

**CERTIFICATION REPORT
FOR THE FORMER STORM WATER
RETENTION BASIN AREA**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



NOVEMBER 2006

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20500-RP-0005
REVISION 0
FINAL**

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	benchmark toxicity value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
CRDL	Contract Required Detection Limit
CU	certification unit
D&D	Decontamination and Demolition
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FPA	Former Production Area
FRL	final remediation level
FS	feasibility study
FTF	Fire Training Facility
GMA	Great Miami Aquifer
HAMDC	highest allowable minimum detectable concentration
HPGe	high-purity germanium detector
HWMU	hazardous waste management unit
MDC	Main Drainage Corridor
MDL	minimum detection level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
PCB	Polychlorinated Biphenyls
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
STP	Sewage Treatment Plant
SWRB	Storm Water Retention Basin
TPU	total propagated uncertainty
UCL	upper confidence limit
UST	underground storage tank
V/FCN	Variance/Field Change Notice
V&V	verification and validation
VOC	volatile organic compound
WAC	waste acceptance criteria
yd ³	cubic yards

EXECUTIVE SUMMARY

This Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that soils in the former Storm Water Retention Basin Area meet established final remediation levels (FRLs). The area includes the former east, center, and west Storm Water Retention Basins, which are located south of the East Parking Lot.

This Certification Report includes details of the certification sampling, analysis, and validation that took place in the former Storm Water Retention Basin Area. The certification area was reduced due to the demolition and dismantlement (D&D) of the Silos Water Treatment Facility that was taking place at the time of certification sampling. Figure 1-1 depicts the original layout of the former Storm Water Retention Basin Area and Figure 1-2 depicts the area to be certified.

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.

All former Storm Water Retention Basin Area certification units (CUs) were sampled and statistical analysis was conducted where necessary to ensure certification criteria were met. As discussed in the Certification Design Letter and Certification Project Specific Plan for the Former Storm Water Retention Basin Area (DOE 2006a), the certification criteria are that the average primary area-specific constituent of concern (ASCOC) concentrations within a CU are below-FRLs at a 95 percent upper confidence level (UCL, 90 percent UCL for secondary ASCOCs). Upon completion of final certification statistics, all former Storm Water Retention Basin Area CUs pass the certification criteria.

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. At that time, DOE intends to proceed with final land use activities as outlined in the Natural Resource Restoration Plan (DOE 2002).

DOE has restricted access to certified areas in order to maintain their integrity prior to final land use development. Fernald Closure Project (FCP) procedure EP-0008 has been developed to implement a process to protect certified areas from becoming re-contaminated.

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 soils in the former Storm Water Retention Basin (SWRB) Area meet established final remediation levels (FRLs). The former SWRB Area, as defined for this certification effort, includes the former east, center, and west SWRBs, which are located south of the East Parking Lot. 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 contaminated 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). The general approach for the removal of contaminated soil and debris in the former SWRB Area followed "Excavation Approach D - Excavation Following D&D in the Former Production Area, Sewage Treatment Plant and Fire Training Facility," as described in Section 4.4 of the SEP.

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 former SWRB Area. The certification area was reduced due to the demolition and dismantlement (D&D) of the Silos Water Treatment Facility that was taking place at the time of certification sampling. Figure 1-1 depicts the original layout of the former SWRB Area and Figure 1-2 depicts the area to be certified under this Certification Report.

It should be noted that there is a small section of the former 60-inch site drain pipe that remains just north of this area running north to south under the access road, which is still utilized as a drainage culvert that drains into the footprint of the SWRBs. This section of pipe was left in place due to its precarious position beneath both the leachate collection transmission line that runs east-to-west from the OSDF to the CAWWT and the main effluent discharge line from the site that runs west-to-east from the CAWWT to the Great Miami River. All contaminated sediment was removed from this 60-inch line during the remediation process. It has been determined that any detectable activity is of a fixed nature. There is no significant increase of uranium concentration in the water as a result of flowing through this pipe. Due to these factors, no further remediation for the 60-inch pipe is planned. Access to this pipe has been restricted by installing barriers on both ends of the pipe to stop potential trespassers. Access will be further restricted administratively as required by Legacy Management, steep slopes, ponding water, and also by heavy vegetation in a few years. Therefore, no additional remediation will be done on the remaining portion of this pipe.

1.4 OBJECTIVES

The objectives of this Certification Report are:

- 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),
- Present the statistical analysis showing that all CUs have passed the certification criteria, including FRL attainment and hotspot criteria, and
- Describe access controls implemented to prevent recontamination.

1.5 REPORT FORMAT

This Certification Report is presented in six 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

Section 6.0 Protection of Certified Areas

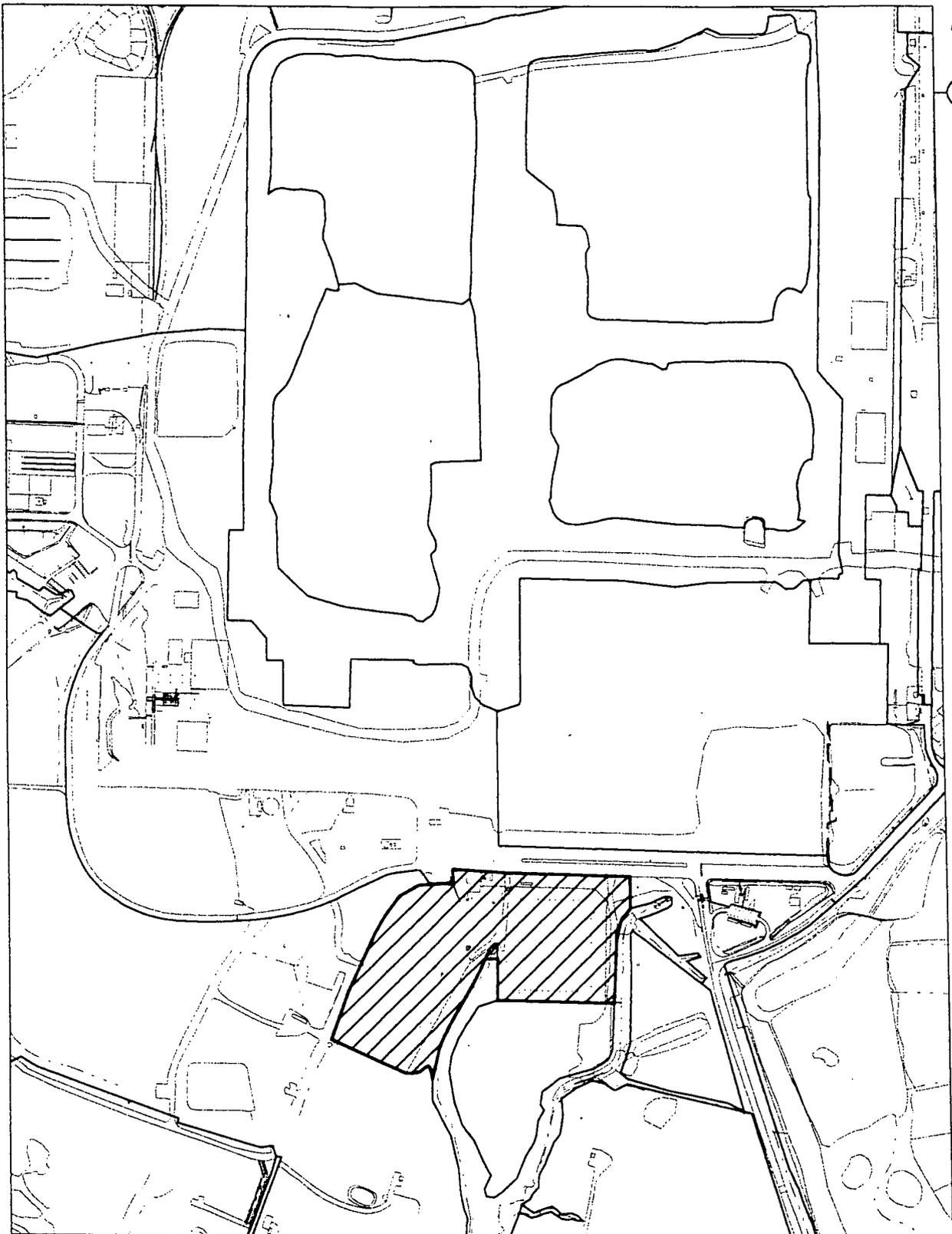
Appendix A Utility Trench Sampling Variance/Field Change Notice (V/FCN) 20500-PSP-0009-83

Appendix B Certification Samples, Analytical Results and Final Statistics Tables

Appendix C Correction of 7-Day Radium-226 Results

1.6 FCP MASTER CERTIFICATION MAP

In order to track certification and characterization for reuse areas at the FCP, DOE updates a controlled map (Figure 1-3) 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 former SWRB Area.

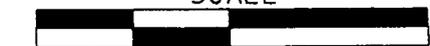


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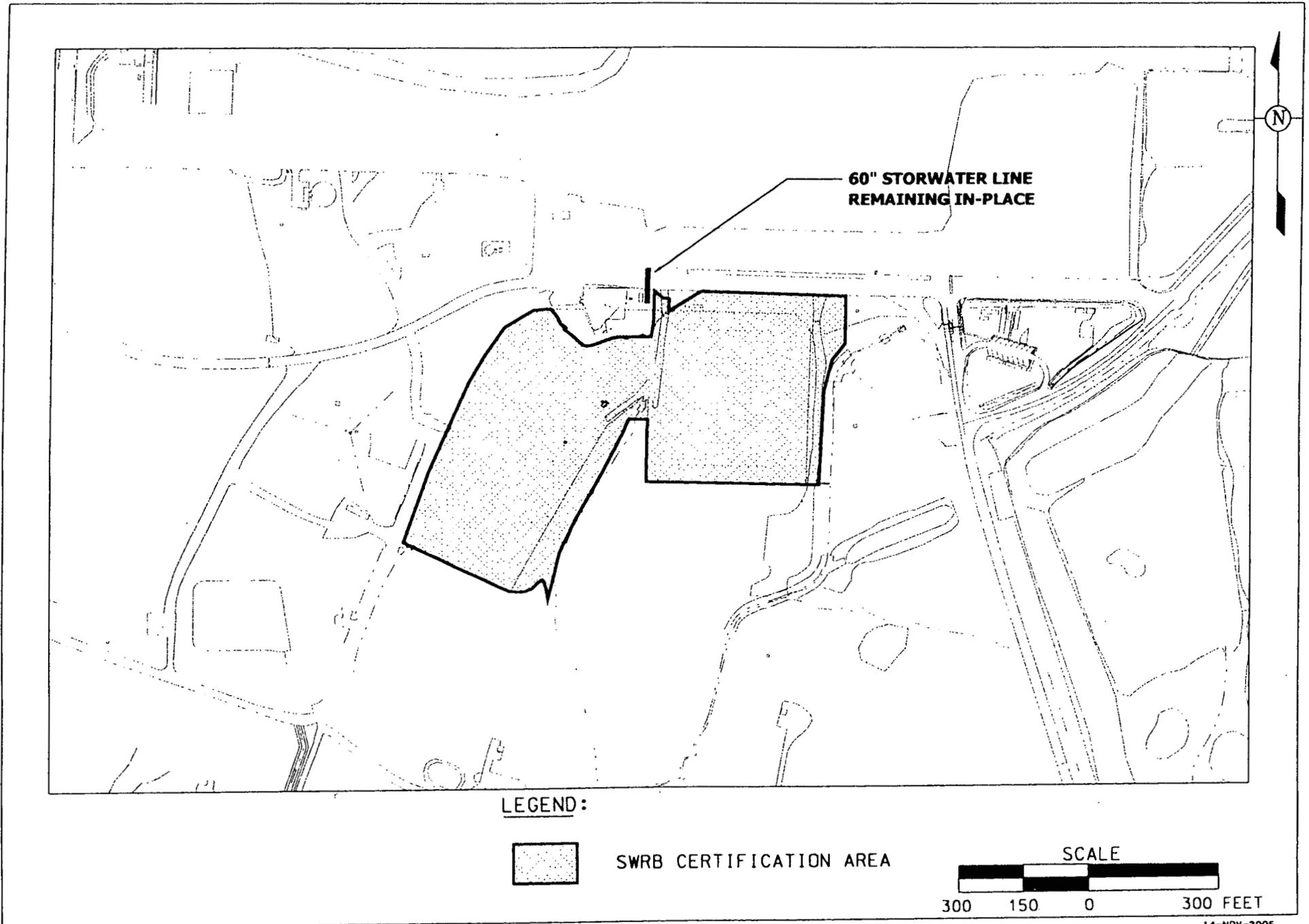
SWRB AREA

SCALE



500 250 0 500 FEET

FIGURE 1-1. FORMER SWRB AREA LOCATION MAP

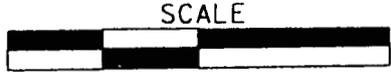


60" STORWATER LINE
REMAINING IN-PLACE

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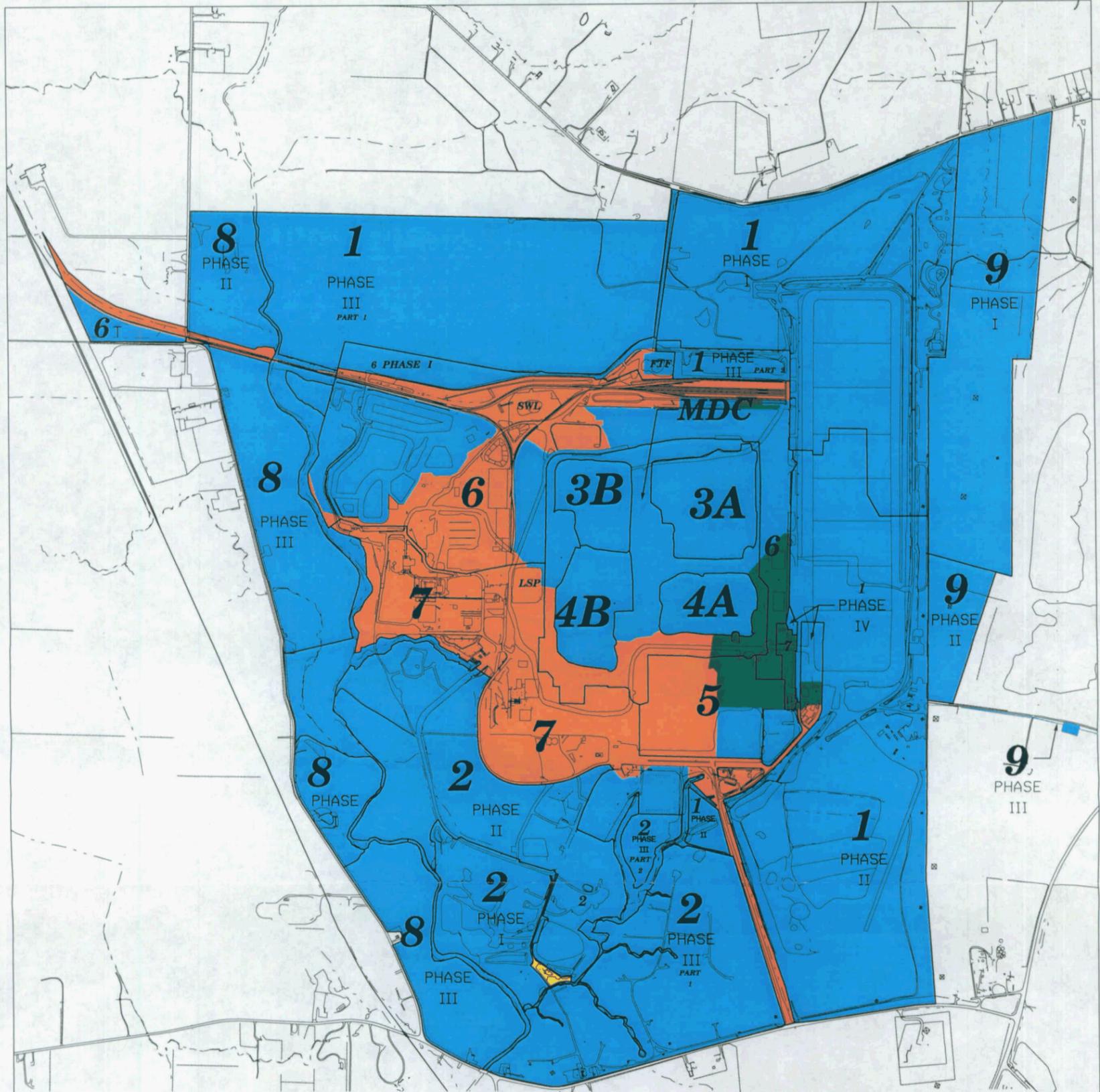
SWRB CERTIFICATION AREA



SCALE

300 150 0 300 FEET

FIGURE 1-2. AREA TO BE CERTIFIED



revised October 16, 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	0	1.0	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	7.6	13.8	5.6	0	0
AREA 6	148.9	77.3	60.9	10.8	0	0
AREA 7	77.0	9.6	65.0	2.4	0	0
AREA 8	98.9	98.9	0	0	0	0
MDC	39.8	24.2	11.7	3.9	0	0
PR/SSOD/PPDD	33.3	33.3	0	0.0	0	0
TOTAL ON SITE	1048.6	873.5	151.5	23.6	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.

