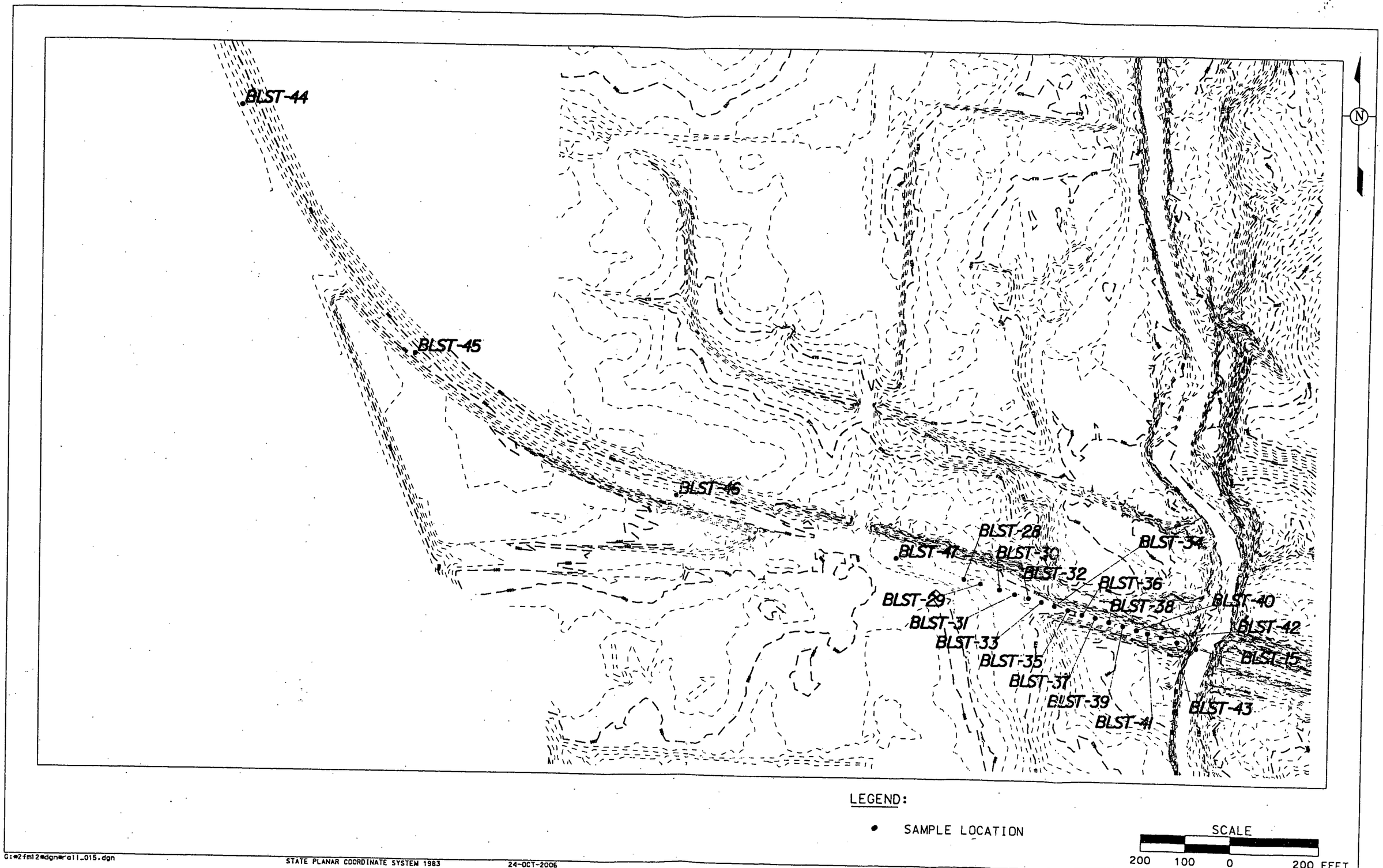
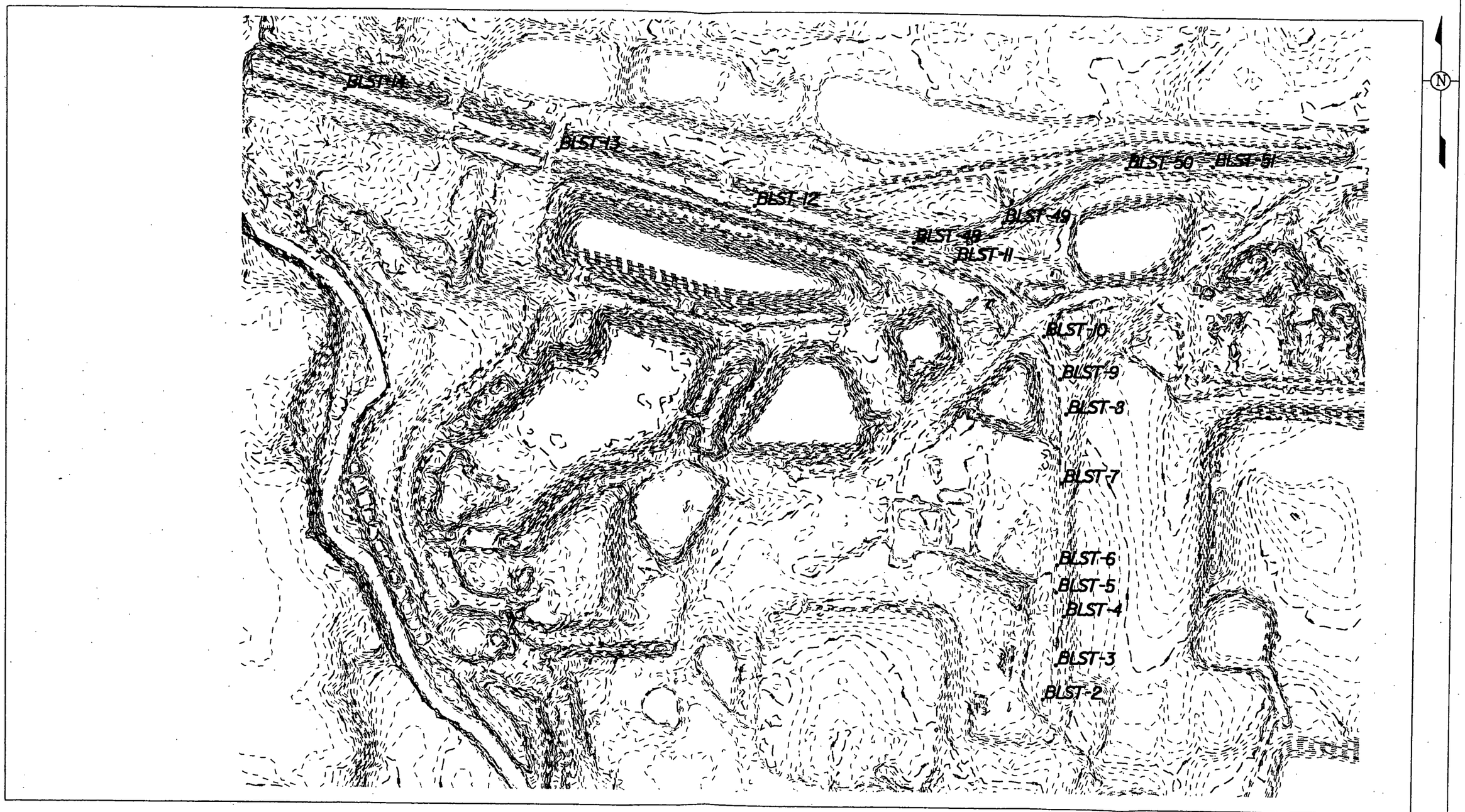