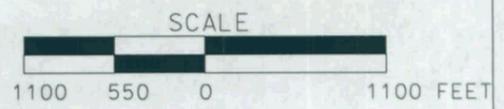


FIGURE 1-3. FCP CONTROLLED CERTIFICATION MAP

2.0 CERTIFICATION APPROACH

2.1 CERTIFICATION STRATEGY

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 former SWRB Area is described in the Certification Design Letter (CDL) and Project Specific Plan (PSP) for the Former Storm Water Retention Basin Area (DOE 2006a).

2.1.1 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. Secondary ASCOCs for the former SWRB Area are listed in the SEP. Table 2-1 lists the secondary ASCOCs identified in the SEP. Table 2-2 presents justification for retaining or not retaining the ASCOCs and the ecological COCs for each CU in the former SWRB Area.

2.1.2 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. The list of ASCOCs is also presented in Table 2-1 with their respective FRLs and, if applicable, benchmark toxicity values (BTVs).

2.1.3 ASCOC Selection Process

Each COC on the Remediation Area 7 ASCOC list (Table 2-1) was evaluated for its relevance to the former SWRB Area. Table 2-2 presents the reasoning for either retaining or eliminating the ASCOC. In addition to the assigned COCs for Remediation Area 7, the COCs from upgradient areas that were potentially carried with the storm flows are also included. All final COCs for the former SWRB Area are provided on Table 2-3.

2.2 CERTIFICATION APPROACH

The certification design for the former SWRB Area followed the general approach outlined in Section 3.4 of the SEP. The design for the former SWRB Area is depicted on Figures 2-1 and 2-2, and the sample locations are depicted in Figures 2-3 through 2-6. The five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, and thorium-232) were retained in each CU. Additional secondary COCs are identified for specific CUs within the certification area.

Many factors were taken into consideration when determining the boundaries for each CU within the former SWRB Area. These factors include: historical land use, proximity to other areas of the site, and residual COC data. To allow for more concentrated sampling and ensure that excavation of the SWRBs had no effect on the soil, Group 1 CUs have been established in the former SWRB Area.

2.2.1 Certification Unit Design

The former SWRB Area consists of eleven Group 1 CUs. CUs SWRB-C02, SWRB-C03, SWRB-C06, SWRB-C07, and SWRB-C09 were designed specifically around the footprints of the former east, center, and west SWRB. CU11 was designed around the access road located east of the east SWRB.

In addition to the 11 CUs planned for the former SWRB Area, one CU was designed around samples collected from utility trench excavations. This is discussed further in Section 3.1.

2.2.2 Sample Selection Process

For eleven CUs, the selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. Each CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those locations against the minimum distance criteria for the CU. If the minimum distance criteria were not met, an alternative random location was selected for that sub-CU, and all the locations were re-tested. This process continued until all random locations met the minimum distance criteria.

For the CU designed around utility trench excavations, samples were collected every 50 feet. This is discussed further in Appendix A.

2.2.3 Certification Sampling

For eleven CUs, samples were collected for analysis from 0 to 6 inches at 12 of the 16 locations in each CU. The four samples designated as "archive" were not collected as they were not needed for additional analysis.

In addition to the 12 planned sample locations within CU5 and CU8, one bias sample location was designated in each CU, along the haul road located east of the east SWRB. The bias sample locations were based upon the highest total counts from the real-time scan completed along the haul road. At the bias sample locations, the top 0 to 6 inches of gravel as well as the top 0 to 6 inches of soil were collected.

For the CU designed around utility trench excavations, 18 samples were collected.

It should be noted that sample locations SWRB-C10-4 and SWRB-C10-6, were sample locations SWRB-C08-1 and SWRB-C08-2 under Revision A of the CDL/PSP, respectively. Based on OEPA comments to include the center SWRB, the two samples from CU 08 now fall in CU 10. Two new samples locations, SWRB-C08-18 and SWRB-C08-19 were added to CU 08.

Prior to commencement of certification sampling field activities, all certification sample locations were surveyed and field verified to make sure no surface obstacles would prevent collection at the planned location. It was not necessary to move any planned certification sample locations.

2.2.4 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 be 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 each COC is less than 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 AREA 7^a**

ASCOC	FRL
Radionuclides	
Total Uranium	82 mg/kg
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Cesium-137	1.4 pCi/g
Lead-210	38 pCi/g
Technetium-99	30 pCi/g
Thorium-230	280 pCi/g
Inorganics	
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Lead	400 mg/kg
Manganese	4,600 mg/kg
Antimony	96 mg/kg
Cadmium	82 mg/kg
Molybdenum	2,900 mg/kg
Silver	29,000 mg/kg
Organics	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Dieldrin	0.015 mg/kg
Benzo(a)anthracene	20 mg/kg
Benzo(a)pyrene	2 mg/kg
Benzo(b)fluoranthene	20 mg/kg
Benzo(g,h,i)perylene	1 mg/kg ^b
Benzo(k)fluoranthene	200 mg/kg
Chrysene	2,000 mg/kg
Dibenzo(a,h)anthracene	2 mg/kg
Fluoranthene	10 mg/kg ^b
Indeno(1,2,3-cd)pyrene	20 mg/kg
Phenanthrene	5 mg/kg ^b
Pyrene	10 mg/kg ^b

^aAs listed in Table 2-7 of the SEP.

^bASCOC does not have a FRL therefore the benchmark toxicity value (BTV) will be used.

pCi/g - picoCuries per gram

**TABLE 2-2
 ASCOC LIST FOR THE FORMER SWRB AREA**

ASCOC	Retained as ASCOC?	Justification
Radiological		
Radium-226	Yes	Sitewide primary COC
Radium-228	Yes	Sitewide primary COC
Thorium-228	Yes	Sitewide primary COC
Thorium-232	Yes	Sitewide primary COC
Total Uranium	Yes	Sitewide primary COC
Cesium-137	Yes	Retained as potentially upgradient storm flows COC
Lead-210	Yes	Retained as potentially upgradient storm flows COC
Technetium-99	Yes	Above-WAC in east SWRB; retained as potentially upgradient storm flows COC
Thorium-230	Yes	Retained as potentially upgradient storm flows COC
Inorganics		
Antimony	Yes	Retained as potentially upgradient storm flows COC
Arsenic	Yes	Retained as potentially upgradient storm flows COC
Barium	Yes	Retained as potentially upgradient storm flows COC
Beryllium	Yes	Retained as potentially upgradient storm flows COC
Cadmium	Yes	Retained as potentially upgradient storm flows COC
Chromium	Yes	Retained as potentially upgradient storm flows COC
Lead	Yes	Retained as potentially upgradient storm flows COC
Mercury	Yes	Retained as potentially upgradient storm flows COC
Molybdenum	Yes	Retained as potentially upgradient storm flows COC
Selenium	Yes	Retained as potentially upgradient storm flows COC
Silver	Yes	Retained as potentially upgradient storm flows COC
Pesticides/PCBs		
Aroclor-1254	Yes	Above-FRL results in adjacent A2PII Subarea 3; retained as potentially upgradient storm flows COC
Aroclor-1260	Yes	Retained as potentially upgradient storm flows COC
Dieldrin	Yes	Retained as potentially upgradient storm flows COC
PAHs		
Benzo(a)anthracene	Yes	Retained as potentially upgradient storm flows COC
Benzo(a)pyrene	Yes	Retained as potentially upgradient storm flows COC
Benzo(b)fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Benzo(g,h,i)perylene	Yes	Retained as potentially upgradient storm flows COC
Benzo(k)fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Chrysene	Yes	Retained as potentially upgradient storm flows COC
Dibenzo(a,h)anthracene	Yes	Retained as potentially upgradient storm flows COC
Fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Indeno(1,2,3-cd)pyrene	Yes	Retained as potentially upgradient storm flows COC

TABLE 2-2
ASCOC LIST FOR THE FORMER SWRB AREA

ASCOC	Retained as ASCOC?	Justification
PAHs (continued)		
Phenanthrene	Yes	Retained as potentially upgradient storm flows COC
Pyrene	Yes	Retained as potentially upgradient storm flows COC
VOCs		
1,1,1-Trichloroethane	Yes	Retained as potentially upgradient storm flows COC
1,1-Dichloroethene	Yes	Retained as potentially upgradient storm flows COC
1,2-Dichloroethane	Yes	Retained as potentially upgradient storm flows COC
4-Methyl-2-pentanone	Yes	Retained as potentially upgradient storm flows COC
Acetone	Yes	Retained as potentially upgradient storm flows COC
Benzene	Yes	Retained as potentially upgradient storm flows COC
Carbon Tetrachloride	Yes	Retained as potentially upgradient storm flows COC
Ethylbenzene	Yes	Retained as potentially upgradient storm flows COC
Methylene chloride	Yes	Retained as potentially upgradient storm flows COC
Tetrachloroethene	Yes	Retained as potentially upgradient storm flows COC
Toluene	Yes	Retained as potentially upgradient storm flows COC
Trichloroethene	Yes	Retained as potentially upgradient storm flows COC
Xylenes, Total	Yes	Retained as potentially upgradient storm flows COC

**TABLE 2-3
 FINAL ASCOC LIST FOR THE FORMER SWRB AREA**

ASCOC	FRL	Type of ASCOC	Where Retained
Radiological			
Radium-226	1.7 pCi/g	Primary	All CUs
Radium-228	1.8 pCi/g	Primary	All CUs
Thorium-228	1.7 pCi/g	Primary	All CUs
Thorium-232	1.5 pCi/g	Primary	All CUs
Total Uranium	8.2 mg/kg	Primary	All CUs
Cesium-137	1.4 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Lead-210	38 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Technetium-99	30.0 pCi/g	Secondary	CUs 1 through 10 Utility Trench CU
Thorium-230	280 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Inorganics			
Antimony	96 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Arsenic	12 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Barium	68,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Beryllium	1.5 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Cadmium	82 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Chromium	300 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Lead	400 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Mercury	7.5 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Molybdenum	2,900 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Selenium	5,400 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Silver	29,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Pesticides/PCBs			
Aroclor-1254	0.13 mg/kg	Secondary	CUs 1 through 10 Utility Trench CU
Aroclor-1260	0.13 mg/kg	Secondary	CUs 1 through 10 Utility Trench CU
Dieldrin	0.015 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
PAHs			
Benzo(a)anthracene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(a)pyrene	2 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(b)fluoranthene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(g,h,i)perylene	1 mg/kg ^a	Secondary	CUs 2, 3, 6, 7, 9
Benzo(k)fluoranthene	200 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Chrysene	2,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Dibenzo(a,h)anthracene	2 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Fluoranthene	10 mg/kg ^a	Secondary	CUs 2, 3, 6, 7, 9
Indeno(1,2,3-cd)pyrene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Phenanthrene	5 mg/kg ^a	Secondary	CUs 2, 3, 6, 7, 9

**TABLE 2-3
 FINAL ASCOC LIST FOR THE FORMER SWRB AREA**

ASCOC	FRL	Type of ASCOC	Where Retained
Pyrene	10 mg/kg ^a	Secondary	CUs 2, 3, 6, 7, 9
VOCs			
1,1,1-Trichloroethane	4.3 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
1,1-Dichloroethene	0.41 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
1,2-Dichloroethane	0.16 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
4-Methyl-2-pentanone	2,500 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Acetone	43,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzene	850 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Carbon Tetrachloride	2.1 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Ethylbenzene	5,100 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Methylene chloride	37 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Tetrachloroethene	3.6 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Toluene	10,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Trichloroethene	25 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Xylenes, Total	92,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9

^aASCOC does not have a FRL therefore the BTV will be used.

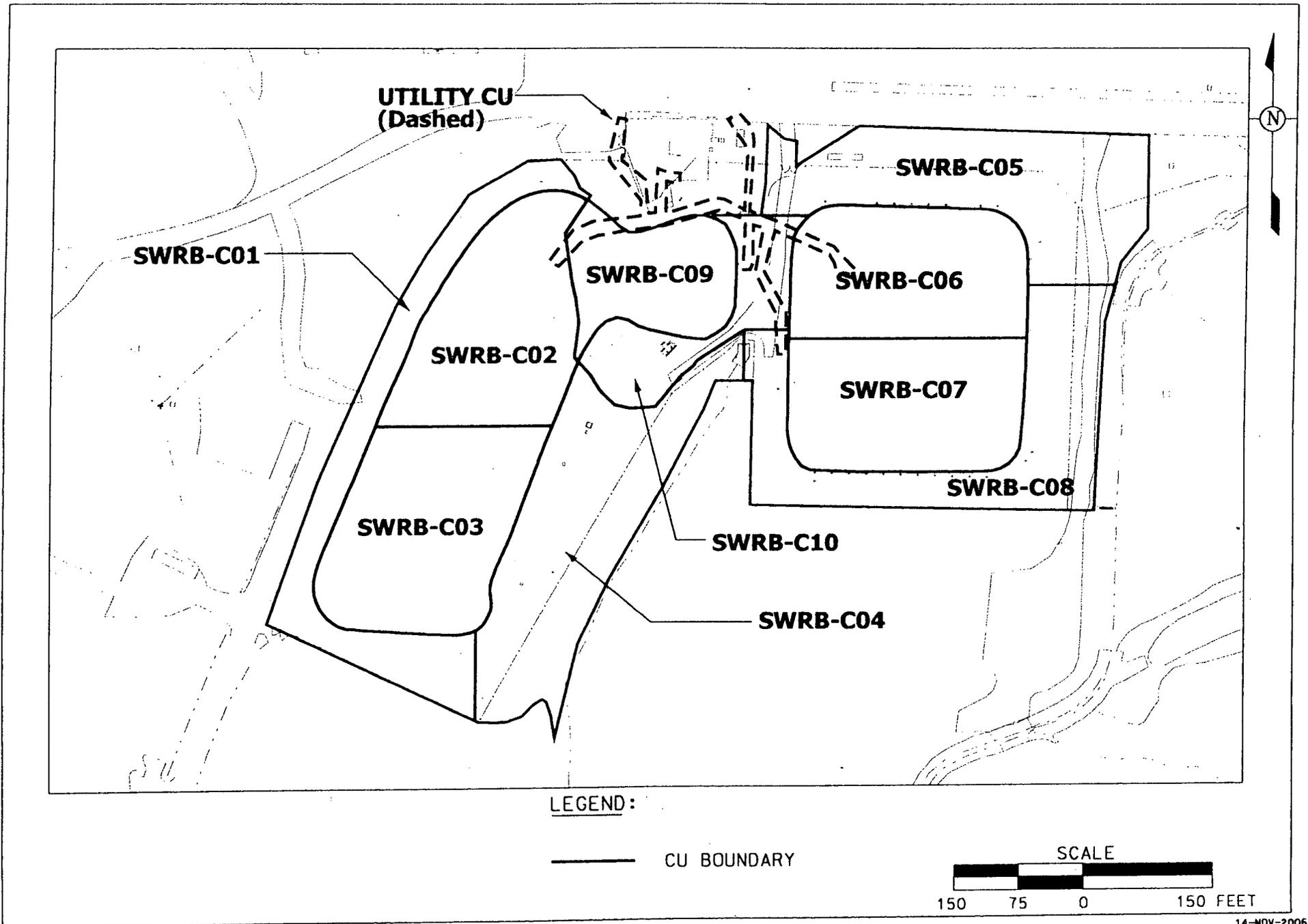
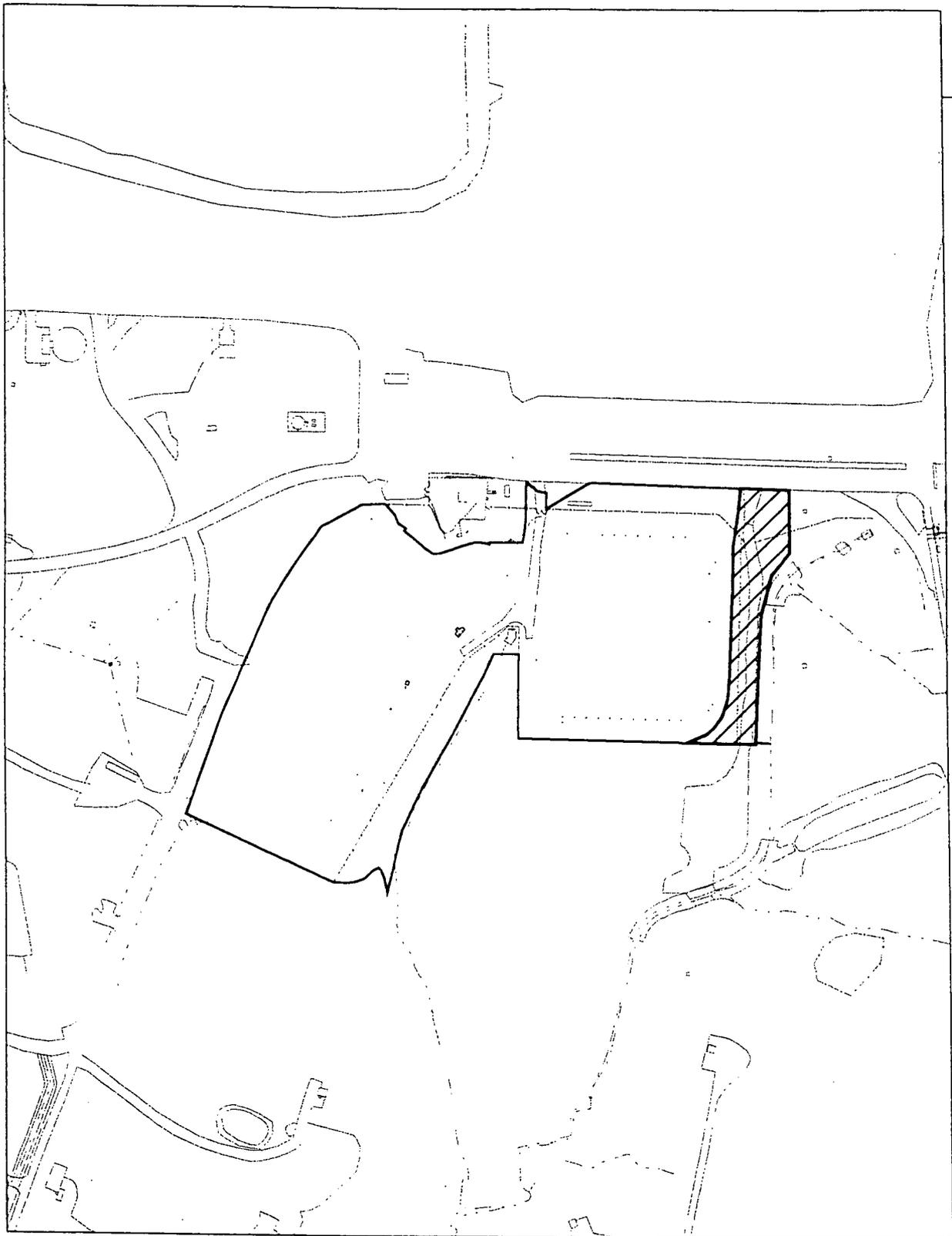


FIGURE 2-1. FORMER SWRB AREA CERTIFICATION BOUNDARIES

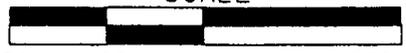


LEGEND:



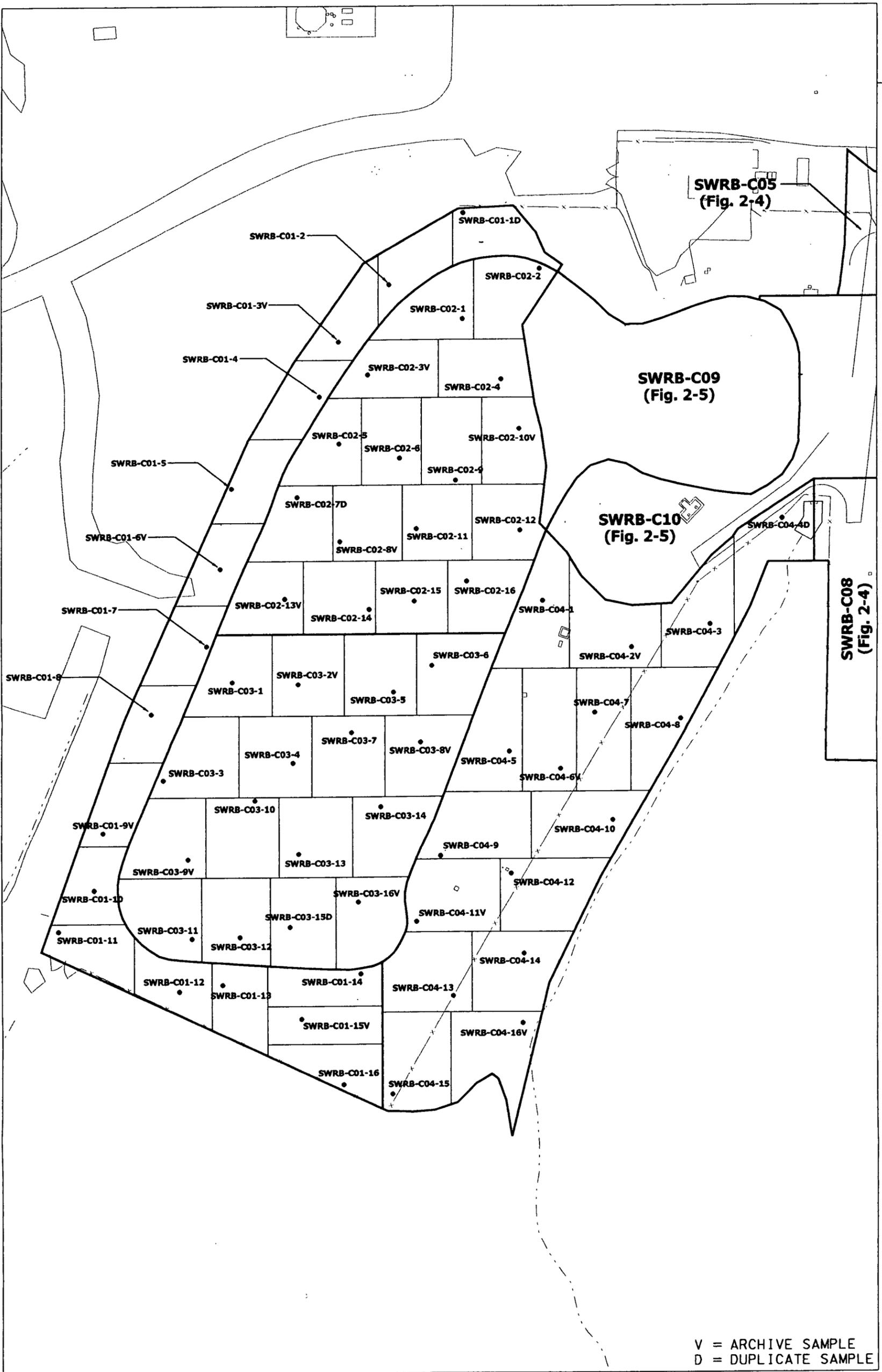
SWRB CU11 BOUNDARY

SCALE



250 125 0 250 FEET

FIGURE 2-2. FORMER SWRB AREA CERTIFICATION BOUNDARY CU 11



LEGEND:

• SAMPLE LOCATION

V = ARCHIVE SAMPLE
D = DUPLICATE SAMPLE

SCALE

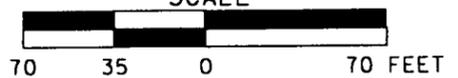


FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS (CUS 1-4)

3.0 OVERVIEW OF FIELD ACTIVITIES

In accordance with the SEP, prior to conducting precertification and certification activities, all soil demonstrated to contain contamination above the associated FRLs or other applicable action levels were evaluated for remedial actions.

In addition to the Predesign Investigations, the OU5 RI Reports (DOE 1995a) and Feasibility Study Reports (FS, DOE 1995c) were used for remedial design of the former SWRB Area. Final grade excavation monitoring/sampling and real-time scanning/sampling data have been collected pursuant to the RI/FS and remedial activities.

Before initiating the certification process, all historical soil data within the former SWRB Area certification area was pulled from the Sitewide Environmental Database (SED). Based on the results of sampling and scanning activities summarized below, it was determined that no further remedial actions were necessary to remove above-FRL or above-WAC soil.

3.1 AREA PREPARATION AND PRECERTIFICATION

As the soil around the SWRBs was not impacted by production activities at the site, limited sampling was done on the soil in this area during the RI/FS. The sediment within the basins was periodically removed, therefore the sediment was not characterized during the RI/FS either.

The soil around the basins as well as the sediment within the basins were fully characterized during various predesign investigations.

All historical data are discussed in the Excavation Plan for Area 7 Silos and General Area (DOE 2005a) and the WAC Attainment Plan for Sediment in the Storm Water Retention Basins (DOE 2006b). These include data collected during the RI/FS and various predesign investigations.

The east, center, and west SWRBs were excavated in 2006. The sediment from the west SWRB was below WAC for the OSDF, and was excavated for disposal in the OSDF. The sediment from the east and center SWRBs had technetium-99 results above WAC for the OSDF, and was therefore excavated for off-site disposal.

All soil samples collected during predesign were below FRLs. The planned excavations for the SWRB area included the excavation of sediment from the SWRBs as well as the soil on the west side of the west SWRB. This excavation was a continuation of the excavation of impacted soil/flyash from the former Southern Waste Unit road per Addendum No. 1 to the Implementation Plan for Area 2, Phase II (A2PII) - Subarea 3 (Infrastructure) Subcontractor Laydown Area and Equipment Wash Facility (DOE 2005b). The

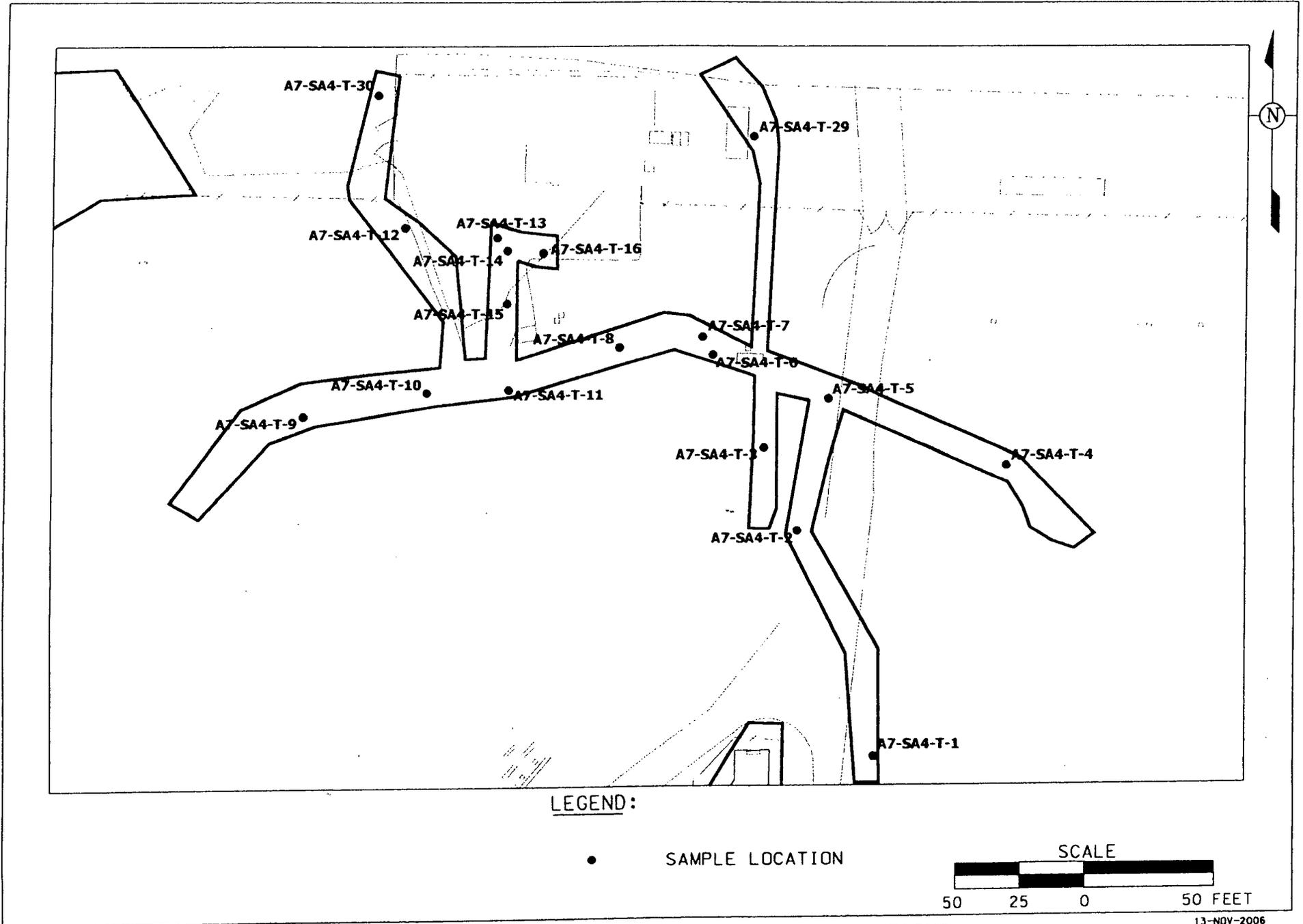
impacted soil/flyash was above FRL for aroclor-1254.

Utilities removed as part of the remediation process were taken out after all excavation was completed to design grade and precertification had been completed. Once the utility had been removed as required by the technical specification, precertification was performed on the trench bottom created by removal of these utilities and then back-filled with the precertified overburden soil. These sampling events took place as described in Variance/Field Change Notice (V/FCN) 20500-PSP-0009-83, written to the PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011) (DOE 2005a), and is included in Appendix A. The sample locations are shown on Figure 3-1 and the data is included in Appendix B.

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns as specified in the Area 7 Silos and General Area Excavation Control and Precertification PSP. The former SWRB Area passed precertification criteria.

3.2 CHANGES TO SCOPE OF WORK

There were no changes to the scope of work for the former SWRB Area.



LEGEND:

● SAMPLE LOCATION

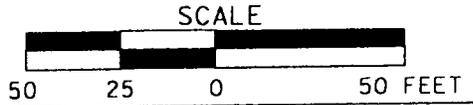


FIGURE 3-1. UTILITY TRENCH SAMPLE LOCATIONS

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES, AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

All samples collected were sent off-site for analysis. The laboratories complied with Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) requirements (DOE 2003). The SCQ is the source for analytical methodologies (Appendix G), data verification and validation, and analytical quality assurance/quality control requirements.

Laboratory analysis of certification samples was conducted using approved analytical methods, as discussed in Appendix H of the SEP. The minimum detection level (MDL) was set at 10 percent of the FRL and analyses were conducted to Analytical Support Level (ASL) D or E, where the MDL of 10 percent of the FRL is above the SCQ ASL detection level, but the analyses meet all other SCQ ASL D criteria. ASL D data packages were provided for all of the analytical data. All data were validated and entered into the FCP SED. Final certification results are provided in Appendix B, and a summary of the analytical methods follows:

4.1.1 Chemical Methods

Metals

Samples submitted for metals analysis, with the exception of mercury, were analyzed by inductively coupled plasma-mass spectrometry.

Samples submitted for mercury analysis were analyzed by cold vapor atomic absorption.

Volatile Organic Compounds (VOCs)

Samples submitted for VOC analyses were analyzed by gas chromatography/mass spectrometry.

Semi-Volatile Organic Compounds (SVOCs)

Samples submitted for SVOC analysis were analyzed by gas chromatography/mass spectrometry.

Pesticides/Polychlorinated Biphenyls (Pest/PCBs)

Samples submitted for pesticide or PCB analysis were analyzed by gas chromatography.

4.1.2 Radiochemical Methods

The radiochemical analytical methods depended on the specific nuclides of interest. Performance-based specification criteria included highest allowable minimum detectable concentration (HAMDC), percent overall tracer/chemical recovery, percent matrix spike recovery, method blank concentration, percent

recovery of laboratory control sample, and relative error ratio for duplicate samples for each analyte. The on-site laboratory was required to meet these specifications using the methodologies described below.

Total Uranium

Samples were analyzed for uranium-238 using gamma spectroscopy, and the results were used to calculate the total uranium value, as follows:

$$\text{Total uranium (mg/kg)} = (2.998544) \times \text{uranium-238 gamma spectrometry result (pCi/g)}$$

The validation qualifier assigned to the total uranium value was the same as the uranium-238 qualifier.

Radium-226

Samples were analyzed by gamma spectrometry, and radium-226 was quantified by measuring gamma rays emitted by members of its decay chain. This method does not require chemical separation but the samples must be allowed a 7-day progeny in-growth period before counting (Appendix C). The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the former SWRB Area certification results.

Radium-228

Radium-228 was quantified by measuring gamma rays emitted by members of its decay chain. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the former SWRB Area certification results.

Thorium-228 and Thorium-232

Thorium-228 and Thorium-232 quantified by measuring gamma rays emitted by members of their decay chain. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the former SWRB Area certification results.

Cesium-137

Cesium-137 was quantified by measuring its emitted gamma rays. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the former SWRB Area certification results.

Lead-210

Lead-210 was quantified by measuring gamma rays emitted by members of its decay chain. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the former SWRB Area certification results.

Technetium-99

Technetium-99 was quantified by using a liquid scintillation counter.

Thorium-230

Samples were analyzed by alpha spectrometry and the isotope was quantified by measuring its characteristic alpha rays at 4621-kiloelectron volt (KeV) and 4687 KeV. The offsite laboratory used the combination of these two alpha lines, with the help of a thorium-229 yield indicator, to quantify the thorium-230 results.

4.2 DATA VERIFICATION AND VALIDATION

This section discusses the data verification and validation (V&V) process used to examine the quality of field and laboratory results. Data were qualified to indicate the level of data usability, or level of confidence in the reported analytical results. The U.S. Environmental Protection Agency (EPA) National Functional Guidelines for Data Review (Inorganic Data) (EPA 1994), as adapted and approved by EPA Region V, as well as Section 11.2 and Appendix D of the SCQ, was used for this process.

Specific parameters associated with the data were evaluated during V&V to determine whether or not the data quality objectives were met. Five principal Quality Assurance parameters (i.e., precision, accuracy, completeness, comparability, and representativeness) were addressed during V&V. Field sampling and handling, laboratory analysis and reporting, and non-conformances and discrepancies in the data were examined to ensure compliance with appropriate and applicable procedures.