FIGURE 2-13. BALLAST SAMPLE LOCATIONS WEST OF PADDYS RUN



LEGEND:

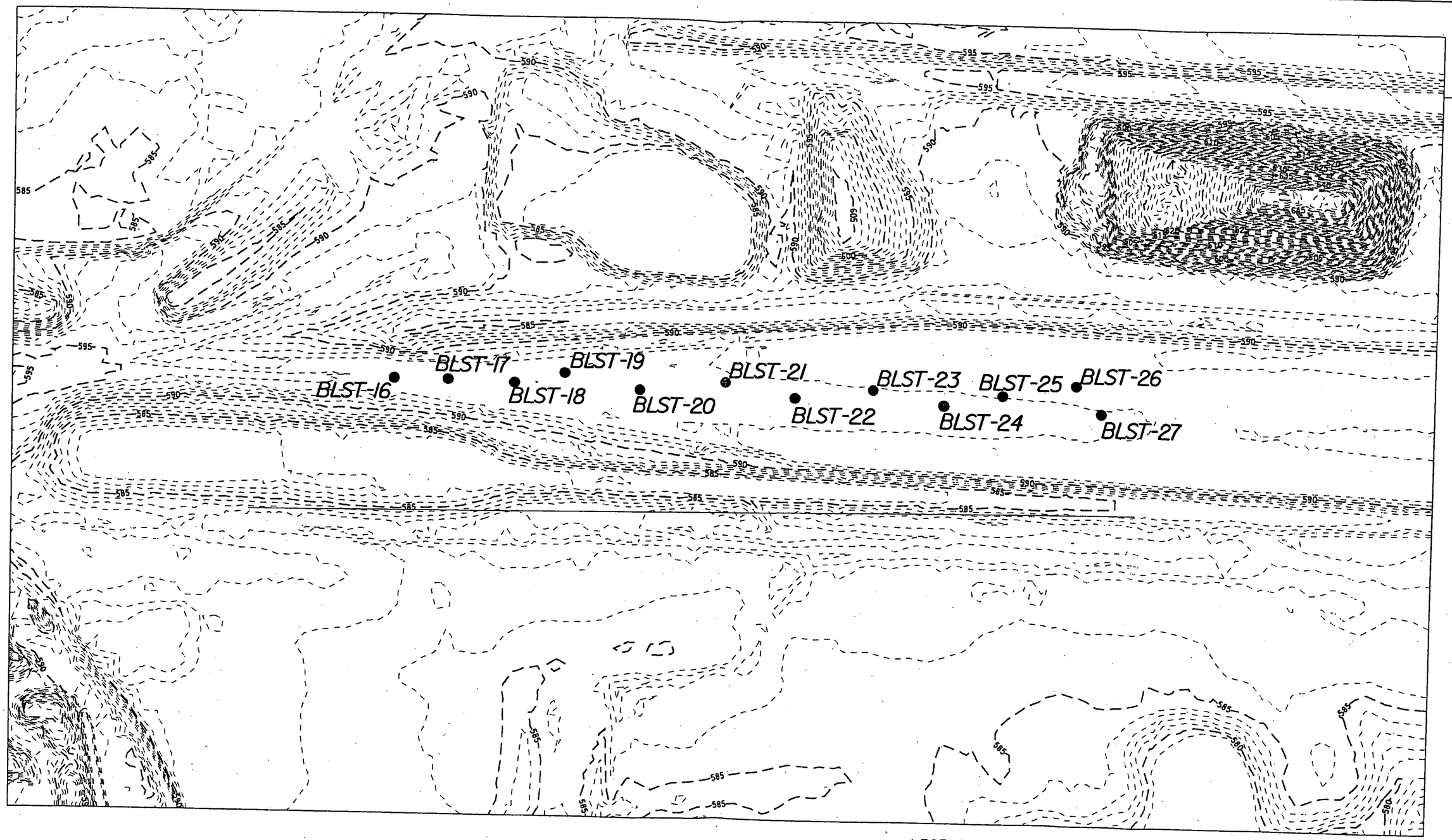
• SAMPLE LOCATION

SCALE

250 125 0 250 FEET

G:\e2fm12\dgn\RAIL_016.dgn STATE PLANAR COORDINATE SYSTEM 1983 24-OCT-2006

FIGURE 2-14 BALLAST SAMPLE LOCATIONS EAST OF PADDYS RUN



LEGEND:

● SAMPLE LOCATION

SCALE

100 50 0 100 FEET

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FIGURE 2-15. BALLAST SAMPLE LOCATIONS IN RAILYARD

VARIANCE / FIELD CHANGE NOTICE	Significant (Yes or No): NO	V/F: 20600-PSP-0016-101
WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev.0		Page: 1 of 10
PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification of the Area 6 Waste Pits and General Area		Date: 6/26/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of ballast material for characterization. The areas to be sampled are shown on Figure 1.

The planned sample locations are shown on Figures 2 and 3. The Geoprobe® shall be used to core through the entire depth of the ballast. The core of ballast material shall then be scanned with a beta/gamma frisker. If an interval scans greater than 450 ccpm, a biased sample will be collected from the 12-inch interval with the highest ccpm. If there is visible staining of the ballast material, a biased sample shall also be collected from the 12-inch interval around the visibly stained ballast. If the entire core of ballast material scans less than 450 ccpm and there is no evidence of staining, a sample should be collected from the 12-inch interval that represents the middle of the core. The planned sample locations will be surveyed by the surveyors prior to sampling.

See, Attachment 1 for the Sampling and Analytical Requirements, Attachment 2 for the Target Analyte Lists (TALs), and Attachment 3 for the Sample Identifiers and Locations.

In addition to the planned sample locations, any areas along the rail line where the ballast material has visible staining are to be sampled. Sampling should be conducted as described above. Surveyors shall be contacted to survey in sample locations that are identified by the samplers. Figure 4 identifies the TALs to be sampled for the various areas along the rail. Additional samples collected shall be consecutively numbered beginning with the next number after the planned sample number.

Surveying Required: Yes - by surveying group.
Field Data Validation: Yes

Justification:
The ballast material underneath a portion of the rail line is being characterized to further assess disposition options.

REQUESTED BY: Denise Arico Date: 06/26/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske [signature]	7-13-06	X	PROJECT MANAGER: J.D. Chiou [signature]	6/27/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: R. Abitz [signature]	27 Jun 06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McLurgin	7/5/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Buhrlage [signature]	6/28/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method[a]	Matrix	ASL	Preserve	TAT	Container[b]	Minimum Mass
Any combination of Rads/Metals/PCBs/ SVOCs and/or Fluoride (TALs, MDOTU, MDNWQP, MDNZQP)	Gamma Spec, Alpha Spec, and LSC	Solid	B	Cool, 4° C	Prelim gamma 10 days Final gamma 30 days Final alpha (Th-230) 10 days Final Tc99 10 days	Polyethylene sample container	500 g
	ICP/AES or ICP/MS				10 day		
	GC				10 day		
	GC				10 day		
	IC				10 day		
Rads (TAL M)	Gamma Spec	Solid	B	None	Prelim gamma 10 days Final gamma 30 days	Plastic or Stainless Steel core liner or polyethylene sample container	300 g
Rads/Metals (TAL MDSXB7)	Gamma Spec, Alpha Spec, and LSC	Solid	B	Cool, 4° C	Prelim gamma 10 days Final gamma 30 days Final alpha (Th-230) 10 days Final Tc99 10 days	Polyethylene sample container	300 g
	ICP/AES or ICP/MS				10 days		

da 6/27/06

Special Instructions (samplers):
[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):
For radium-226, a seven-day in-growth is requested.
Analytical Data Validation is not required.
ASL: B
Data Package Requirements – COAs
Historical Data for Shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8

ATTACHMENT 2
TARGET ANALYTE LISTS

20600-PSP-0016-B7
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Lead-210	38 pCi/g	3.8 pCi/g

20600-PSP-0016-D
(up to 25 samples estimated in V/FCN)

Analyte	FRL[a]	MDL
Technetium-99	29.1 pCi/g	2.91 pCi/g

20600-PSP-0016-M
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g

20600-PSP-0016-N
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Cesium-137	1.4 pCi/g	0.14 pCi/g
Thorium-230	280 pCi/g	28 pCi/g

20600-PSP-0016-O
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Fluoride	78000 mg/kg	7800 mg/kg

20600-PSP-0016-P[c]
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene[d]	*0.088 mg/kg*[d]	*0.01 mg/kg*[d]
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*

ATTACHMENT 2
TARGET ANALYTE LISTS
(continued)

20600-PSP-0016-Q
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015 mg/kg	0.0015 mg/kg

20600-PSP-0016-S
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Thorium-230	280 pCi/g	28 pCi/g

20600-PSP-0016-T
(up to 25 samples estimated in V/FCN)

Analyte	FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg

20600-PSP-0016-U[c]
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene[d]	*0.088 mg/kg*[d]	*0.01 mg/kg*[d]
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Carbazole	12 mg/kg	1.2 mg/kg

20600-PSP-0016-W
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Fluoride	78000 mg/kg	7800 mg/kg

ATTACHMENT 2
TARGET ANALYTE LISTS
(continued)

20600-PSP-0016-X
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*

20600-PSP-0016-Z
(up to 25 samples estimated in V/FCN)

Analyte	FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Fluoride	78000 mg/kg	7800 mg/kg

[a]The MDL for technetium-99 is ten percent of the WAC limit, which is lower than the FRL.

[b]BTV applies to Ecological COCs.

[c]The MDLs for TALs P and U are ten percent of the BTV, which is lower than the FRLs.

[d]Ten percent of the BTV is not achievable for Dibenzo(a,h)anthracene.

Location	Sample ID	TAL	Northing	Easting
BLST-1	BLST-1^*a*-RMPS	MDSXB7	480900.709	1348015.456
BLST-2	BLST-2^*a*-RMPS	MDSXB7	480997.717	1348017.411
BLST-3	BLST-3^*a*-RMPS	MDSXB7	481087.951	1348051.4
BLST-4	BLST-4^*a*-RMPS	MDSXB7	481214.768	1348069.959
BLST-5	BLST-5^*a*-RMPS	MDSXB7	481277.608	1348049.46
BLST-6	BLST-6^*a*-RMPS	MDSXB7	481349.14	1348051.017
BLST-7	BLST-7^*a*-RMPS	MDSXB7	481564.33	1348059.839
BLST-8	BLST-8^*a*-RMPS	MDOTU	481745.491	1348068.842
BLST-9	BLST-9^*a*-RMPS	MDOTU	481837.449	1348052.636
BLST-10	BLST-10^*a*-RMPS	MDOTU	481949.692	1348008.281
BLST-11	BLST-11^*a*-RMPS	MDOTU	482143.728	1347776.111
BLST-12	BLST-12^*a*-RMPS	MDNWQP	482284.961	1347258.707
BLST-13	BLST-13^*a*-RMPS	MDNWQP	482425.54	1346745.702
BLST-14	BLST-14^*a*-RMPS	MDNZQP	482580.359	1346185.403
BLST-15	BLST-15^*a*-R	M	482658.56	1345882.82

Where:

BLST = Sample collected from the ballast

1, 2, etc = Consecutive sample numbers (locations)

a = To be replaced with the number that is two times the bottom depth of the sample interval collected

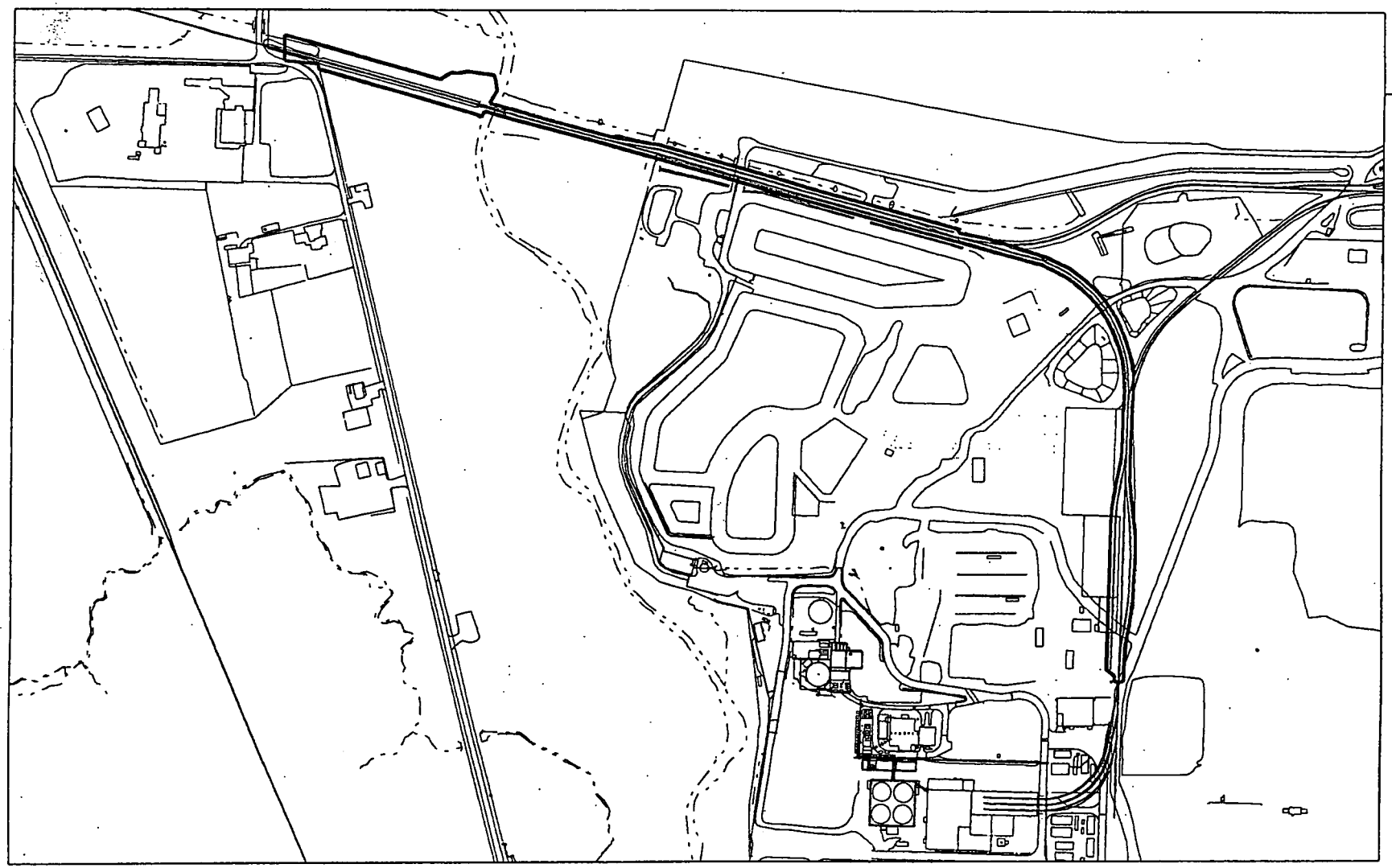
R = radiological

M = metals

P = pesticides and/or PCBs

S = semi-volatiles or PAHs

Note: If a bias sample is collected, "-B" is to be placed at the end of the sample ID.