The V&V process evaluated the following parameters:

- Specific field forms for sample collection and handling
- Chain of Custody forms
- Completeness of laboratory data deliverable.

The data validation process examined the analytical data to determine the validation qualifier of the results. General areas examined that apply to all the chemical data include the following:

- Holding Times
- Instrument calibrations
- Calculation of results
- Matrix spike/matrix spike duplicate recoveries
- Laboratory/field duplicate precision
- Field/Laboratory Blank contamination
- Dry weight correction for solid samples
- Correct detection limits reported
- Laboratory control sample recoveries and compliance with established limits.

Parameters unique to the evaluation of radiochemical analyses include:

- Calibration data for specific energies
- Background checks
- Relative Error ratios
- Detector efficiencies
- Background count correction.

For this project, all the radiological data were reviewed and validated for all criteria noted above. Per project requirements, a minimum of 10 percent of the certification data were validated to Level D. This validation included the same review process as for Level B, but included a systematic review of the raw data and recalculations

Following V&V, qualifier codes were applied to specific data points, reflecting the level of confidence assigned to the particular datum. These codes included:

- No qualification; the positive result or detection limit is confident as reported
- J Positive result is estimated or imprecise; data point is usable for decision-making purposes. Positive results less than the contract required reporting limit are also qualified in this manner
- R Positive result or detection limit is considered unreliable; data point should not be used for decision-making purposes
- U Undetected result at the stated limit of detection
- UJ Undetected result; detection limit is considered estimated or imprecise; the data point is usable for decision-making purposes
- N Positive result is tentatively identified - that is, there is some question regarding the actual identification and quantification of the result. Compound reported is best professional judgement of the interpretation of the supporting data, such as mass spectra. Caution must be exercised with the use of these data
- NV Not Validated. The results for this sample were not validated
- Z This result, or detection limit in this analysis is not the best one to use; another analysis (e.g., the dilution or re-analysis) contains a more confident and usable result.

The V&V of this data set did not identify any problems. All results were either not qualified (-), qualified as estimated (J) and/or non-detects (U).

4.3 DATA REDUCTION

Each sample used to support the former SWRB Area certification decision was entered in the SED with the following information:

Field Information

- Sample Identification Number - A unique number assigned to each discrete sample point
- Coordinate Information - Northing and Easting locations.

Using the information as summarized above, the following actions were taken for data reduction of each CU data set.

1. All of the data for each CU were queried from SED. All of the data were used even if the CU had more than the minimum required data points.
2. The data from the validation fields were used for statistical calculations.
3. Data with a qualifier of R or Z was not used in the statistical calculations.
4. The higher of the two duplicate results was used in the statistical calculations.
5. One half of the non-detect (U or UJ) values were used in the statistical calculations.

Laboratory Information

For each sample result the following information is entered:

- Laboratory Result - The reported analytical value from the laboratory
- Laboratory Qualifier - The qualifier reported from the lab. For radiological parameters non-detect values are assigned a U qualifier
- Total Propagated Uncertainty (TPU) - The TPU is an estimate of the overall uncertainty associated with a measured or calculated result that has been derived from an evaluation of all factors that can influence a result, including both systematic and random sources of uncertainty. For both *in situ* and laboratory-based radioactivity measurements, factors such as the random nature of the radioactive decay process (i.e., counting uncertainty), the mass or volume of the "sample" being analyzed, the variation in radiation detection efficiency with the energy of the emitted radiation and the density and chemical composition of the sample, uncertainty in nuclear decay parameters used to convert counts to activity, and attenuation of the radiation must be considered to properly assess the overall uncertainty of the measured result.
- Units - The units in which the Laboratory Result is reported.

Validation Information

- Validation Result - The result based on the validation process. During the validation process, sample results may be adjusted. If the laboratory result is less than the associated minimum detectable concentration, the validation result becomes the minimum detectable concentration value.
- Validation TPU - The TPU based on the validation process (applicable to radiological parameters only). The data Validation Section evaluates the reported TPU as described in the SCQ in Section 11.2 and Appendix D to assess the impact on the data quality and will qualify the data as estimated if the uncertainty is excessive.
- Validation Qualifier - The qualifier assigned as a result of the data validation process.
- Validation Units - The units in which the Validation Result is reported.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

Certification success or failure was based on sample data from each CU against criteria discussed in Section 2.2.4. Subsequent to any evaluation of preliminary data, full statistical analysis and evaluation was performed on all validated data. Final certification data are presented in Appendix B.

5.1 CERTIFICATION RESULTS AND EVALUATION

The following is a summary of the analytical results and statistical analyses of the data for each CU in the former SWRB Area:

SWRB-C01

CU SWRB-C01 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C02

CU SWRB-C02 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C03

CU SWRB-C03 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C04

CU SWRB-C04 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C05

Within CU SWRB-C05, sample location SWRB-C05-13 had a result greater than two times the FRL for Aroclor-1254 at 304 µg/kg. Following sample analysis, it was identified that this sample location was in the area of known buried asbestos that was identified on Drawing 99X-5500-G-00909 in the Area 7 Support and Silos Process Areas Excavation Plan (DOE, 2006c). This area, which is approximately 20'x40', was excavated according to this plan thus removing all the asbestos debris and the elevated aroclor-1254. Subsequently, the *a posteriori* sample size calculation for aroclor-1254 was performed and showed that enough samples were collected to make a conclusion; therefore this sample location has been removed. The final certification data are presented in Appendix B.

SWRB-C06

CU SWRB-C06 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C07

CU SWRB-C07 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C08

CU SWRB-C08 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C09

CU SWRB-C09 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C10

CU SWRB-C10 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

SWRB-C11

CU SWRB-C11 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

Utility Trench CU

There were 18 samples collected from utility trenches that comprise one CU. This CU passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix B.

5.2 FORMER SWRB AREA CERTIFICATION CONCLUSIONS

Based on the certification analytical results, precertification data, and statistical analysis, DOE has determined that the remedial objectives in the OU5 ROD have been achieved for the former SWRB Area, and no further remedial actions are required. This portion of the FCP will be released for restoration and final land use upon EPA and OEPA concurrence.

6.0 PROTECTION OF CERTIFIED AREAS

DOE has restricted access to certified areas in order to maintain their integrity prior to transfer for final land use. FCP Procedure EP-0008 has been developed to implement a process to protect certified areas from becoming re-contaminated.

The procedure is summarized as follows:

- At the beginning of certification sampling activities for a remediation area, the perimeter of the “certified” area will be clearly delineated
- Signs will be posted upon the temporary perimeter limiting access to authorized individuals or projects
- To gain access to conduct work in a “certified” area, the person or project desiring access will submit a request to the Compliance section of the Environmental Closure Project
- Any equipment to be used within the “certified” area must have been cleaned in accordance with FCP certified area access
- Employees/operators should be briefed on the entry and exit requirements for a “certified” area
- Additional restrictions apply to certified areas that have been restored. The Environmental Closure Project Restoration Management Group will approve request for access in writing prior to entry.

After DOE, EPA and OEPA agree that an area is certified, the area will be released for final land use. At that time, best management practices and administrative controls will be used to protect the area from contamination, and other controls will be implemented as needed.

REFERENCES

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- U.S. Department of Energy, 1995b, "Record of Decision for Remedial Actions at Operable Unit 2," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 1995c "Feasibility Study Report for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 1996a, "Record of Decision for Remedial Actions at Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
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- U.S. Department of Energy, 1998, "Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 2002, "Natural Resource Restoration Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 2003, "Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ)," Revision 3, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 2005a, "Excavation Plan for Area 7 Silos and General Area," Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.
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- U.S. Department of Energy, 2006a, "Certification Design Letter and Certification Project Specific Plan for the Former Storm Water Retention Basin Area," Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.
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- U.S. Department of Energy, 2006c, "Area 7 Support and Silos Process Areas Excavation Plan," Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio
- U.S. Environmental Protection Agency, 1994, "National Functional Guidelines for Data Review (Inorganic Data)," U.S. EPA Office of Solid Waste and Emergency Response, Washington, DC.

APPENDIX A
UTILITY TRENCH SAMPLING
VARIANCE/FIELD CHANGE NOTICE (V/FCN) 20500-PSP-0009-83

VARIANCE / FIELD CHANGE NOTICE

Significant?
(Yes or No): **NO**

V/F: 20500-PSP-0009-83

WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0009 Rev. 0

Page: 1 of 2

PROJECT TITLE: PSP for the Excavation Control and Precertification of Area 7 Silos and General Area

Date: 4/3/06

**VARIANCE / FIELD CHANGE NOTICE (Include justification):
EXCAVATION CONTROL**

This V/FCN documents the collection of physical soil samples for precertification of soil beneath the bedding of excavated utilities located in the Area 7 Storm Water Retention Basins Area. Construction will be excavating known utilities; however, the possibility exists that unknown utilities will be uncovered during excavation. All sampling locations will be field located approximately every fifty feet along the bottom of the excavation. All samples will be collected from the bottom of the excavation from the bucket of an excavator (if necessary) after the piping and bedding material has been removed or from paddys created to represent the sample locations. The goal will be to collect samples from the top six inches of soil from the bottom of the excavation. Additionally, if there is evidence of leakage from the piping (e.g., broken, cracked, or disjoined piping, stained or discolored soil), then a biased sample location will be flagged and samples will be collected from the floor of both sidewalls approximately one foot from the floor of the excavation.

The Sampling and Analytical Requirements and TALs are provided on Attachment 1. The area specific constituents of concern for this sampling effort will be the primary radionuclides (total uranium, radium-226, radium-228, thorium-228, thorium-232 - TAL E), technetium-99 (TAL A), and aroclor-1254 and aroclor-1260 (TAL K).

The first sample ID shall be A7-SA4-T-1^{RP}, and each additional sample consecutively numbered, where:

A7 = Area 7

SA4 = Subarea 4

T = Trench

1, 2, etc.. = consecutive sample numbers (locations)

RP = radiological and PCB analysis

Field sketch required: Yes

Surveying required: No, will be provided by Real-Time

Justification:

As discussed in Sections 3.5.3 and 3.6 of the Excavation Plan for Area 7 Silos and General Area, due to the depths of the excavations to access the inspection sump and underdrain collection sump/system, the soil will be removed as below-FRL soil. Because the utilities in this area are so deep, it is necessary to backfill the trenches after the utilities have been removed in order to ensure the area is left in a safe condition. Therefore, samples will be collected from the bottom of the excavation prior to backfilling the trenches similarly to the sampling performed during the excavation of the Abandoned Outfall Line. Per Section 1.3 of the PSP, the collection of physical samples will be documented with a V/FCN.

REQUESTED BY: Denise Arico

Date: 4/3/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE & FIELD <i>[Signature]</i>	4/5/06	X	PROJECT MANAGER TD <i>[Signature]</i>	4/13/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER F <i>[Signature]</i>	4/13/06
X	ANALYTICAL CUSTOMER SUPPORT <i>[Signature]</i>	4/3/06		RTIMP Manager	
	W.O.		X	Supply Manager T <i>[Signature]</i>	4/19/06
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 ^b	TAT	Preservative	Container ^a	Minimum Mass/Volume
A	GPC or LSC	Soil	D/E	10 days	Cool 4°C	Glass with Teflon-lined lid	500 g
E	Gamma Spec			PEDD 10 days ^c			
K	GC			Final Gamma 30 days 10 days			

Special Instructions (samplers):

^aSample container types may be changed at the direction of the Field Sampling Lead, as long as the mass/volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):

^bAnalyses will be conducted to ASL D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of the FRL. The preliminary gamma spec analysis can be ran according to ASL B requirements.

^cFor radium-226, a seven-day in-growth is requested. The preliminary gamma spec analysis can be ran according to ASL B requirements.

No field QC will be collected under this V/FCN.

Analytical Data Validation is required, VSL D.

Data Package Requirement – Full ASL D package

Historical Data for Shipping is 11.5 mg/kg total uranium from boring A7-SA4-9.

TAL 20500-PSP-0009-A

(50 estimated soil analysis specified in V/FCN)

Analyte	WAC**	MDL - Soil
Technetium-99	29.1 pCi/g	2.91 pCi/g

**WAC is lower than the FRL therefore it will be used.

TAL 20500-PSP-0009-E

(50 estimated soil analysis specified in V/FCN)

Analyte	FRL	MDL - Soil
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

TAL 20500-PSP-0009-K

(50 estimated soil analysis specified in V/FCN)

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

APPENDIX B
CERTIFICATION SAMPLES, ANALYTICAL RESULTS
AND FINAL STATISTICS TABLES

APPENDIX B STATISTICAL ABBREVIATIONS AND SYMBOLS

The procedure used to determine if the data are to be assumed to be either normally distributed or lognormally distributed is outlined in Section G.2.3 of Appendix G to the SEP. The second paragraph under "Step 3: Perform the Shapiro-Wilk Test to evaluate if the data are normally or lognormally distributed" states that "If the Shapiro-Wilk Test indicates both normal and lognormal distributions fit the data, the distribution with the highest p-value will be used in the Student's t-Test (Section G.2.2.2) to make the certification decision." Therefore, the distribution testing procedure is not a matter of transforming the data and then testing for lognormality only when the normality assumption fails as the comment seems to imply. The method is to test both normality and lognormality and select the distribution that "best" fits the data as defined by the test yielding the higher p-value above a minimum acceptable value. The minimum acceptable p-value for acceptance of a distribution was set at 0.05.

If the maximum result for each analyte is below the FRL, no statistical result needs to be reported. For all statistical evaluations, the maximum value of the two duplicates was used.

Abbreviations:

Est. Mean* - Estimated measure of central tendency (Normal: Mean; LogNormal: Est Mean; Non-Parametric: Median)

W-Statistic Probability - Shapiro-Wilk probability of the "better" fit - either normal or lognormal (note: a value less than 0.05 indicates that neither normality nor lognormality could be accepted, but the highest p-value is still shown). The test is performed on the raw untransformed data (N) and the log-transformed data (LN) to test for lognormality.

t-Test (N) - indicates that the normal distribution is best fit to data with a p-value greater than or equal to 0.05.

t-Test (LN) - indicates that the lognormal distribution is best fit to data with a p-value greater than or equal to 0.05.

Sign Test - the Sign test was used because one of the following situations occurred:

1. there were greater than 50 percent non-detects,
2. between 15 and 50 percent non-detects and data not symmetrically distributed,
3. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data not symmetrically distributed.

Wilcoxon SR - the Wilcoxon Signed Rank procedure was used because of one of the following situations:

1. between 15 and 50 percent non-detects and data symmetrically distributed,
2. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data symmetrically distributed.

Note: Data was considered to be "symmetrically distributed" if the Standardized Skewness had an Absolute Value of less than or equal to 2.00 (i.e., between -2.00 and 2.00).

Number of NDs - number of non-detects.

Certification Unit SWRB-C01

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Aroclor-1254	Aroclor-1260
SWRB-C01-1	0.9 -	0.975 -	0.981 -	0.975 -	11.3 -	2.08 U	19.9 N	17.6 N
SWRB-C01-1-D	0.915 -	0.914 -	0.921 -	0.914 -	8.34 -	2.02 U	19.6 N	14.4 N
SWRB-C01-2	0.946 -	0.913 -	0.925 -	0.913 -	5.41 -	2.08 U	3.8 U	3.8 U
SWRB-C01-4	0.862 -	0.938 -	0.95 -	0.938 -	4.43 -	1.89 U	4 U	4 U
SWRB-C01-5	0.985 -	1.02 -	1.04 -	1.02 -	9.06 -	1.9 U	3.9 U	3.9 U
SWRB-C01-7	0.83 -	0.912 -	0.943 -	0.912 -	4.5 -	1.98 U	3.8 U	3.8 U
SWRB-C01-8	0.96 -	0.936 -	0.971 -	0.936 -	5.16 -	1.94 U	3.9 U	3.9 U
SWRB-C01-10	0.811 -	0.754 -	0.746 -	0.754 -	5.44 -	1.91 U	3.8 U	3.8 U
SWRB-C01-11	0.713 -	0.601 -	0.614 -	0.601 -	3.67 -	1.92 U	3.5 U	3.5 U
SWRB-C01-12	1.27 -	1.17 -	1.17 -	1.17 -	5.38 -	2.01 U	4.1 U	4.1 U
SWRB-C01-13	1.15 -	1.03 -	1.05 -	1.03 -	9.68 -	1.94 U	13.4 N	8.5 J
SWRB-C01-14	0.99 -	0.932 -	0.93 -	0.932 -	5.89 -	2.13 U	11 J	8 J
SWRB-C01-16	0.981 -	0.932 -	0.934 -	0.932 -	9.8 -	2.42 U	11.4 N	8.2 N
Limit	1.7	1.8	1.7	1.5	82	30	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	µg/kg	µg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.27	1.17	1.17	1.17	11.3	2.42 U	19.9	17.6
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	8	8
% Nondetects	0%	0%	0%	0%	0%	100%	67%	67%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C02