LEGEND:

BALLAST SAMPLING AREA

SCALE

500 250 0 500 FEET

DRAFT

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STATE PLANAR COORDINATE SYSTEM 1983

26-JUN-2006

FIGURE 1.

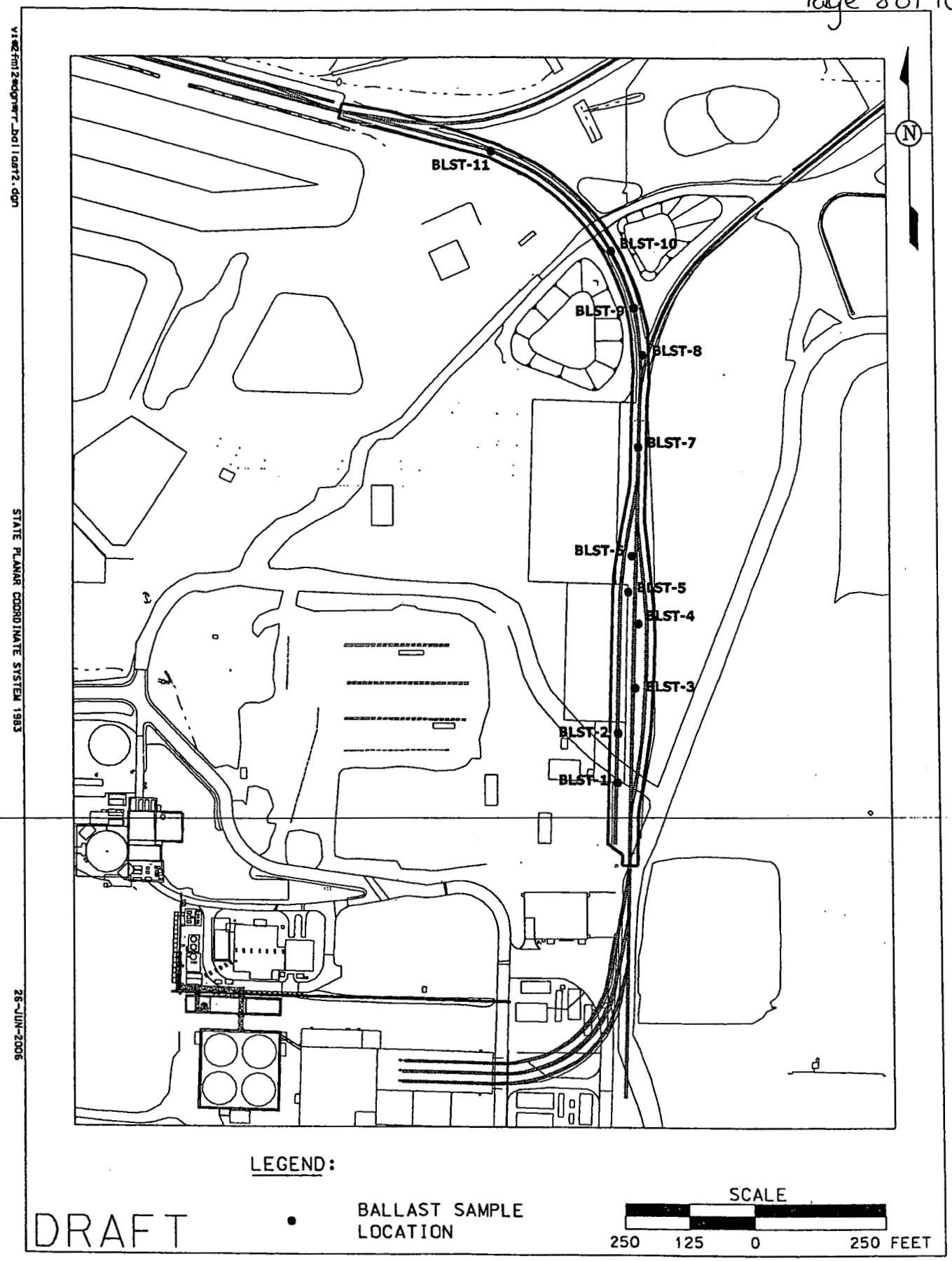
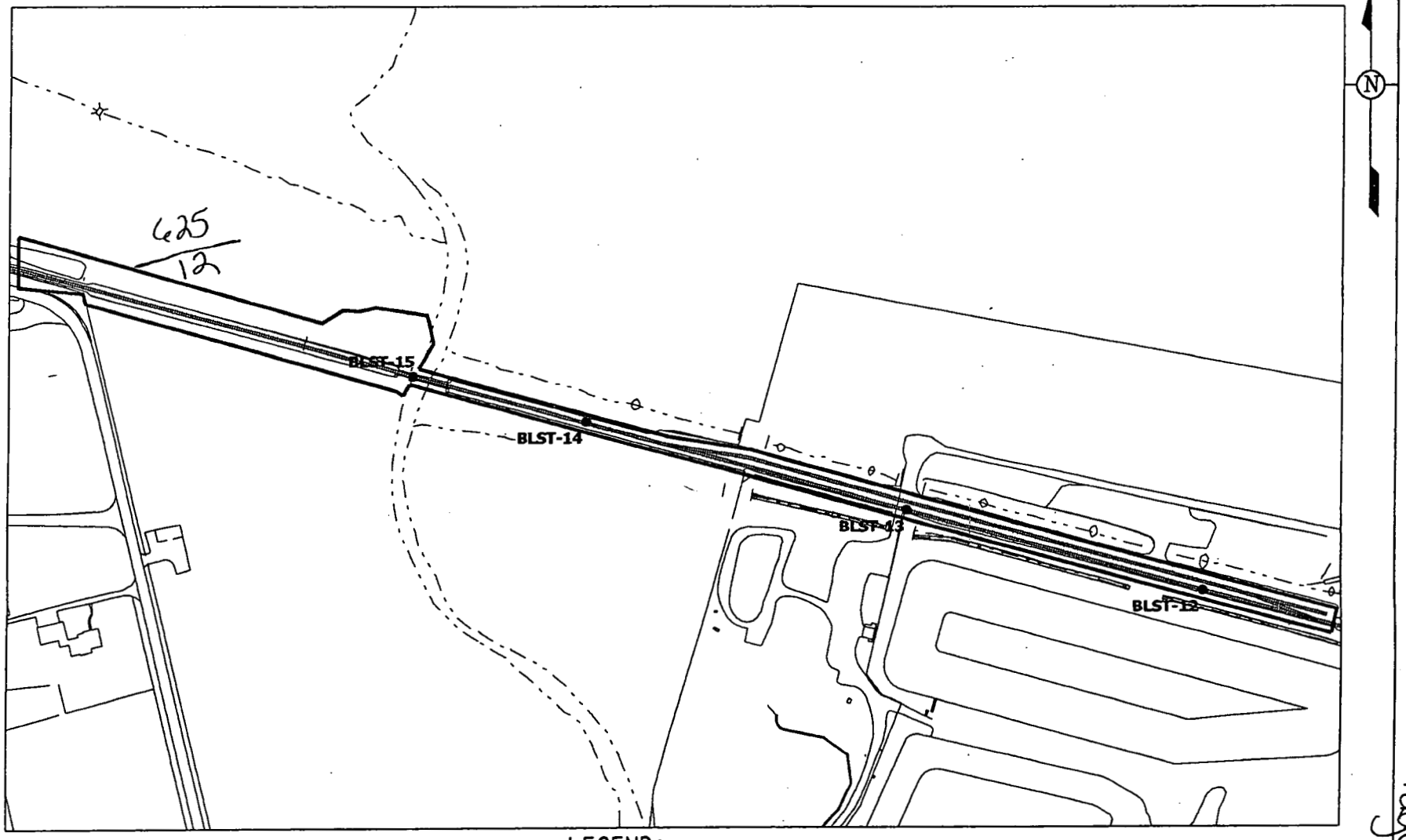

BLST-11
BLST-10
BLST-9
BLST-8
BLST-7
BLST-6
BLST-5
BLST-4
BLST-3
BLST-2
BLST-1
N
LEGEND:
BALLAST SAMPLE LOCATION
SCALE
250 125 0 250 FEET
DRAFT
STATE PLANAR COORDINATE SYSTEM 1983
26-JUN-2006

FIGURE 2.



LEGEND:

• BALLAST SAMPLE LOCATION

SCALE

250 125 0 250 FEET

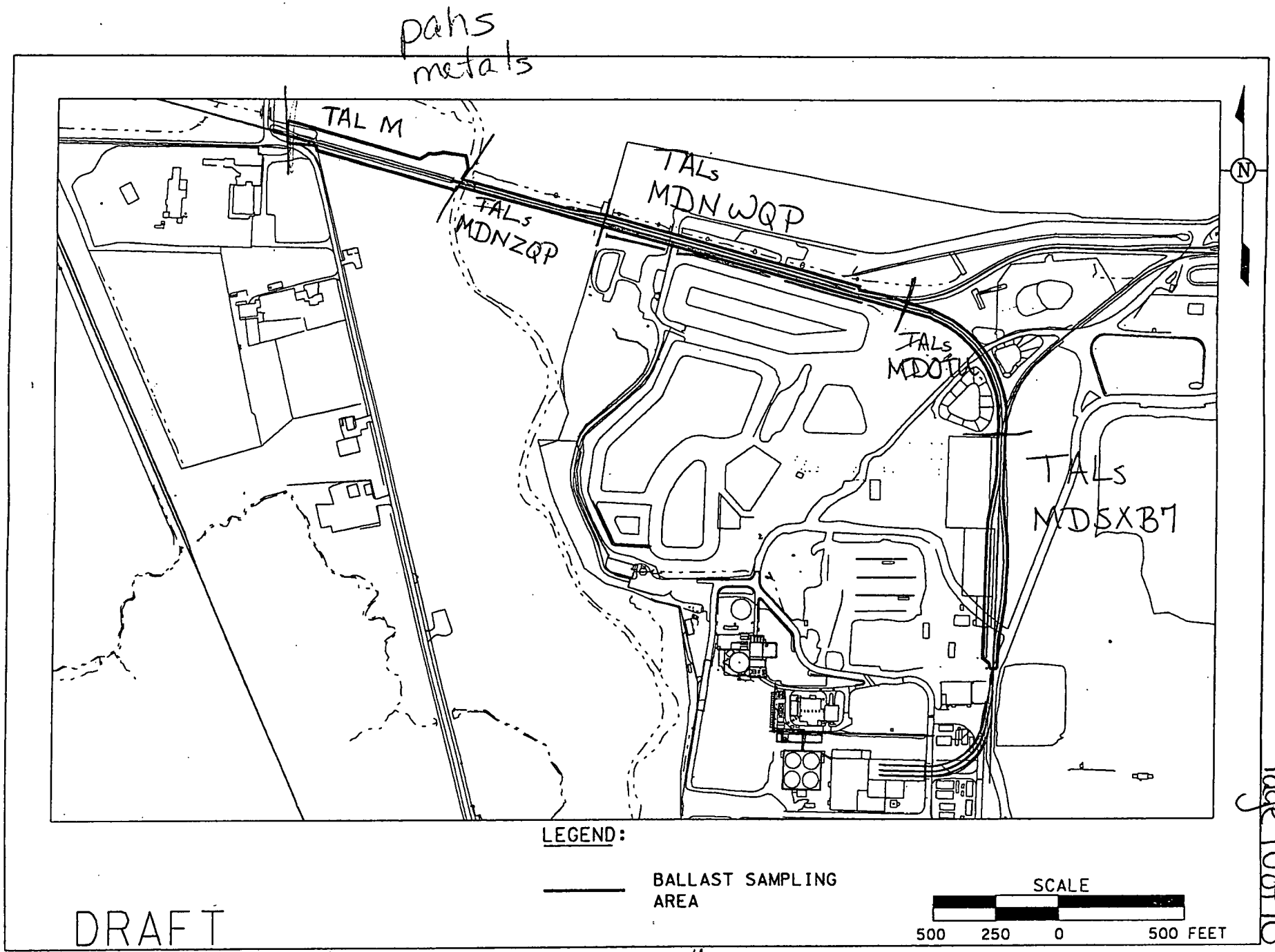
DRAFT

v:\2fm12\dgn\rr_ballast3.dgn
STATE PLANAR COORDINATE SYSTEM 1983

26-JUN-2006

FIGURE 3.

Page 9 of 10



v:\2fm12\dgn\rr_ballast.dgn
STATE PLANAR COORDINATE SYSTEM 1983

26-JUN-2006

FIGURE 4.

Page 10 of 10

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No) NO	V/F: 20600-PSP-0016-106
WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev.0		Page: 1 of 2
PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification of the Area 6 Waste Pits and General Area		Date: 8/17/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

T' Variance/Field Change Notice (V/FCN) documents the collection of ballast material from the railyard area for c.. .acterization.

The sample locations are to be field located in accessible areas of the railyard. Twelve surface samples are to be collected and submitted for arsenic (TAL A4) and PAH (TAL A1) analysis. Surveyors shall be contacted to survey in sample locations that are identified by the samplers.

The first sample collected shall by identified as BLST-16^MS, and each additional sample collected shall be consecutively numbered, where:

BLST = Sample collected from the ballast
16, 17, etc = Consecutive sample numbers (locations)
M = metals analysis
S = semi-volatile analysis (PAHs)

Surveying Required: Yes - by surveying group.
Field Data Validation: Yes

Justification:
The ballast material in the railyard is being characterized to further assess disposition options.

REQUESTED BY: Denise Arico Date: 08/16/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske [signature]	8-29-06	X	PROJECT MANAGER: J.D. Chiou [signature]	8/30/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: R. Abitz Denise M Arico for RA	8/16/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McTurgan	8/17/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Buhrlage [signature]	8/21/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [X]YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	Matrix	ASL	Preserve	TAT	Container[b]	Minimum Mass
Metals/SVOCs (TAL A1 and A4)	ICP/AES or ICP/MS	Solid	B	Cool, 4° C	10 day	Polyethylene sample container	250 g
	GC				10 day		

Special Instructions (samplers):
[b] Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):
Analytical Data Validation is not required.
ASL: B
Data Package Requirements – COAs
Historical Data for Shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8

20600-PSP-0016-A1
(12 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Benzo(a)anthracene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(a)pyrene	2.0 mg/kg / *1.0 mg/kg*	0.2 mg/kg
Benzo(b)fluoranthene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	200 mg/kg / *1.0 mg/kg*	20 mg/kg
Chrysene	2,000 mg/kg / *1.0 mg/kg*	200 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg / *0.088 mg/kg*	*0.2 mg/kg*
Fluoranthene	*10 mg/kg*	*0.1 mg/kg*
Indeno(1,2,3-cd)pyrene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Phenanthrene	*5 mg/kg*	0.5 mg/kg
Pyrene	*10 mg/kg*	*0.1 mg/kg*

20600-PSP-0016-A4
(12 samples estimated in V/FCN)

Analyte	FRL	MDL
Arsenic	12 mg/kg	1.2 mg/kg

[a] BTV applies to Ecological COCs. MDL is 10% of the BTV for COCs that do not have an FRL

VARIANCE / FIELD CHANGE NOTICE	Significant (Yes or No) NO	V/F: 20600-PSP-0016-107
WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev.0		Page: 1 of 4
PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification of the Area 6 Waste Pits and General Area		Date: 8/22/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

T Variance/Field Change Notice (V/FCN) documents the collection of ballast material located between the Paddys Run trestle and the FCP gate. See Figure 1 for the approximate location to be sampled.