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99	Thorium-230	Antimony
SWRB-C02-1	2.03 J	0.909 -	0.939 -	0.909 -	7.35 J	0.0295 U	3.03 U	0.846 U	1.5 J	0.505 U
SWRB-C02-2	1.27 J	1.06 -	1.08 -	1.06 -	7.53 J	0.0236 U	2.45 U	0.816 U	1.62 J	0.426 U
SWRB-C02-4	1.3 J	0.863 -	0.874 -	0.863 -	6.46 J	0.0222 U	2.47 U	0.8 U	1.32 J	0.469 U
SWRB-C02-5	1.23 J	0.975 -	0.976 -	0.975 -	10.7 J	0.0695 U	0.85 U	0.802 U	1.56 J	0.418 U
SWRB-C02-6	1.83 J	1.05 -	1.08 -	1.05 -	7.98 J	0.0658 U	1.36 J	0.831 U	1.67 J	0.432 J
SWRB-C02-7	1.19 J	1.04 -	1.05 -	1.04 -	5.94 J	0.0563 U	1.45 J	0.835 U	1.55 J	0.473 U
SWRB-C02-7-D	1.27 J	1.02 -	1.14 -	1.02 -	6.77 J	0.0564 U	1.11 J	0.812 U	1.41 J	0.431 U
SWRB-C02-9	1.46 J	1.23 -	1.26 -	1.23 -	11.6 J	0.0761 U	1.49 J	0.889 U	1.74 J	0.505 J
SWRB-C02-11	1.46 J	1.22 -	1.23 -	1.22 -	6.74 J	0.0686 U	1.79 -	0.816 U	1.67 J	0.512 J
SWRB-C02-12	0.862 J	0.601 -	0.606 -	0.601 -	3.8 J	0.0395 U	0.949 J	0.981 -	0.973 J	0.439 U
SWRB-C02-14	1.88 J	1.2 -	1.19 -	1.2 -	6.94 J	0.0678 U	2.17 -	0.949 J	1.88 J	0.49 J
SWRB-C02-15	1.12 J	0.958 -	0.944 -	0.958 -	7.32 J	0.0933 U	1.36 J	0.818 U	1.38 J	0.434 U
SWRB-C02-16	1.36 J	0.642 -	0.663 -	0.642 -	1.56 U	0.0624 U	1.1 J	1.12 -	1.46 J	0.507 U
Limit	1.7	1.8	1.7	1.5	82	1.4	38	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%	90%
Max. Result	2.03	1.23	1.26	1.23	11.6	0.0933 U	2.17	1.12	1.88	0.512
Max. > Limit	Yes	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	57.6% (LN)	--	--	--	--	--	--	--	--	--
Test Procedure	Lognormal	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	12	4	9	0	8
% Nondetects	0%	0%	0%	0%	8%	100%	33%	75%	0%	67%
Est. Mean*	1.43	--	--	--	--	--	--	--	--	--
UCL	1.63	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--
Pass / Fail	pass	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	10 Pass	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Certification Unit SWRB-C02

SampleID	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Molybdenum	Selenium	Silver	Benzo(a)anthracene
SWRB-C02-1	6.77 -	60.7 J	0.511 -	0.173 J	13.6 J	12.3 J	0.0118 J	1.5 J	2.17 U	0.16 U	42.1 U
SWRB-C02-2	7.52 -	68.5 J	0.464 -	0.175 J	13.8 J	11.8 J	0.0189 J	1.67 J	1.83 U	0.135 U	35.5 U
SWRB-C02-4	7.84 -	87.7 J	0.546 -	0.272 J	16.7 J	12.2 J	0.0131 J	1.8 J	2.01 U	0.156 J	38.7 U
SWRB-C02-5	7.17 -	71 J	0.534 -	0.199 J	15.1 J	12.8 J	0.0145 J	1.84 J	1.8 U	0.133 U	35.2 U
SWRB-C02-6	6.93 -	81.2 J	0.627 -	0.214 J	17.1 J	15.6 J	0.0183 J	1.33 J	1.8 U	0.133 U	39.9 U
SWRB-C02-7	7.18 -	70.6 J	0.521 -	0.179 J	13.8 J	12.2 J	0.0135 J	1.5 J	2.03 U	0.15 U	40.1 U
SWRB-C02-7-D	7.64 -	76.8 J	0.531 -	0.172 J	15.8 J	13.7 J	0.0232 J	2 J	1.85 U	5.58 J	37.9 U
SWRB-C02-9	12.9 -	110 J	0.743 -	0.272 J	18.9 J	18.6 J	0.0252 J	2.11 J	1.98 U	0.146 U	41.3 U
SWRB-C02-11	8.16 -	80.8 J	0.625 -	0.182 J	20.6 J	15.8 J	0.0145 J	1.75 J	2.1 U	0.155 U	41.1 U
SWRB-C02-12	6.42 -	52.7 J	0.3 -	0.163 J	10.1 J	7.94 J	0.0047 J	1.65 J	1.89 U	0.139 U	36.9 U
SWRB-C02-14	8.55 -	82.7 J	0.864 -	0.192 J	20 J	15.6 J	0.0166 J	1.47 J	2.05 U	0.151 U	41.7 U
SWRB-C02-15	5.21 -	53.7 J	0.473 -	0.211 J	11.5 J	11 J	0.0124 J	1.4 J	1.86 U	0.138 U	40.6 U
SWRB-C02-16	5.72 -	53 J	0.324 -	0.161 J	10.8 J	9.4 J	0.0112 J	1.16 J	2.18 U	0.161 U	43.5 U
Limit	12	68000	1.5	82	300	400	7.5	2900	5400	29000	20000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	12.9	110	0.864	0.272	20.6	18.6	0.0252	2.11	2.18 U	5.58	43.5 U
Max. > Limit	Yes	No	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	31.3% (LN)	--	--	--	--	--	--	--	--	--	--
Test Procedure	Lognormal	--	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	0	0	0	12	10	12
% Nondetects	0%	0%	0%	0%	0%	0%	0%	0%	100%	83%	100%
Est. Mean*	7.57	--	--	--	--	--	--	--	--	--	--
UCL	8.33	--	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--	--
Pass / Fail	pass	--	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	2 Pass	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Certification Unit SWRB-C02

SampleID	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene
SWRB-C02-1	42.1 U	42.1 U	42.1 U	42.1 U	42.1 U	42.1 U	42.1 U
SWRB-C02-2	35.5 U	35.5 U	35.5 U	35.5 U	35.5 U	35.5 U	35.5 U
SWRB-C02-4	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U
SWRB-C02-5	35.2 U	35.2 U	35.2 U	35.2 U	35.2 U	35.2 U	35.2 U
SWRB-C02-6	39.9 U	39.9 U	39.9 U	39.9 U	39.9 U	39.9 U	39.9 U
SWRB-C02-7	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U
SWRB-C02-7-D	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U
SWRB-C02-9	41.3 U	41.3 U	41.3 U	41.3 U	41.3 U	41.3 U	41.3 U
SWRB-C02-11	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U
SWRB-C02-12	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U
SWRB-C02-14	41.7 U	41.7 U	41.7 U	41.7 U	41.7 U	41.7 U	41.7 U
SWRB-C02-15	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U
SWRB-C02-16	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U
Limit	2000	20000	1000	200000	2000000	2000	10000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U	43.5 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C02

SampleID	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260	Dieldrin	1,1,1-Trichloroethane	1,1-Dichloroethene
SWRB-C02-1	42.1 U	42.1 U	42.1 U	4.9 J	4.2 U	1.7 U	1 U	1 U
SWRB-C02-2	35.5 U	35.5 U	35.5 U	5.6 J	3.6 U	1.4 U	1.3 U	1.3 U
SWRB-C02-4	38.7 U	38.7 U	38.7 U	3.9 U	3.9 U	1.6 U	1 U	1 U
SWRB-C02-5	35.2 U	35.2 U	35.2 U	3.5 U	3.5 U	1.4 U	1 U	1 U
SWRB-C02-6	39.9 U	39.9 U	39.9 U	4 U	4 U	1.6 U	1 U	1 U
SWRB-C02-7	40.1 U	40.1 U	40.1 U	4 U	4 U	1.6 U	1 U	1 U
SWRB-C02-7-D	37.9 U	37.9 U	37.9 U	3.8 U	3.8 U	1.5 U	0.8 U	0.8 U
SWRB-C02-9	41.3 U	41.3 U	41.3 U	4.1 U	4.1 U	1.7 U	1.1 U	1.1 U
SWRB-C02-11	41.1 U	41.1 U	41.1 U	4.1 U	4.1 U	1.6 U	1.2 U	1.2 U
SWRB-C02-12	36.9 U	36.9 U	36.9 U	3.7 U	3.7 U	1.5 U	1.1 U	1.1 U
SWRB-C02-14	41.7 U	41.7 U	41.7 U	29.9 -	15 -	1.7 U	1.1 U	1.1 U
SWRB-C02-15	40.6 U	40.6 U	40.6 U	4.1 U	4.1 U	1.6 U	0.8 U	0.8 U
SWRB-C02-16	43.5 U	43.5 U	43.5 U	4.4 U	4.4 U	1.7 U	1 U	1 U
Limit	20000	5000	10000	130	130	15	4300	410
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	43.5 U	43.5 U	43.5 U	29.9	15	1.7 U	1.3 U	1.3 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	12	12	12	9	11	12	12	12
% Nondetects	100%	100%	100%	75%	92%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C02

SampleID	1,2-Dichloroethane	4-Methyl-2-pentanone	Acetone	Benzene	Carbon Tetrachloride	Ethylbenzene	Methylene chloride
SWRB-C02-1	1 U	5 U	9.9 U	1 U	1 U	1 U	5 U
SWRB-C02-2	1.3 U	6.6 U	9.4 U	1.3 U	1.3 U	1.3 U	6.6 U
SWRB-C02-4	1 U	4.9 U	6.3 U	1 U	1 U	1 U	4.9 U
SWRB-C02-5	1 U	5 U	5 U	1 U	1 U	1 U	5 U
SWRB-C02-6	1 U	5 U	13.8 U	1 U	1 U	1 U	5 U
SWRB-C02-7	1 U	5.2 U	5.2 U	1 U	1 U	1 U	5.2 U
SWRB-C02-7-D	0.8 U	4.1 U	4.1 U	0.8 U	0.8 U	0.8 U	4.1 U
SWRB-C02-9	1.1 U	5.3 U	19.2 U	1.1 U	1.1 U	1.1 U	5.3 U
SWRB-C02-11	1.2 U	6.2 U	8.4 U	1.2 U	1.2 U	1.2 U	6.2 U
SWRB-C02-12	1.1 U	5.3 U	5.3 U	1.1 U	1.1 U	1.1 U	5.3 U
SWRB-C02-14	1.1 U	5.4 U	5.4 U	1.1 U	1.1 U	1.1 U	5.4 U
SWRB-C02-15	0.8 U	4.3 U	10 U	0.8 U	0.8 U	0.8 U	4.3 U
SWRB-C02-16	1 U	4.9 U	4.9 U	1 U	1 U	1 U	4.9 U
Limit	160	2500000	43000000	850000	2100	5100000	37000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.3 U	6.6 U	19.2 U	1.3 U	1.3 U	1.3 U	6.6 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C02

SampleID	Tetrachloroethene	Toluene	Trichloroethene	Xylenes, Total
SWRB-C02-1	1 U	1 U	1 U	1 U
SWRB-C02-2	1.3 U	3.8 U	1.3 U	1.4 U
SWRB-C02-4	1 U	1 U	1 U	1 U
SWRB-C02-5	1 U	1 U	1 U	1 U
SWRB-C02-6	1 U	1 U	1 U	1 U
SWRB-C02-7	1 U	1 U	1 U	1 U
SWRB-C02-7-D	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C02-9	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C02-11	1.2 U	1.2 U	1.2 U	1.2 U
SWRB-C02-12	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C02-14	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C02-15	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C02-16	1 U	1 U	1 U	1 U
Limit	3600	10000000	25000	92000000
Units	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%
Max. Result	1.3 U	3.8 U	1.3 U	1.4 U
Max. > Limit	No	No	No	No
W-statistic Prob. #	--	--	--	--
Test Procedure	--	--	--	--
Sample Size	12	12	12	12
Nondetects	12	12	12	12
% Nondetects	100%	100%	100%	100%
Est. Mean*	--	--	--	--
UCL	--	--	--	--
Prob. > Limit	--	--	--	--
Pass / Fail	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--

Certification Unit SWRB-C03

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99
SWRB-C03-1	0.984 J	1.05 -	1.06 -	1.05 -	4.77 J	0.0326 U	0.967 J	1.7 U
SWRB-C03-3	1.01 J	0.945 -	0.967 -	0.945 -	5.86 J	0.0206 U	2.17 U	1.6 U
SWRB-C03-4	1.39 J	1.06 -	1.04 -	1.06 -	7.18 J	0.0247 U	3.69 U	1.6 U
SWRB-C03-5	1.17 J	1.13 -	1.19 -	1.13 -	8.66 J	0.0386 J	2.59 U	1.72 U
SWRB-C03-6	1.21 J	0.717 -	0.73 -	0.717 -	4.37 J	0.0649 U	1.22 J	1.57 U
SWRB-C03-7	1.07 J	1.02 -	1.09 -	1.02 -	5.39 J	0.0443 J	3.43 U	1.64 U
SWRB-C03-10	1.45 J	1.05 -	1.05 -	1.05 -	6.44 J	0.0714 U	1.37 J	1.74 U
SWRB-C03-11	1.1 J	1.07 -	1.1 -	1.07 -	8.29 J	0.0233 U	2.52 U	1.75 U
SWRB-C03-12	1.1 J	1.03 -	1.04 -	1.03 -	4.67 J	0.0237 U	2.54 U	1.64 U
SWRB-C03-13	1.27 J	1.1 -	1.13 -	1.1 -	5.73 J	0.0631 U	1.6 -	1.62 U
SWRB-C03-14	1.09 J	0.941 -	0.952 -	0.941 -	6.5 J	0.0208 U	2.07 J	1.74 U
SWRB-C03-15	1.14 J	1.1 -	1.23 -	1.1 -	6.57 J	0.0189 U	3.51 U	1.64 U
SWRB-C03-15-D	1.01 J	1.11 -	1.09 -	1.11 -	7.03 J	0.0636 U	1.19 J	1.71 U
Limit	1.7	1.8	1.7	1.5	82	1.4	38	30
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.45	1.13	1.23	1.13	8.66	0.0443	2.07	1.75 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	10	6	12
% Nondetects	0%	0%	0%	0%	0%	83%	50%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C03

SampleID	Thorium-230	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Molybdenum	Selenium
SWRB-C03-1	0.722 J	0.56 U	6.3 J	94.9 J	0.67 -	0.2 J	19.7 J	11.9 J	0.017 J	1.7 J	0.65 U
SWRB-C03-3	1.43 -	2.16 UJ	6.7 J	113 J	0.79 -	0.2 J	25.9 J	11.2 J	0.017 J	1.5 J	3.24 U
SWRB-C03-4	1.2 -	2.25 UJ	12.3 J	109 J	1.1 -	0.2 J	26.2 J	15.8 J	0.024 J	1.4 J	3.37 U
SWRB-C03-5	1.7 -	0.475 UJ	6.3 J	102 J	0.96 -	0.23 J	23.6 J	17.4 J	0.022 J	1.3 J	0.712 U
SWRB-C03-6	1.15 J	0.7 U	4.4 J	62.6 J	0.4 -	0.15 J	14.8 J	9.4 J	0.011 J	1.1 J	0.647 U
SWRB-C03-7	1.49 -	2.42 UJ	8.8 J	107 J	0.87 -	0.22 J	24.7 J	14.9 J	0.055 J	1.5 J	3.63 U
SWRB-C03-10	1.61 -	2.22 UJ	8.1 J	107 J	0.94 -	0.24 J	27.3 J	17.2 J	0.029 J	1.4 J	3.33 U
SWRB-C03-11	1.74 -	2.11 UJ	6.5 J	102 J	0.89 -	0.19 J	25.9 J	19.7 J	0.024 J	1.2 J	3.16 U
SWRB-C03-12	1.69 -	2.21 UJ	2 J	92.3 J	0.62 -	0.15 J	27.8 J	14.9 J	0.0051 J	0.35 J	3.32 U
SWRB-C03-13	1.85 -	2.54 UJ	7.1 J	102 J	0.79 -	0.25 J	24.7 J	15.3 J	0.023 J	1.3 J	3.81 U
SWRB-C03-14	1.74 -	1 U	6.3 J	99 J	0.65 -	0.19 J	22.7 J	15.7 J	0.019 J	1.3 J	0.729 U
SWRB-C03-15	1.52 -	2.32 UJ	6.8 J	103 J	0.84 -	0.2 J	24.2 J	14.4 J	0.02 J	1.5 J	3.47 U
SWRB-C03-15-D	1.48 -	2.38 UJ	6 J	104 J	0.7 -	0.2 J	23 J	14.8 J	0.018 J	1.4 J	3.57 U
Limit	280	96	12	68000	1.5	82	300	400	7.5	2900	5400
Units	pCi/g	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.85	2.54 UJ	12.3	113	1.1	0.25	27.8	19.7	0.055	1.7	3.81 U
Max. > Limit	No	No	Yes	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	23.7% (N)	--	--	--	--	--	--	--	--
Test Procedure	--	--	Normal	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12	12
Nondetects	0	12	0	0	0	0	0	0	0	0	12
% Nondetects	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Est. Mean*	--	--	6.80	--	--	--	--	--	--	--	--
UCL	--	--	7.76	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	pass	--	--	--	--	--	--	--	--

<i>a posteriori</i> Sample	--	--	2	--	--	--	--	--	--	--	--
Size calculation	--	--	Pass	--	--	--	--	--	--	--	--