Sixteen locations of representative spacing are to be field located along the area identified in Figure 1. The Geoprobe® shall be used to core through the entire depth of the ballast. The core of ballast material shall then be scanned with a beta/gamma frisker. If an interval scans greater than 450 ccpm, a biased sample will be collected from the 12-inch interval with the highest ccpm. If there is visible staining of the ballast material, a biased sample shall also be collected from the 12-inch interval around the visibly stained ballast. If the entire core of ballast material scans less than 450 ccpm and there is no evidence of staining, a sample should be collected from the 12-inch interval that represents the middle of the core. Contact the surveyors to survey in the sample locations.

The Sampling and Analytical Requirements and Target Analyte Lists (TALs) are provided on Attachment 1.

Each sample collected will be submitted for analysis of the TALs provided on Attachment 1.

The first sample collected shall by identified as BLST-28^x-RMS, and each additional sample collected shall be consecutively numbered, where:

BLST = Sample collected from the ballast
28, 29, etc = Consecutive sample numbers (locations)
x = to be replaced with the number that is two times the bottom depth of the sample interval collected.
R = radiological analysis
M = metals analysis
S emi-volatile analysis (PAHs)

Surveying Required: Yes - by surveying group.
Field Data Validation: Yes

Justification:
The ballast material located between the Paddys Run Trestle and the FCP Gate is being characterized to further assess disposition options.

REQUESTED BY: Denise Arico Date: 08/22/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske [signature]	8-23-06	X	PROJECT MANAGER: J.D. Chiou [signature]	8/30/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: R. Abitz [signature]	22 Aug 06
X	ANALYTICAL CUSTOMER SUPPORT: Paul T. McAvergan	8/28/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Buhrlage [signature]	8/21/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
F MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	Matrix	ASL	Preserve	TAT	Container[b]	Minimum Mass
Rads/Metals/SVOCs (TAL A1/B5/B7/B8/B9)	Gamma or Alpha Spec or LSC or GPC	Solid	D	Cool, 4° C	EDD gamma 10 days[a] Final gamma 14 days Final Tc99 10 days Final Th230 10days	Polyethylene sample container	250 g[c]
	ICP/AES or ICP/MS				10 day		
	GC				10 day		

Special Instructions (samplers):

[c]At the direction of the field sampling lead, triple the specified sample mass shall be collected from one sample location in order for the contract laboratory to perform the required quality control analysis.. The sample shall be identified on the Chain of Custody/Request for Analysis form as "designated for laboratory QC.".

[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):

[a]Samples will go through a 7-day in-growth, and shall have "7DAY" noted in the suffix field of the EDD.
Analytical Data Validation is required.
ASL: D
Data Package Requirements – Full Data Package
Historical Data for Shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8

TARGET ANALYTE LIST

20600-PSP-0016-B5
(estimated 16 samples estimated in V/FCN)

Analyte	FRL	MDL
Thorium-230	280 pCi/g	28 pCi/g
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Technetium-99	30.0 pCi/g	2.9 pCi/g

20600-PSP-0016-B7
(estimated 16 samples estimated in V/FCN)

Analyte	FRL	MDL
Lead-210	38 pCi/g	3.8 pCi/g

20600-PSP-0016-B8
(estimated 16 samples estimated in V/FCN)

Analyte	FRL	MDL
Neptunium-237	3.2 pCi/g	0.32 pCi/g

ATTACHMENT 1
(cont'd)

20600-PSP-0016-B9
(estimated 16 samples estimated in V/FCN)

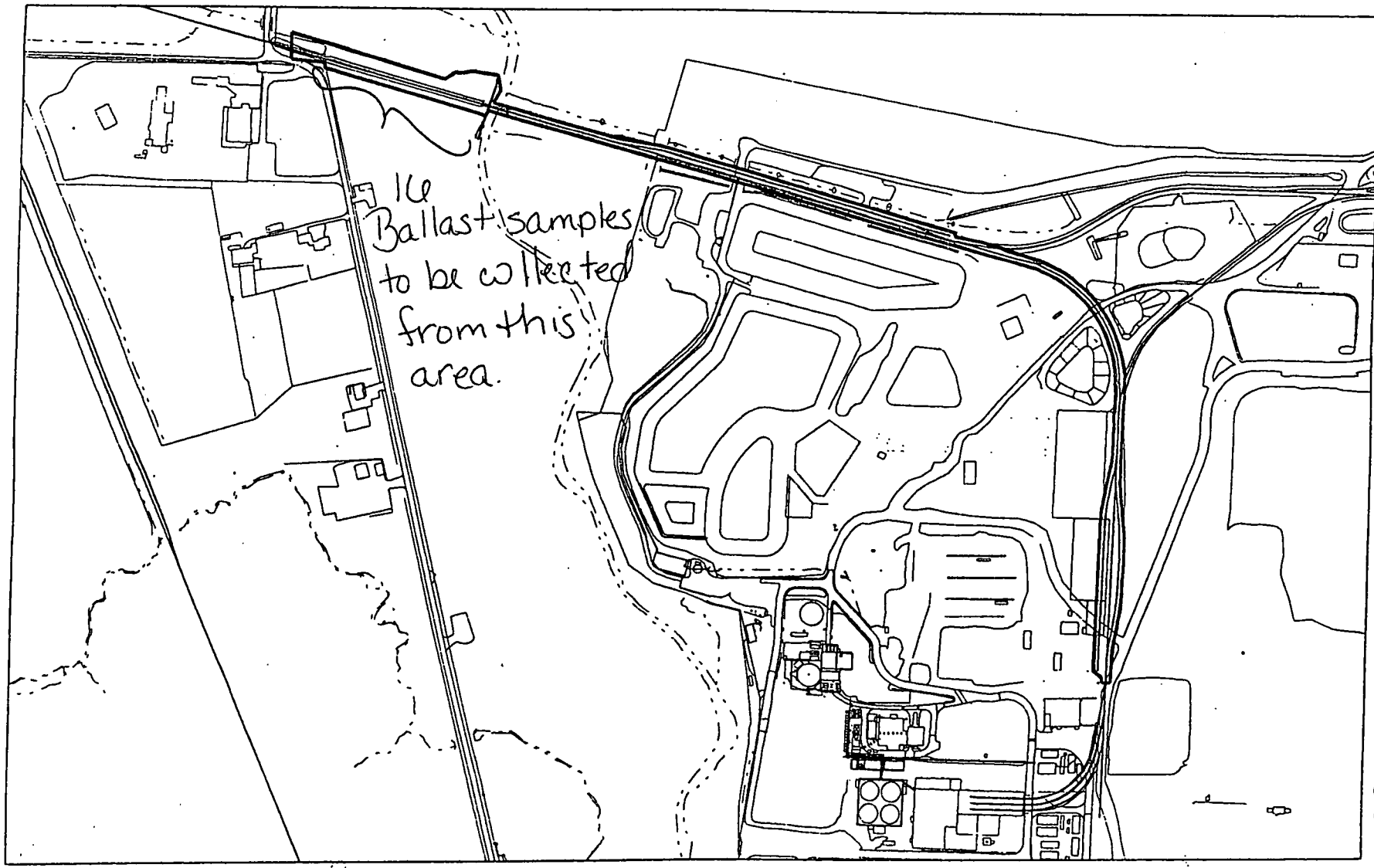
Analyte	FRL	MDL
Arsenic	12 mg/kg	1.2 mg/kg
Barium	68000 mg/kg	200 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	82 mg/kg	8.2 mg/kg
Chromium	300 mg/kg	30 mg/kg
Lead	400 mg/kg	40 mg/kg
Mercury	7.5 mg/kg	0.75 mg/kg
Selenium	5400 mb/kg	10 mg/kg
Silver	29000 mg/kg	40 mg/kg