Certification Unit SWRB-C03

SampleID	Silver	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene
SWRB-C03-1	0.071 J	37.1 U	37.1 U	37.1 U	37.1 U	37.1 U
SWRB-C03-3	0.073 J	36.6 U	36.6 U	36.6 U	36.6 U	36.6 U
SWRB-C03-4	0.086 J	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U
SWRB-C03-5	0.083 J	40.7 U	40.7 U	40.7 U	40.7 U	40.7 U
SWRB-C03-6	0.048 J	37.4 U	37.4 U	37.4 U	37.4 U	37.4 U
SWRB-C03-7	0.078 J	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U
SWRB-C03-10	0.073 J	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U
SWRB-C03-11	0.07 J	36.8 U	36.8 U	36.8 U	36.8 U	36.8 U
SWRB-C03-12	0.0436 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U
SWRB-C03-13	0.081 J	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U
SWRB-C03-14	0.066 J	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U
SWRB-C03-15	0.072 J	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U
SWRB-C03-15-D	0.068 J	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U
Limit	29000	20000	2000	20000	1000	200000
Units	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	0.086	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U
Max. > Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	1	12	12	12	12	12
% Nondetects	8%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--

Certification Unit SWRB-C03

SampleID	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260
SWRB-C03-1	37.1 U	37.1 U	37.1 U	37.1 U	37.1 U	37.1 U	3.7 U	3.7 U
SWRB-C03-3	36.6 U	36.6 U	36.6 U	36.6 U	36.6 U	36.6 U	3.7 U	3.7 U
SWRB-C03-4	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U	3.9 U	3.9 U
SWRB-C03-5	40.7 U	40.7 U	40.7 U	40.7 U	40.7 U	40.7 U	4.1 U	4.1 U
SWRB-C03-6	37.4 U	37.4 U	37.4 U	37.4 U	37.4 U	37.4 U	3.7 U	3.7 U
SWRB-C03-7	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U	4 U	4 U
SWRB-C03-10	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	3.9 U	3.9 U
SWRB-C03-11	36.8 U	36.8 U	36.8 U	36.8 U	36.8 U	36.8 U	3.7 U	3.7 U
SWRB-C03-12	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	3.7 U	3.7 U
SWRB-C03-13	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U	4.2 U	4.2 U
SWRB-C03-14	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U	41.1 U	4.1 U	4.1 U
SWRB-C03-15	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U	40.3 U	4 U	4 U
SWRB-C03-15-D	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U	4 U	4 U
Limit	2000000	2000	10000	20000	5000	10000	130	130
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U	42.4 U	4.2 U	4.2 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C03

SampleID	Dieldrin	1,1,1-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-pentanone	Acetone	Benzene
SWRB-C03-1	1.5 U	1 U	1 U	1 U	5.1 U	5.1 U	1 U
SWRB-C03-3	1.5 U	1.2 U	1.2 U	1.2 U	6 U	6 U	1.2 U
SWRB-C03-4	1.6 U	0.9 U	0.9 U	0.9 U	4.6 U	6.6 U	0.9 U
SWRB-C03-5	1.6 U	0.9 U	0.9 U	0.9 U	4.7 U	16.5 U	0.9 U
SWRB-C03-6	1.5 U	0.9 U	0.9 U	0.9 U	4.4 U	4.4 U	0.9 U
SWRB-C03-7	1.6 U	1 U	1 U	1 U	5.2 U	8.2 U	1 U
SWRB-C03-10	1.6 U	1.1 U	1.1 U	1.1 U	5.7 U	5.7 U	1.1 U
SWRB-C03-11	1.5 U	1.1 U	1.1 U	1.1 U	5.3 U	5.3 U	1.1 U
SWRB-C03-12	1.5 U	1 U	1 U	1 U	5.1 U	5.1 U	1 U
SWRB-C03-13	1.7 U	1.1 U	1.1 U	1.1 U	5.7 U	13.6 U	1.1 U
SWRB-C03-14	1.6 U	1.1 U	1.1 U	1.1 U	5.3 U	5.3 U	1.1 U
SWRB-C03-15	1.6 U	1.2 U	1.2 U	1.2 U	5.9 U	18.3 U	1.2 U
SWRB-C03-15-D	1.6 U	1.2 U	1.2 U	1.2 U	6 U	24.8 U	1.2 U
Limit	15	4300	410	160	2500000	4300000	850000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.7 U	1.2 U	1.2 U	1.2 U	6 U	24.8 U	1.2 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C03

SampleID	Carbon Tetrachloride	Ethylbenzene	Methylene chloride	Tetrachloroethene	Toluene	Trichloroethene	Xylenes, Total
SWRB-C03-1	1 U	1 U	5.1 U	1 U	6.3 J	1 U	1 U
SWRB-C03-3	1.2 U	1.2 U	6 U	1.2 U	2.6 J	1.2 U	1.9 J
SWRB-C03-4	0.9 U	0.9 U	4.6 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C03-5	0.9 U	0.9 U	4.7 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C03-6	0.9 U	0.9 U	4.4 U	0.9 U	1 J	0.9 U	0.9 U
SWRB-C03-7	1 U	1 U	5.2 U	1 U	1 U	1 U	1 U
SWRB-C03-10	1.1 U	1.1 U	5.7 U	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C03-11	1.1 U	1.1 U	5.3 U	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C03-12	1 U	1 U	5.1 U	1 U	1 U	1 U	1 U
SWRB-C03-13	1.1 U	1.1 U	5.7 U	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C03-14	1.1 U	1.1 U	5.3 U	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C03-15	1.2 U	1.2 U	5.9 U	1.2 U	1.2 U	1.2 U	1.2 U
SWRB-C03-15-D	1.2 U	1.2 U	6 U	1.2 U	1.2 U	1.2 U	1.2 U
Limit	2100	5100000	37000	3600	100000000	25000	920000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.2 U	1.2 U	6 U	1.2 U	6.3	1.2 U	1.9
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	9	12	11
% Nondetects	100%	100%	100%	100%	75%	100%	92%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C04

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Aroclor-1254	Aroclor-1260
SWRB-C04-1	0.636 J	0.346 -	0.34 -	0.346 -	2.11 U	1.81 -	3.5 U	3.5 U
SWRB-C04-3	1.38 J	0.986 -	0.99 -	0.986 -	96.3 -	3.91 -	37.5 J	27.2 -
SWRB-C04-4	1.58 J	1.06 -	1.08 -	1.06 -	29.1 -	0.751 U	67.2 J	32.2 -
SWRB-C04-4-D	1.36 J	1.06 -	1.04 -	1.06 -	26.7 -	0.755 U	100 J	42.7 -
SWRB-C04-5	0.839 J	0.64 -	0.669 -	0.64 -	1.92 U	0.84 U	3.7 U	3.7 U
SWRB-C04-7	0.899 J	1.03 -	0.99 -	1.03 -	5.36 J	0.775 U	3.9 U	3.9 U
SWRB-C04-8	1.02 J	0.897 -	0.851 -	0.897 -	8.18 -	0.903 J	3.9 U	3.9 U
SWRB-C04-9	1.14 J	1 -	1.03 -	1 -	6.52 -	0.753 U	3.9 U	3.9 U
SWRB-C04-10	0.986 J	0.88 -	0.86 -	0.88 -	15.6 -	1.08 -	13.1 N	9.1 J
SWRB-C04-12	1.16 J	0.959 -	1.01 -	0.959 -	6.19 -	0.748 U	11 J	5.4 J
SWRB-C04-13	1.09 J	1.03 -	0.982 -	1.03 -	7.55 -	0.748 U	7.5 J	3.9 U
SWRB-C04-14	0.988 J	0.8 -	0.797 -	0.8 -	4.92 J	0.741 U	7.6 J	3.9 U
SWRB-C04-15	1.22 J	0.953 -	0.939 -	0.953 -	8.56 -	0.771 U	3.7 U	3.7 U
Limit	1.7	1.8	1.7	1.5	82	30	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	µg/kg	µg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.58	1.06	1.08	1.06	96.3	3.91	100	42.7
Max. > Limit	No	No	No	No	Yes	No	No	No
W-statistic Prob. #	--	--	--	--	49.9% (LN)	--	--	--
Test Procedure	--	--	--	--	Lognormal	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	8	6	8
% Nondetects	0%	0%	0%	0%	8%	67%	50%	67%
Est. Mean*	--	--	--	--	15.46	--	--	--
UCL	--	--	--	--	48.50	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	pass	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	3 Pass	--	--	--

Certification Unit SWRB-C05

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Aroclor-1254	Aroclor-1260
SWRB-C05-1	0.669 J	0.578 -	0.617 -	0.578 -	2.8 U	0.815 U	3.6 U	3.6 U
SWRB-C05-2	0.829 J	0.595 -	0.605 -	0.595 -	3.01 U	0.768 U	9.3 J	5.8 J
SWRB-C05-4	0.774 J	0.599 -	0.607 -	0.599 -	4.57 J	0.795 U	8.2 J	4.5 J
SWRB-C05-5	1.12 J	1.1 -	1.14 -	1.1 -	6.95 -	0.75 U	6.9 J	3.9 U
SWRB-C05-5-D	1.03 J	1.01 -	1.06 -	1.01 -	6.19 -	0.787 U	3.9 U	3.9 U
SWRB-C05-7	0.813 J	0.522 -	0.545 -	0.522 -	6.23 J	0.789 U	21 -	8.4 J
SWRB-C05-8	1.04 J	1.22 -	1.22 -	1.22 -	8.48 -	0.756 U	180 -	75 -
SWRB-C05-9	0.955 J	0.757 -	0.734 -	0.757 -	7.01 -	0.756 U	127 -	52 -
SWRB-C05-11	0.703 J	0.514 -	0.551 -	0.514 -	4.89 J	0.77 U	49.6 -	26.7 -
SWRB-C05-12	0.776 J	0.637 -	0.603 -	0.637 -	3.01 J	0.758 U	8.2 J	4.9 J
SWRB-C05-15	0.92 J	0.868 -	0.877 -	0.868 -	3.51 U	0.773 U	9.4 J	5.6 J
SWRB-C05-16	1.16 J	0.934 -	1.02 -	0.934 -	8.2 J	0.853 U	6.1 J	4.1 J
SWRB-C05-17^1	1.40595 -	0.847 -	0.859 -	0.847 -	8.05 -	--	--	--
SWRB-C05-17^2	1.18482 -	1.15 -	1.22 -	1.15 -	6.37 -	--	--	--
Limit	1.7	1.8	1.7	1.5	82	30	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	µg/kg	µg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.40595	1.22	1.22	1.22	15.2	0.853 U	180	75
Max. > Limit	No	No	No	No	No	No	Yes	No
W-statistic Prob. #	--	--	--	--	--	--	25.3% (LN)	--
Test Procedure	--	--	--	--	--	--	Lognormal	--
Sample Size	13	13	13	13	13	11	11	11
Nondetects	0	0	0	0	3	11	1	2
% Nondetects	0%	0%	0%	0%	23%	100%	9%	18%
Est. Mean*	--	--	--	--	--	--	40.23	--
UCL	--	--	--	--	--	--	129.20	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	pass	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	3 Pass	--

Certification Unit SWRB-C06

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99	Thorium-230	Antimony
SWRB-C06-2	1.56 -	1.22 -	1.21 -	1.22 -	8.64 -	0.0759 U	1.84 J	0.788 U	1.71 J	0.464 U
SWRB-C06-3	1.09 -	0.811 -	0.804 -	0.811 -	6.35 -	0.0503 U	1.19 J	0.792 U	1.15 J	0.435 U
SWRB-C06-4	1.46 -	1.15 -	1.13 -	1.15 -	7.41 -	0.0798 U	1.15 J	0.791 U	1.36 J	0.54 U
SWRB-C06-6	1.38 -	1.26 -	1.27 -	1.26 -	6.87 -	0.068 U	1.88 J	0.787 U	1.59 J	0.417 U
SWRB-C06-7	1.35 -	1.17 -	1.21 -	1.17 -	5.84 -	0.0623 U	1.76 J	0.825 U	1.73 J	0.492 U
SWRB-C06-8	1.22 -	0.883 -	0.904 -	0.883 -	4.7 -	0.0668 U	1.35 J	0.842 U	1.32 J	0.385 U
SWRB-C06-10	1.03 -	0.887 -	0.894 -	0.887 -	3.46 -	0.0528 U	1.12 J	0.787 U	1.45 J	0.486 U
SWRB-C06-10-D	1.12 -	0.954 -	0.972 -	0.954 -	4.67 -	0.0236 U	2.67 U	0.778 U	1.33 J	0.499 U
SWRB-C06-11	1.35 -	1.13 -	1.17 -	1.13 -	6.02 -	0.0493 U	1.29 J	0.778 U	1.88 J	0.443 U
SWRB-C06-12	1.25 -	0.955 -	1.1 -	0.955 -	6.42 -	0.0183 U	3.11 U	0.778 U	1.34 J	0.443 U
SWRB-C06-13	1.22 -	1.14 -	1.17 -	1.14 -	6.87 -	0.0266 U	4.51 J	0.883 U	1.91 J	0.452 U
SWRB-C06-15	1.31 -	1.09 -	1.09 -	1.09 -	5.83 -	0.0226 U	1.65 U	0.793 U	1.47 J	0.435 U
SWRB-C06-16	1.25 -	1.15 -	1.15 -	1.15 -	6.63 -	0.0773 U	1.32 J	0.811 U	1.39 J	0.407 U
Limit	1.7	1.8	1.7	1.5	82	1.4	38	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%	90%
Max. Result	1.56	1.26	1.27	1.26	8.64	0.0798 U	4.51	0.883 U	1.91	0.54 U
Max. > Limit	No	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	2	12	0	12
% Nondetects	0%	0%	0%	0%	0%	100%	17%	100%	0%	100%
Est. Mean*	--	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C06

SampleID	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Molybdenum	Selenium	Silver	Benzo(a)anthracene	Benzo(a)pyrene
SWRB-C06-2	6.97 -	103 J	0.524 -	0.213 J	13.8 J	13 J	0.0106 J	2.16 J	1.99 U	0.147 U	36.7 U	36.7 U
SWRB-C06-3	5.33 -	52.1 J	0.34 -	0.178 J	10.2 J	9.9 J	0.0116 J	1.83 J	1.87 U	0.138 U	36.7 U	36.7 U
SWRB-C06-4	8.56 -	85.6 J	0.596 -	0.202 J	14.3 J	15.4 J	0.02 J	1.84 J	2.32 U	0.214 J	46.5 U	46.5 U
SWRB-C06-6	7.05 -	75.1 J	0.498 -	0.304 J	13.4 J	12.2 J	0.0101 J	1.4 J	1.79 U	0.132 U	38.3 U	38.3 U
SWRB-C06-7	5.02 -	61.8 J	0.404 -	0.191 J	9.54 J	11.8 J	0.0135 J	1.48 J	2.11 U	0.156 U	40.1 U	40.1 U
SWRB-C06-8	5.26 -	156 J	0.658 -	0.174 J	19.1 J	16.7 J	0.0159 J	0.906 J	1.65 U	0.122 U	38.9 U	38.9 U
SWRB-C06-10	5.57 -	61.5 J	0.458 -	0.192 J	17.8 J	13 J	0.0104 J	1.92 J	2.09 U	0.154 U	38.9 U	38.9 U
SWRB-C06-10-D	5.33 -	55.7 J	0.385 -	0.206 J	10.3 J	10.4 J	0.0056 J	1.98 J	2.14 U	0.158 U	39.5 U	39.5 U
SWRB-C06-11	6.46 -	76.4 J	0.44 -	0.212 J	13.1 J	13.1 J	0.0172 J	1.68 J	1.9 U	0.141 U	37.5 U	37.5 U
SWRB-C06-12	7.72 -	57.5 J	0.352 -	0.169 J	11.3 J	9.71 J	0.0099 J	1.88 J	1.9 U	0.141 U	38.8 U	38.8 U
SWRB-C06-13	7.19 -	75.7 J	0.489 -	0.183 J	12 J	13.7 J	0.0134 J	1.74 J	1.94 U	0.144 U	39.4 U	39.4 U
SWRB-C06-15	5.96 -	73.9 J	0.523 -	0.169 J	13.6 J	13.2 J	0.0223 J	1.38 J	1.87 U	0.138 U	40.1 U	40.1 U
SWRB-C06-16	8.99 -	85.7 J	0.554 -	0.367 J	13.6 J	13.8 J	0.0132 J	1.63 J	1.75 U	0.129 U	39.2 U	39.2 U
Limit	12	68000	1.5	82	300	400	7.5	2900	5400	29000	20000	2000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	8.99	156	0.658	0.367	19.1	16.7	0.0223	2.16	2.32 U	0.214	46.5 U	46.5 U
Max. > Limit	No	No	No	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	0	0	0	12	11	12	12
% Nondetects	0%	0%	0%	0%	0%	0%	0%	0%	100%	92%	100%	100%
Est. Mean*	--	--	--	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C06

SampleID	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene
SWRB-C06-2	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U
SWRB-C06-3	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U
SWRB-C06-4	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U
SWRB-C06-6	38.3 U	38.3 U	38.3 U	38.3 U	38.3 U	38.3 U	38.3 U
SWRB-C06-7	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U
SWRB-C06-8	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U
SWRB-C06-10	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U
SWRB-C06-10-D	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U
SWRB-C06-11	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U
SWRB-C06-12	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U
SWRB-C06-13	39.4 U	39.4 U	39.4 U	39.4 U	39.4 U	39.4 U	39.4 U
SWRB-C06-15	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U	40.1 U
SWRB-C06-16	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U	39.2 U
Limit	20000	1000	200000	2000000	2000	10000	20000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U	46.5 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C06

SampleID	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260	Dieldrin	1,1,1-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane
SWRB-C06-2	36.7 U	36.7 U	3.7 U	3.7 U	1.5 U	0.9 U	0.9 U	0.9 U
SWRB-C06-3	36.7 U	36.7 U	3.7 U	3.7 U	1.5 U	1 U	1 U	1 U
SWRB-C06-4	46.5 U	46.5 U	5.1 J	4.7 U	1.9 U	1.4 U	1.4 U	1.4 U
SWRB-C06-6	38.3 U	38.3 U	3.8 U	3.8 U	1.5 U	0.9 U	0.9 U	0.9 U
SWRB-C06-7	40.1 U	40.1 U	4 U	4 U	1.6 U	1.1 U	1.1 U	1.1 U
SWRB-C06-8	38.9 U	38.9 U	3.9 U	3.9 U	1.6 U	1.1 U	1.1 U	1.1 U
SWRB-C06-10	38.9 U	38.9 U	3.9 U	3.9 U	1.6 U	1 U	1 U	1 U
SWRB-C06-10-D	39.5 U	39.5 U	4 U	4 U	1.6 U	1.1 U	1.1 U	1.1 U
SWRB-C06-11	37.5 U	37.5 U	3.8 U	3.8 U	1.5 U	1.1 U	1.1 U	1.1 U
SWRB-C06-12	38.8 U	38.8 U	3.9 U	3.9 U	1.6 U	1.1 U	1.1 U	1.1 U
SWRB-C06-13	39.4 U	39.4 U	3.9 U	3.9 U	1.6 U	1 U	1 U	1 U
SWRB-C06-15	40.1 U	40.1 U	10.9 J	4 U	1.6 U	1.1 U	1.1 U	1.1 U
SWRB-C06-16	39.2 U	39.2 U	3.9 U	3.9 U	1.6 U	0.9 U	0.9 U	0.9 U
Limit	5000	10000	130	130	15	4300	410	160
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	46.5 U	46.5 U	10.9	4.7 U	1.9 U	1.4 U	1.4 U	1.4 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	12	12	10	12	12	12	12	12
% Nondetects	100%	100%	83%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C06

SampleID	4-Methyl-2-pentanone	Acetone	Benzene	Carbon Tetrachloride	Ethylbenzene	Methylene chloride	Tetrachloroethene	Toluene
SWRB-C06-2	4.6 U	4.6 U	0.9 U	0.9 U	0.9 U	4.6 U	0.9 U	1 J
SWRB-C06-3	4.9 U	4.9 U	1 U	1 U	1 U	4.9 U	1 U	2.3 J
SWRB-C06-4	6.9 U	6.9 U	1.4 U	1.4 U	1.4 U	6.9 U	1.4 U	1.4 U
SWRB-C06-6	4.5 U	9.7 U	0.9 U	0.9 U	0.9 U	4.5 U	0.9 U	0.9 U
SWRB-C06-7	5.5 U	8.3 U	1.1 U	1.1 U	1.1 U	5.5 U	1.1 U	1.1 U
SWRB-C06-8	5.3 U	10.8 U	1.1 U	1.1 U	1.1 U	5.3 U	1.1 U	3.3 J
SWRB-C06-10	5.1 U	5.4 U	1 U	1 U	1 U	5.1 U	1 U	1.1 J
SWRB-C06-10-D	5.3 U	9.7 U	1.1 U	1.1 U	1.1 U	5.3 U	1.1 U	1.1 U
SWRB-C06-11	5.4 U	5.4 U	1.1 U	1.1 U	1.1 U	5.4 U	1.1 U	2 J
SWRB-C06-12	5.4 U	5.4 U	1.1 U	1.1 U	1.1 U	5.4 U	1.1 U	1.1 U
SWRB-C06-13	4.8 U	12.7 U	1 U	1 U	1 U	4.8 U	1 U	1 U
SWRB-C06-15	5.3 U	5.3 U	1.1 U	1.1 U	1.1 U	5.3 U	1.1 U	1.1 U
SWRB-C06-16	4.6 U	4.6 U	0.9 U	0.9 U	0.9 U	4.6 U	0.9 U	0.9 U
Limit	2500000	43000000	850000	2100	5100000	37000	3600	100000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	6.9 U	12.7 U	1.4 U	1.4 U	1.4 U	6.9 U	1.4 U	3.3
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12	7
% Nondetects	100%	100%	100%	100%	100%	100%	100%	58%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C06

SampleID	Trichloroethene	Xylenes, Total
SWRB-C06-2	0.9 U	0.9 U
SWRB-C06-3	1 U	1.6 J
SWRB-C06-4	1.4 U	1.4 U
SWRB-C06-6	0.9 U	0.9 U
SWRB-C06-7	1.1 U	1.1 U
SWRB-C06-8	1.1 U	1.9 J
SWRB-C06-10	1 U	1 U
SWRB-C06-10-D	1.1 U	1.1 U
SWRB-C06-11	1.1 U	1.4 J
SWRB-C06-12	1.1 U	1.1 U
SWRB-C06-13	1 U	1 U
SWRB-C06-15	1.1 U	1.1 U
SWRB-C06-16	0.9 U	0.9 U
Limit	25000	920000000
Units	µg/kg	µg/kg
Conf. Level	90%	90%
Max. Result	1.4 U	1.9
Max. > Limit	No	No
W-statistic Prob. #	--	--
Test Procedure	--	--
Sample Size	12	12
Nondetects	12	9
% Nondetects	100%	75%
Est. Mean*	--	--
UCL	--	--
Prob. > Limit	--	--
Pass / Fail	--	--
<i>a posteriori</i> Sample Size calculation	--	--

Certification Unit SWRB-C07

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99	Thorium-230
SWRB-C07-2	1.47 -	1.17 -	1.19 U	1.17 -	5.39 -	0.0469 -	1.34 -	1.42 U	1.29 J
SWRB-C07-3	0.941 -	0.798 -	0.822 U	0.798 -	3.57 -	0.045 U	1.06 J	1.5 U	0.832 J
SWRB-C07-4	0.802 -	0.696 -	0.697 U	0.696 -	1.74 U	0.0386 U	3.42 U	1.53 U	1.34 J
SWRB-C07-4-D	0.796 -	0.75 -	0.752 U	0.75 -	3.58 -	0.0361 U	2.78 U	1.55 U	1.22 J
SWRB-C07-5	1.23 -	1.2 -	1.2 U	1.2 -	7.29 -	0.0732 U	1.3 J	1.54 U	1.69 J
SWRB-C07-7	1.32 -	1.18 -	1.17 U	1.18 -	6.57 -	0.0686 U	0.95 J	1.55 U	1.64 -
SWRB-C07-8	1.21 -	1.08 -	1.08 U	1.08 -	5.14 -	0.063 -	1.11 -	1.51 U	1.11 J
SWRB-C07-9	1.02 -	0.839 -	0.831 -	0.839 -	4.4 -	0.0719 U	1.25 -	1.49 U	1.34 J
SWRB-C07-11	0.847 -	0.653 -	0.66 U	0.653 -	4.13 -	0.0613 U	0.839 J	1.48 U	1.36 J
SWRB-C07-12	0.551 -	0.501 -	0.507 U	0.501 -	4.27 -	0.0661 U	0.8 U	1.39 U	0.624 J
SWRB-C07-13	1.2 -	1.16 -	1.18 U	1.16 -	5.33 -	0.0844 U	1.38 J	1.53 U	2.09 -
SWRB-C07-14	1.19 -	1.03 -	1.02 U	1.03 -	8.57 -	0.0617 U	1.45 J	1.56 U	1.39 J
SWRB-C07-16	0.98 -	1.11 -	1.14 U	1.11 -	5.21 -	0.0696 U	1.24 J	1.52 U	1.65 J
Limit	1.7	1.8	1.7	1.5	82	1.4	38	30	280
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.47	1.2	0.831	1.2	8.57	0.063	1.45	1.56 U	2.09
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	11	0	0	10	2	12	0
% Nondetects	0%	0%	92%	0%	0%	83%	17%	100%	0%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C07

SampleID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Molybdenum	Selenium	Silver
SWRB-C07-2	2.3 UJ	6.9 J	114 J	0.62 -	0.19 J	23 J	22 J	0.015 J	1.3 J	3.46 U	0.058 J
SWRB-C07-3	0.46 U	4.6 J	126 J	0.55 -	0.16 J	15.4 J	9.3 J	0.013 J	1.2 J	0.634 U	0.054 J
SWRB-C07-4	1.1 U	4.7 J	63.2 J	0.53 -	0.15 J	16.3 J	10.6 J	0.012 J	1.3 J	0.691 U	0.053 J
SWRB-C07-4-D	0.79 U	4.3 J	89.9 J	0.48 -	0.15 J	16.1 J	10 J	0.014 J	1.2 J	0.684 U	0.0457 U
SWRB-C07-5	0.52 U	4.6 J	95.1 J	0.59 -	0.15 J	14.4 J	18.4 J	0.016 J	0.98 J	0.666 U	0.053 J
SWRB-C07-7	0.55 U	5.5 J	87.6 J	0.56 -	0.18 J	13.5 J	12 J	0.012 J	1.7 J	0.633 U	0.058 J
SWRB-C07-8	2.25 UJ	7.6 J	114 J	0.7 -	0.19 J	20.5 J	14.3 J	0.018 J	1.3 J	3.38 U	0.058 J
SWRB-C07-9	0.94 U	7.3 J	93.5 J	0.56 -	0.21 J	19.9 J	12.5 J	0.018 J	2.5 J	0.905 U	0.071 J
SWRB-C07-11	0.53 UJ	3.6 J	54.2 J	0.36 -	0.13 J	12 J	7.6 J	0.0093 J	1.9 J	0.636 U	0.0429 U
SWRB-C07-12	0.445 UJ	2.7 J	19.9 J	0.22 -	0.13 J	5.6 J	6.5 J	0.007 J	0.99 J	0.668 U	0.0449 U
SWRB-C07-13	0.54 U	4.6 J	82.7 J	0.56 -	0.19 J	13.5 J	11.7 J	0.016 J	1.4 J	0.672 U	0.063 J
SWRB-C07-14	0.46 U	6.3 J	80.7 J	0.64 -	0.3 J	16.3 J	13.8 J	0.03 J	1.3 J	0.661 U	0.097 J
SWRB-C07-16	0.55 U	6.1 J	160 J	0.75 -	0.21 J	16.6 J	13.6 J	0.02 J	1.2 J	0.647 U	0.063 J
Limit	96	12	68000	1.5	82	300	400	7.5	2900	5400	29000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	2.3 UJ	7.6	160	0.75	0.3	23	22	0.03	2.5	3.46 U	0.097
Max. > Limit	No	No	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12	12
Nondetects	12	0	0	0	0	0	0	0	0	12	2
% Nondetects	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%	17%
Est. Mean*	--	--	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C07

SampleID	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
SWRB-C07-2	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U
SWRB-C07-3	35.7 U	35.7 U	35.7 U	35.7 U	35.7 U	35.7 U
SWRB-C07-4	40 U	40 U	40 U	40 U	40 U	40 U
SWRB-C07-4-D	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U
SWRB-C07-5	37 U	37 U	37 U	37 U	37 U	37 U
SWRB-C07-7	36.4 U	36.4 U	36.4 U	36.4 U	36.4 U	36.4 U
SWRB-C07-8	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U
SWRB-C07-9	51.5 U	51.5 U	51.5 U	51.5 U	51.5 U	51.5 U
SWRB-C07-11	35.8 U	35.8 U	35.8 U	35.8 U	35.8 U	35.8 U
SWRB-C07-12	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U
SWRB-C07-13	37.8 U	37.8 U	37.8 U	37.8 U	37.8 U	37.8 U
SWRB-C07-14	38.3 U	61.2 J	82.9 J	38.3 U	38.3 U	41.3 J
SWRB-C07-16	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U
Limit	20000	2000	20000	1000	200000	2000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	51.5 U	61.2	82.9	51.5 U	51.5 U	41.3
Max. > Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	12	11	11	12	12	11
% Nondetects	100%	92%	92%	100%	100%	92%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--

Certification Unit SWRB-C07

SampleID	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260	Dieldrin
SWRB-C07-2	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	6.2 J	3.9 U	1.5 U
SWRB-C07-3	35.7 U	35.7 U	35.7 U	35.7 U	35.7 U	3.6 U	3.6 U	1.4 U
SWRB-C07-4	40 U	40 U	40 U	40 U	40 U	4 U	4 U	1.6 U
SWRB-C07-4-D	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U	3.8 U	3.8 U	1.5 U
SWRB-C07-5	37 U	37 U	37 U	37 U	37 U	3.7 U	3.7 U	1.5 U
SWRB-C07-7	36.4 U	36.4 U	36.4 U	36.4 U	36.4 U	3.6 U	3.6 U	1.5 U
SWRB-C07-8	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U	3.8 U	3.8 U	1.5 U
SWRB-C07-9	51.5 U	75 J	51.5 U	51.5 U	59.6 J	5.2 U	5.2 U	2.1 U
SWRB-C07-11	35.8 U	35.8 U	35.8 U	35.8 U	35.8 U	3.6 U	3.6 U	1.4 U
SWRB-C07-12	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	3.8 U	3.8 U	1.5 U
SWRB-C07-13	37.8 U	37.8 U	37.8 U	37.8 U	37.8 U	3.8 U	3.8 U	1.5 U
SWRB-C07-14	38.3 U	72.5 J	38.3 U	38.3 U	72.4 J	3.8 U	3.8 U	1.5 U
SWRB-C07-16	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	3.8 U	3.8 U	1.5 U
Limit	2000	10000	20000	5000	10000	130	130	15
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	51.5 U	75	51.5 U	51.5 U	72.4	6.2	5.2 U	2.1 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	12	10	12	12	10	11	12	12
% Nondetects	100%	83%	100%	100%	83%	92%	100%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C07

SampleID	1,1,1-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-pentanone	Acetone	Benzene
SWRB-C07-2	1 U	1 U	1 U	4.9 U	5.6 U	1 U
SWRB-C07-3	0.9 U	0.9 U	0.9 U	4.4 U	5 U	0.9 U
SWRB-C07-4	1.1 U	1.1 U	1.1 U	5.7 U	12.9 U	1.1 U
SWRB-C07-4-D	1 U	1 U	1 U	5.1 U	6.6 U	1 U
SWRB-C07-5	1 U	1 U	1 U	4.8 U	7.8 U	1 U
SWRB-C07-7	0.9 U	0.9 U	0.9 U	4.7 U	18.5 U	0.9 U
SWRB-C07-8	1 U	1 U	1 U	4.8 U	4.8 U	1 U
SWRB-C07-9	0.9 U	0.9 U	0.9 U	4.5 U	4.5 U	0.9 U
SWRB-C07-11	0.9 U	0.9 U	0.9 U	4.5 U	9 U	0.9 U
SWRB-C07-12	1 U	1 U	1 U	4.8 U	4.8 U	1 U
SWRB-C07-13	0.8 U	0.8 U	0.8 U	4.1 U	4.1 U	0.8 U
SWRB-C07-14	1 U	1 U	1 U	4.8 U	4.8 U	1 U
SWRB-C07-16	0.9 U	0.9 U	0.9 U	4.4 U	4.4 U	0.9 U
Limit	4300	410	160	2500000	43000000	850000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	1.1 U	1.1 U	1.1 U	5.7 U	18.5 U	1.1 U
Max. > Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--

Certification Unit SWRB-C07

SampleID	Carbon Tetrachloride	Ethylbenzene	Methylene chloride	Tetrachloroethene	Toluene	Trichloroethene	Xylenes, Total
SWRB-C07-2	1 U	1 U	4.9 U	1 U	1 U	1 U	1 U
SWRB-C07-3	0.9 U	0.9 U	4.4 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C07-4	1.1 U	1.1 U	5.7 U	1.1 U	1.1 U	1.1 U	1.1 U
SWRB-C07-4-D	1 U	1 U	5.1 U	1 U	1 U	1 U	1 U
SWRB-C07-5	1 U	1 U	4.8 U	1 U	1.6 J	1 U	1 U
SWRB-C07-7	0.9 U	0.9 U	4.7 U	0.9 U	1.1 J	0.9 U	0.9 U
SWRB-C07-8	1 U	1 U	4.8 U	1 U	1 U	1 U	1 U
SWRB-C07-9	0.9 U	0.9 U	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C07-11	0.9 U	0.9 U	4.5 U	0.9 U	1.6 J	0.9 U	0.9 U
SWRB-C07-12	1 U	1 U	4.8 U	1 U	1 U	1 U	1 U
SWRB-C07-13	0.8 U	0.8 U	4.1 U	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C07-14	1 U	1 U	4.8 U	1 U	1 U	1 U	1 U
SWRB-C07-16	0.9 U	0.9 U	4.4 U	0.9 U	1.3 J	0.9 U	0.9 U
Limit	2100	5100000	37000	3600	100000000	25000	920000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.1 U	1.1 U	5.7 U	1.1 U	1.6	1.1 U	1.1 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	8	12	12
% Nondetects	100%	100%	100%	100%	67%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C08