20600-PSP-0016-A1
(estimated 16 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Benzo(a)anthracene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(a)pyrene	2.0 mg/kg / *1.0 mg/kg*	0.2 mg/kg
Benzo(b)fluoranthene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	200 mg/kg / *1.0 mg/kg*	20 mg/kg
Chrysene	2,000 mg/kg / *1.0 mg/kg*	200 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg / *0.088 mg/kg*	0.2 mg/kg
Fluoranthene	*10 mg/kg*	*0.1 mg/kg*
Indeno(1,2,3-cd)pyrene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Phenanthrene	*5 mg/kg*	*0.5 mg/kg*
Pyrene	*10 mg/kg*	*0.1 mg/kg*

[a]BTV applies to Ecological COCs. MDL is 10% of the BTV for COCs that do not have an FRL

v/f 20600-PSP-0016-107



LEGEND:

SCALE

500 250 0 500 FEET

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PLANAR COORDINATE SYSTEM 1983

26-JUN-2006

FIGURE 1.

VARIANCE / FIELD CHANGE NOTICE

[redacted]

V/F: 20600-PSP-0016-109

Page: 1 of 4

Date: 8/30/06

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev.0

PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification of the Area 6 Waste Pits and General Area

VARIANCE / FIELD CHANGE NOTICE (Include justification):

T Variance/Field Change Notice (V/FCN) documents the collection of ballast material from the section of track located north of the SWL as well as the section of track west of the FCP gate. See Figure 1 for the areas to be sampled.

Four locations of representative spacing are to be field located in each area to be sampled, for a total of eight locations being sampled. Samples are to be collected from just beneath the top surface of the ballast. Contact the surveyors to survey in the sample locations.

The Sampling and Analytical Requirements and Target Analyte Lists (TALs) are provided on Attachment 1.

Each sample collected will be submitted for analysis of the TALs provided on Attachment 1.

The first sample collected shall by identified as BLST-44^RMS, and each additional sample collected shall be consecutively numbered, where:

BLST = Sample collected from the ballast
44, 45, etc = Consecutive sample numbers (locations)
R = radiological analysis
M = metals analysis
S = semi-volatile analysis (PAHs)

Surveying Required: Yes - by surveying group.
Field Data Validation: Yes

Justification:
The ballast material is being characterized to further assess disposition options.

REQUESTED BY: Denise Arico Date: 08/30/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske	9/8/06	X	PROJECT MANAGER: J.D. Chiou	8/30/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: R. Miller	30 Aug 06
X	ANALYTICAL CUSTOMER SUPPORT: Paul S. McDurgan	8/30/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Bubnage	9/14/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	Matrix	ASL	Preserve	TAT	Container[b]	Minimum Mass
Rads/Metals/SVOCs (TAL A1/B5/B7/B8/B9)	Gamma or Alpha Spec or LSC or GPC	Solid	D/E	Cool, 4° C	EDD gamma 10 days[a] Final gamma 14 days Final Tc99 10 days Final Th230 10days	Polyethylene sample container	250 g[c]
	ICP/AES or ICP/MS				10 day		
	GC				10 day		

Special Instructions (samplers):

[c]At the direction of the field sampling lead, triple the specified sample mass shall be collected from one sample location in order for the contract laboratory to perform the required quality control analysis. The sample shall be identified on the Chain of Custody/Request for Analysis form as "designated for laboratory QC."

[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):

[a]Samples will go through a 7-day in-growth, and shall have "7DAY" noted in the suffix field of the EDD.
Analytical Data Validation is required.
ASL: D/E
Data Package Requirements – Full Data Package
Historical Data for Shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8

TARGET ANALYTE LIST

20600-PSP-0016-B5
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Thorium-230	280 pCi/g	28 pCi/g
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Technetium-99	30.0 pCi/g	2.9 pCi/g

0.3

20600-PSP-0016-B7
(8 samples estimated in V/FCN)

Analyte	FRL	10 MDL
Lead-210	38 pCi/g	~~3.8~~ pCi/g

20600-PSP-0016-B8
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Neptunium-237	3.2 pCi/g	0.32 pCi/g

ATTACHMENT 1
(cont'd)

20600-PSP-0016-B9
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Arsenic	12 mg/kg	1.2 mg/kg
Barium	68000 mg/kg	200 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	82 mg/kg	8.2 mg/kg
Chromium	300 mg/kg	30 mg/kg
Lead	400 mg/kg	40 mg/kg
Mercury	7.5 mg/kg	0.75 mg/kg
Selenium	5400 mb/kg	10 mg/kg
Silver	29000 mg/kg	40 mg/kg

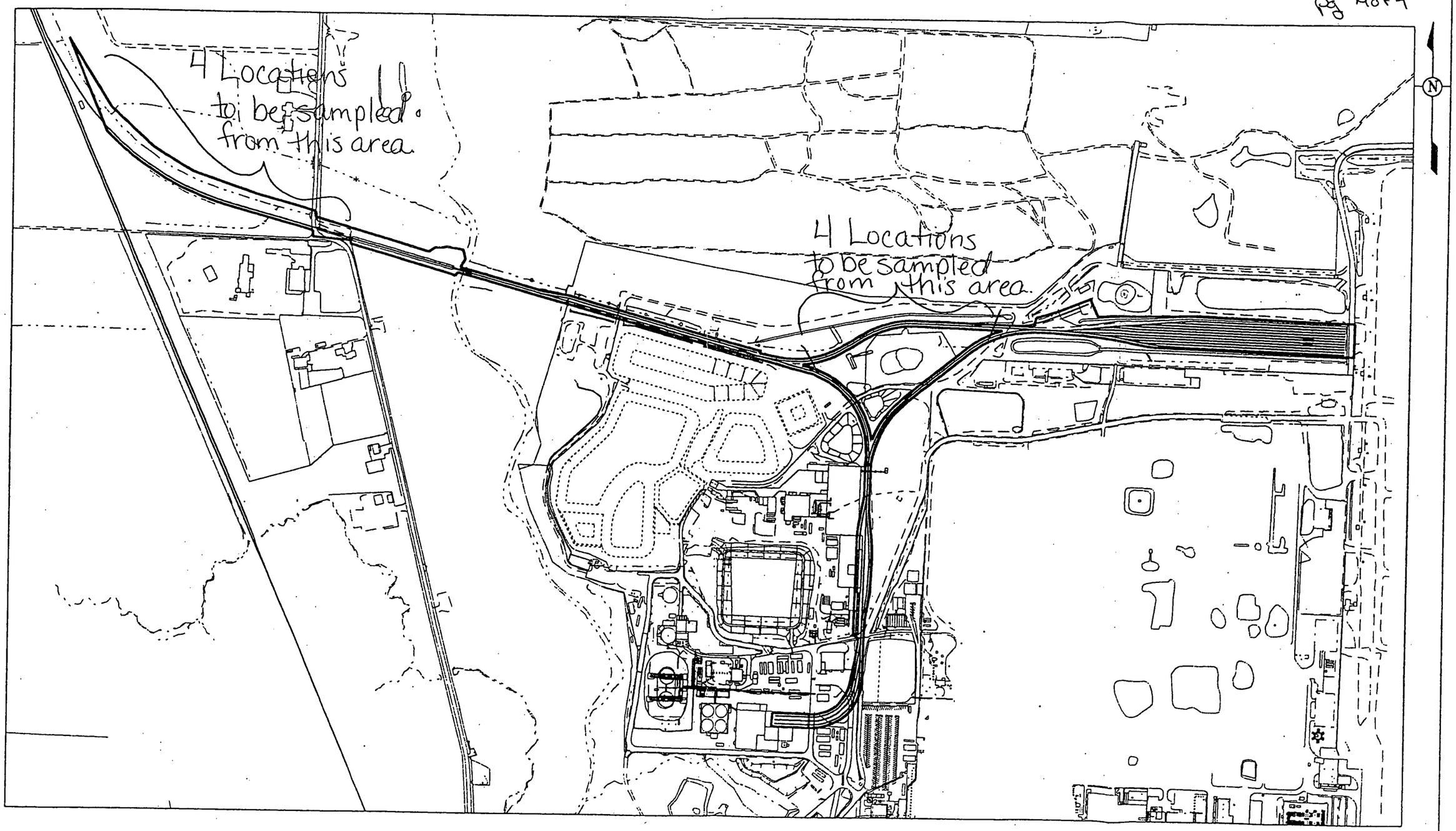
mg/kg

20600-PSP-0016-A1
(8 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Benzo(a)anthracene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(a)pyrene	2.0 mg/kg / *1.0 mg/kg*	0.2 mg/kg
Benzo(b)fluoranthene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	200 mg/kg / *1.0 mg/kg*	20 mg/kg
Chrysene	2,000 mg/kg / *1.0 mg/kg*	200 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg / *0.088 mg/kg*	0.2 mg/kg
Fluoranthene	*10 mg/kg*	*0.1 mg/kg*
Indeno(1,2,3-cd)pyrene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Phenanthrene	*5 mg/kg*	*0.5 mg/kg*
Pyrene	*10 mg/kg*	*0.1 mg/kg*

[a]BTV applies to Ecological COCs. MDL is 10% of the BTV for COCs that do not have an FRL

20600-PSP-0016-109
Pg 4 of 4



DRAFT

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FIGURE 1

VARIANCE / FIELD CHANGE NOTICE

Significant (Yes or No) NO

V/F: 20600-PSP-0016-110

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev.0

Page: 1 of 3

006402

PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification of the Area 6 Waste Pits and General Area

Date: 9/7/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

T Variance/Field Change Notice (V/FCN) documents the collection of soil samples from the banks of Paddys Run Creek directly under the train trestle.

Six locations are to be marked for sampling up each bank of Paddys Run Creek directly underneath the train trestle, for a total of 12 sample locations. The locations will be field located by the lead field tech (but coordinate with Bob Minges or Denise Arico). The top six inches of the soil surface will be collected at each location, and each sample will be submitted for the analytes listed in the TALs provided on attachment 1.

The Sampling and Analytical Requirements and Target Analyte Lists (TALs) are provided on Attachment 1.

Samples collected from the first location shall by identified as A6-UT-1^RMPS and A6-UT-1^L, and each additional sample collected shall be consecutively numbered, where:

A6 = Sample collected in Area 6
UT = Underneath the trestle
1, 2, etc = Consecutive sample numbers (locations)
R = radiological analysis
M = metals analysis
P = pest/PCB analysis
S = semi-volatile analysis (PAHs)
L = volatiles analysis

A trip blank shall be collected and identified as A6-UT-TB1-L.

Surveying Required: Yes - by surveying group.
Field Data Validation: Yes

Justification:
The soil under the trestle is being sampled to ensure that rail operations did not impact the area.

REQUESTED BY: Denise Arico Date: 09/7/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske		X	PROJECT MANAGER: J.D. Chiou	9/26/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: R. Abitz	7 Sep 06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McTurgan	9/25/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Buhrlage	9/14/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [X]NO

DISTRIBUTION

ROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
UALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
IELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	Matrix	ASL	Preserve	TAT	Container[b]	Minimum Mass
Rads/Metals/ SVOCs/ Pest/PCBs (TAL B5/E/O/A1/Q)	Gamma or Alpha Spec or LSC or GPC	Solid	D	Cool, 4° C	EDD gamma 10 days[a] Final gamma 14 days Final Tc99 10 days Final Th230 10days	Glass sample container	500 g[c]
	ICP/AES or ICP/MS				10 day		
	GC				10 day		
Volatiles (TAL I)	GC/MS	Solid	D	Cool, 4° C	10 days	3 x 1-Encore Sampler plus 1 x 2-oz jar for percent moisture	Each Encore will hold approx 5 g
Volatiles (TAL I)	GC/MS	Trip Blank	D	H_2SO_4 pH<2 Cool, 4° C	10 days	2 x 40-ml glass with Teflon-lined septa	120 ml (no headspace)

Special Instructions (samplers):

[c]At the direction of the field sampling lead, triple the specified sample mass shall be collected from one sample location in order for the contract laboratory to perform the required quality control analysis. The sample shall be identified on the Chain of Custody/Request for Analysis form as "designated for laboratory QC."

[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):

[a]One sample will be selected for analysis utilizing a 21-day in-growth with a 25-day TAT for Ra-226. Samples with a 7-day in-growth will be denoted by a "7DAY" suffix in the EDD while the sample chosen as a 21-day in-growth will be denoted by a "21DAY" suffix in the EDD.

Analytical Data Validation is required.

ASL: D

Data Package Requirements – Full Data Package

Historical Data for Shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8

TARGET ANALYTE LIST

20600-PSP-0016-B5
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Thorium-230	280 pCi/g	28 pCi/g
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.3 pCi/g
Radium-228	1.8 pCi/g	0.3 pCi/g
Thorium-228	1.7 pCi/g	0.3 pCi/g
Thorium-232	1.5 pCi/g	0.3 pCi/g
Technetium-99	30.0 pCi/g	2.9 pCi/g

20600-PSP-0016-E
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Cesium-137	1.4 pCi/g	0.14 pCi/g

006402

ATTACHMENT 1
(cont'd)

20600-PSP-0016-O
(8 samples estimated in V/FCN)

Analyte	FRL	MDL
Antimony	10 mg/kg	1.0 mg/kg
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	82 mg/kg	8.2 mg/kg
Silver	29000 mg/kg	40 mg/kg
Fluoride	78000 mg/kg	7800 mg/kg

20600-PSP-0016-A1
(8 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Benzo(a)anthracene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(a)pyrene	2.0 mg/kg / *1.0 mg/kg*	0.2 mg/kg
Benzo(b)fluoranthene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	200 mg/kg / *1.0 mg/kg*	20 mg/kg
Chrysene	2,000 mg/kg / *1.0 mg/kg*	200 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg / *0.088 mg/kg*	0.2 mg/kg
Fluoranthene	*10 mg/kg*	*0.1 mg/kg*
Indeno(1,2,3-cd)pyrene	20 mg/kg / *1.0 mg/kg*	2.0 mg/kg
Phenanthrene	*5 mg/kg*	*0.5 mg/kg*
Pyrene	*10 mg/kg*	*0.1 mg/kg*

20600-PSP-0016-I
(8 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Bromodichloromehtane	4.0 mg/kg	0.4 mg/kg
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg

20600-PSP-0016-Q
(8 samples estimated in V/FCN)

Analyte	FRL/*BTV*[a]	MDL[a]
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015mg/kg	0.0015 mg/kg

[a]BTV applies to Ecological COCs. MDL is 10% of the BTV for COCs that do not have an FRL