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Aroclor-1254	Aroclor-1260
SWRB-C08-3	1.05 -	0.728 -	0.76 J	0.728 -	4.94 -	0.877 U	3.8 U	3.8 U
SWRB-C08-5	0.79 -	0.628 -	0.639 J	0.628 -	2.03 U	0.882 U	3.8 U	3.8 U
SWRB-C08-5-D	0.822 -	0.539 -	0.521 J	0.539 -	2.35 J	0.795 U	3.7 U	3.7 U
SWRB-C08-6	0.756 -	0.405 -	0.459 J	0.405 -	1.82 U	0.817 U	4.1 U	4.1 U
SWRB-C08-8	0.855 -	0.463 -	0.448 J	0.463 -	3.07 J	0.77 U	3.8 U	3.8 U
SWRB-C08-10	1.32 -	1.11 -	1.14 J	1.11 -	8.73 -	0.895 U	4 U	4 U
SWRB-C08-11	1.39 -	0.967 -	0.916 J	0.967 -	18.3 -	0.901 U	3.9 U	3.9 U
SWRB-C08-12	1.17 -	0.965 -	0.998 J	0.965 -	12.8 -	0.893 U	6.8 J	4.5 U
SWRB-C08-13	0.963 -	0.983 -	1.01 J	0.983 -	10.7 -	0.884 U	6 J	4.2 U
SWRB-C08-14	1.09 -	0.977 -	0.924 J	0.977 -	8.75 -	0.892 U	4.1 U	4.1 U
SWRB-C08-16	1.16 -	0.857 -	0.826 J	0.857 -	7.74 -	0.87 U	6.7 J	4.1 U
SWRB-C08-17^1	1.39542 -	1.04 -	1.14 -	1.22 -	9.26 -	--	--	--
SWRB-C08-17^2	1.47966 -	1.22 -	1.14 -	1.22 -	6.73 -	--	--	--
SWRB-C08-18	1.22694 -	0.877 -	0.93 -	0.877 -	4.38 J	0.799 U	3.6 U	3.6 U
SWRB-C08-19	1.05846 -	0.962 -	0.962 -	0.962 -	3.4 U	0.777 U	6.9 J	3.7 U
Limit	1.7	1.8	1.7	1.5	82	30	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	µg/kg	µg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.47966	1.22	1.14	1.22	18.3	0.901 U	6.9	4.5 U
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	14	14	14	14	14	12	12	12
Nondetects	0	0	0	0	2	12	8	12
% Nondetects	0%	0%	0%	0%	14%	100%	67%	100%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99	Thorium-230
SWRB-C09-1	0.958 -	0.653 -	0.632 -	0.653 -	7.43 -	0.081 U	0.998 J	1.85 U	1.05 J
SWRB-C09-2	1.16 -	0.79 -	0.788 -	0.79 -	4.59 -	0.0495 U	0.958 J	1.87 U	1.29 J
SWRB-C09-4	1.11 -	0.761 -	0.8 -	0.761 -	4.77 -	0.0661 U	1.04 J	1.89 U	1.64 J
SWRB-C09-6	1.07 -	0.879 -	0.894 -	0.879 -	4.82 -	0.0871 U	0.815 J	1.89 U	1.24 J
SWRB-C09-7	1.04 -	0.877 -	0.87 -	0.877 -	6.46 -	0.057 U	1.07 J	1.88 U	0.928 J
SWRB-C09-8	1.05 -	0.711 -	0.713 -	0.711 -	6.73 -	0.0632 U	0.711 U	1.93 U	1.35 J
SWRB-C09-9	0.844 -	0.892 -	0.902 -	0.892 -	5.34 -	0.0531 U	1.2 J	1.86 U	2.05 J
SWRB-C09-11	0.708 -	0.711 -	0.722 -	0.711 -	4.07 -	0.0426 U	0.559 U	1.95 U	0.751 J
SWRB-C09-12	0.892 -	0.73 -	0.738 -	0.73 -	4.18 -	0.0683 U	0.896 J	1.9 U	1.58 J
SWRB-C09-14	1.27 -	0.855 -	0.846 -	0.855 -	5.83 -	0.0733 U	1.08 J	1.9 U	1.48 J
SWRB-C09-14-D	1.08 -	0.766 -	0.768 -	0.766 -	3.63 -	0.0734 U	0.847 U	1.92 U	1.35 J
SWRB-C09-15	0.924 -	0.655 -	0.633 -	0.655 -	4.78 -	0.0784 U	1.46 J	1.88 U	1.44 J
SWRB-C09-16	1.02 -	0.902 -	0.92 -	0.902 -	6.24 -	0.0832 U	1.1 J	1.89 U	1.39 J
Limit	1.7	1.8	1.7	1.5	82	1.4	38	30	280
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.28	0.902	0.92	0.902	7.43	0.0871 U	1.46	1.95 U	2.05
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	2	12	0
% Nondetects	0%	0%	0%	0%	0%	100%	17%	100%	0%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Molybdenum	Selenium	Silver
SWRB-C09-1	0.65 U	5.7 -	59.5 J	0.47 -	0.18 J	13.1 J	9.5 J	0.014 J	1.6 J	0.632 U	0.052 J
SWRB-C09-2	0.79 U	5.4 -	67.7 J	0.47 -	0.16 J	14.3 J	9.1 J	0.013 J	1.4 J	0.641 U	0.044 J
SWRB-C09-4	0.89 U	5.2 -	80 J	0.48 -	0.17 J	16.1 J	11.4 J	0.014 J	1.6 J	0.639 U	0.044 J
SWRB-C09-6	1.4 U	6.1 -	65.3 J	0.55 -	0.17 J	14.9 J	10.3 J	0.015 J	1.3 J	0.676 U	0.048 J
SWRB-C09-7	0.78 U	5.2 -	65.4 J	0.44 -	0.16 J	14.9 J	9.1 J	0.015 J	1.4 J	0.661 U	0.046 J
SWRB-C09-8	0.78 U	5.1 -	72.2 J	0.43 -	0.15 J	16.5 J	10.7 J	0.012 J	1.2 J	0.634 U	0.045 J
SWRB-C09-9	0.9 U	6 -	57.6 J	0.52 -	0.19 J	16.7 J	9.1 J	0.017 J	1.4 J	0.667 U	0.045 J
SWRB-C09-11	0.63 U	3.8 -	120 J	0.33 -	0.14 J	9.1 J	7.3 J	0.0077 J	1.2 J	0.648 U	0.0425 J
SWRB-C09-12	0.436 UJ	3.9 -	65.7 J	0.32 -	0.13 J	11 J	8 J	0.011 J	1.2 J	0.654 U	0.0437 U
SWRB-C09-14	2.15 UJ	5.8 -	99.7 J	0.54 -	0.18 J	18.3 J	13.6 J	0.015 J	1.8 J	3.22 U	0.065 J
SWRB-C09-14-D	0.63 U	5.4 -	75.1 J	0.53 -	0.18 J	17.1 J	9.7 J	0.01 J	1.5 J	0.655 U	0.046 J
SWRB-C09-15	0.73 U	5.4 -	75.3 J	0.5 -	0.19 J	14.3 J	7.8 J	0.013 J	1.6 J	0.661 U	0.051 J
SWRB-C09-16	0.53 U	4.9 -	80.4 J	0.47 -	0.17 J	15.8 J	9.2 J	0.014 J	1.4 J	0.628 U	0.047 J
Limit	96	12	68000	1.5	82	300	400	7.5	2900	5400	29000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	2.15 UJ	6.1	120	0.55	0.19	18.3	13.6	0.017	1.8	3.22 U	0.065
Max. > Limit	No	No	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12	12	12
Nondetects	12	0	0	0	0	0	0	0	0	12	1
% Nondetects	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%	8%
Est. Mean*	--	--	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
SWRB-C09-1	36.4 U	36.5 J	69.3 J	36.4 U	36.4 U	36.4 U
SWRB-C09-2	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U
SWRB-C09-4	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U
SWRB-C09-6	38 U	38 U	51.1 J	38 U	38 U	38 U
SWRB-C09-7	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U
SWRB-C09-8	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U
SWRB-C09-9	37.8 U	38.2 J	74.6 J	37.8 U	37.8 U	43.1 J
SWRB-C09-11	36.1 U	36.1 U	36.1 U	36.1 U	36.1 U	36.1 U
SWRB-C09-12	37 U	37 U	37 U	37 U	37 U	37 U
SWRB-C09-14	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U
SWRB-C09-14-D	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U
SWRB-C09-15	146 J	112 J	185 J	52.2 J	37.3 U	142 J
SWRB-C09-16	36.3 U	36.3 U	36.3 U	36.3 U	36.3 U	36.3 U
Limit	20000	2000	20000	1000	200000	2000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	146	112	185	52.2	38 U	142
Max. > Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	11	9	8	11	12	10
% Nondetects	92%	75%	67%	92%	100%	83%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260
SWRB-C09-1	36.4 U	72 J	36.4 U	36.4 U	57.4 J	3.6 U	3.6 U
SWRB-C09-2	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	3.7 U	3.7 U
SWRB-C09-4	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	4.2 J	3.7 U
SWRB-C09-6	38 U	49.4 J	38 U	38 U	40.8 J	6.8 J	3.8 U
SWRB-C09-7	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	9.2 J	3.7 U
SWRB-C09-8	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	3.7 U	3.7 U
SWRB-C09-9	37.8 U	110 J	37.8 U	57.3 J	74.9 J	5.3 J	3.8 U
SWRB-C09-11	36.1 U	36.1 U	36.1 U	36.1 U	36.1 U	3.6 U	3.6 U
SWRB-C09-12	37 U	37 U	37 U	37 U	37 U	3.7 U	3.7 U
SWRB-C09-14	36.7 U	36.7 U	36.7 U	36.7 U	36.7 U	3.7 U	3.7 U
SWRB-C09-14-D	36.9 U	36.9 U	36.9 U	36.9 U	36.9 U	3.7 U	3.7 U
SWRB-C09-15	37.3 U	262 J	50.5 J	40.1 J	220 J	3.7 U	3.7 U
SWRB-C09-16	36.3 U	36.3 U	36.3 U	36.3 U	36.3 U	3.6 U	3.6 U
Limit	2000	10000	20000	5000	10000	130	130
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	38 U	262	50.5	57.3	220	9.2	3.8 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	8	11	10	8	8	12
% Nondetects	100%	67%	92%	83%	67%	67%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Dieldrin	1,1,1-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-pentanone	Acetone	Benzene
SWRB-C09-1	1.5 U	1 U	1 U	1 U	5.1 U	5.1 U	1 U
SWRB-C09-2	1.5 U	0.9 U	0.9 U	0.9 U	4.6 U	4.6 U	0.9 U
SWRB-C09-4	1.5 U	1 U	1 U	1 U	5.1 U	5.1 U	1 U
SWRB-C09-6	1.5 U	0.9 U	0.9 U	0.9 U	4.5 U	4.5 U	0.9 U
SWRB-C09-7	1.5 U	0.9 U	0.9 U	0.9 U	4.5 U	4.5 U	0.9 U
SWRB-C09-8	1.5 U	0.9 U	0.9 U	0.9 U	4.6 U	4.6 U	0.9 U
SWRB-C09-9	1.5 U	1 U	1 U	1 U	4.8 U	4.8 U	1 U
SWRB-C09-11	1.4 U	0.8 U	0.8 U	0.8 U	4.2 U	4.2 U	0.8 U
SWRB-C09-12	1.5 U	0.9 U	0.9 U	0.9 U	4.3 U	4.3 U	0.9 U
SWRB-C09-14	1.5 U	0.9 U	0.9 U	0.9 U	4.3 U	4.3 U	0.9 U
SWRB-C09-14-D	1.5 U	0.8 U	0.8 U	0.8 U	4 U	4 U	0.8 U
SWRB-C09-15	1.5 U	0.8 U	0.8 U	0.8 U	4 U	4 U	0.8 U
SWRB-C09-16	1.5 U	0.9 U	0.9 U	0.9 U	4.7 U	4.7 U	0.9 U
Limit	15	4300	410	160	2500000	4300000	850000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1.5 U	1 U	1 U	1 U	5.1 U	5.1 U	1 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C09

SampleID	Carbon Tetrachloride	Ethylbenzene	Methylene chloride	Tetrachloroethene	Toluene	Trichloroethene	Xylenes, Total
SWRB-C09-1	1 U	1 U	5.1 U	1 U	1 U	1 U	1 U
SWRB-C09-2	0.9 U	0.9 U	4.6 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-4	1 U	1 U	5.1 U	1 U	1 U	1 U	1 U
SWRB-C09-6	0.9 U	0.9 U	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-7	0.9 U	0.9 U	4.5 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-8	0.9 U	0.9 U	4.6 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-9	1 U	1 U	4.8 U	1 U	1 U	1 U	1 U
SWRB-C09-11	0.8 U	0.8 U	4.2 U	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C09-12	0.9 U	0.9 U	4.3 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-14	0.9 U	0.9 U	4.3 U	0.9 U	0.9 U	0.9 U	0.9 U
SWRB-C09-14-D	0.8 U	0.8 U	4 U	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C09-15	0.8 U	0.8 U	4 U	0.8 U	0.8 U	0.8 U	0.8 U
SWRB-C09-16	0.9 U	0.9 U	4.7 U	0.9 U	0.9 U	0.9 U	0.9 U
Limit	2100	5100000	37000	3600	100000000	25000	920000000
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1 U	1 U	5.1 U	1 U	1 U	1 U	1 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Certification Unit SWRB-C10

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Aroclor-1254	Aroclor-1260
SWRB-C10-1	1.024764 -	0.733 J	0.802 J	0.733 J	4.99 -	0.739 U	3.6 U	3.6 U
SWRB-C10-3	1.04793 -	0.794 J	0.787 J	0.794 J	2.52 U	0.832 U	3.8 U	3.8 U
SWRB-C10-4	1.02 -	0.788 -	0.817 J	0.788 -	4.81 -	0.827 U	5.2 J	4 U
SWRB-C10-5	1.07952 -	0.748 J	0.714 J	0.748 J	5.61 -	0.836 U	3.9 U	3.9 U
SWRB-C10-6	0.898 -	0.649 -	0.691 J	0.649 -	3.34 J	0.879 U	3.7 U	3.7 U
SWRB-C10-7	0.973167 -	0.811 J	0.846 J	0.811 J	4.66 -	0.784 U	3.6 U	3.6 U
SWRB-C10-10	0.719394 -	0.626 J	0.736 J	0.626 J	1.91 U	0.814 U	3.5 U	3.5 U
SWRB-C10-11	0.84786 -	0.678 J	0.695 J	0.678 J	6.67 -	0.791 U	3.6 J	3.6 U
SWRB-C10-11-D	0.79521 -	0.535 J	0.572 J	0.535 J	4.03 J	0.957 J	3.6 U	3.6 U
SWRB-C10-12	0.831012 -	0.649 J	0.649 J	0.649 J	5.92 -	0.803 U	3.7 U	3.7 U
SWRB-C10-13	0.828906 -	0.59 J	0.611 J	0.59 J	2.35 U	0.753 U	43 -	12 J
SWRB-C10-14	0.792051 -	0.586 J	0.611 J	0.586 J	2.72 J	0.787 U	3.6 U	3.6 U
SWRB-C10-16	0.925782 -	0.649 J	0.601 J	0.649 J	2.11 U	0.811 U	3.7 U	3.7 U
Limit	1.7	1.8	1.7	1.5	82	30	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	µg/kg	µg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.15	0.811	0.846	0.811	6.67	0.957	43	12
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	4	11	9	11
% Nondetects	0%	0%	0%	0%	33%	92%	75%	92%
Est. Mean*	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--
<i>a posteriori</i> Sample	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--

Certification Unit SWRB-C11

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
SWRB-C11-1	1.18482 -	0.799 -	0.786 -	0.799 -	10.3 -
SWRB-C11-3	1.05846 J	0.694 J	0.729 J	0.694 J	8.42 -
SWRB-C11-4	1.0374 J	0.937 J	1 J	0.937 J	10.8 -
SWRB-C11-5	0.849966 -	0.603 -	0.659 -	0.603 -	3.71 U
SWRB-C11-7	1.20588 J	1.05 J	1.04 J	1.05 J	8.97 -
SWRB-C11-8	0.976326 -	0.697 -	0.721 -	0.697 -	7.44 -
SWRB-C11-9	1.22694 J	1.03 J	1.05 J	1.03 J	7.31 -
SWRB-C11-11	1.31118 -	1.14 -	1.06 -	1.14 -	7.96 -
SWRB-C11-12	1.06899 J	0.848 J	0.891 J	0.848 J	6.85 -
SWRB-C11-13	1.22694 J	0.977 J	0.934 J	0.977 J	13.9 -
SWRB-C11-14	1.024764 J	0.802 J	0.822 J	0.802 J	2.92 U
SWRB-C11-16	1.52178 J	1.11 J	1.18 J	1.11 J	4.04 U
SWRB-C11-16-D	1.248 J	0.884 J	0.923 J	0.884 J	3.85 U
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.52178	1.14	1.18	1.14	13.9
Max. > Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	3
% Nondetects	0%	0%	0%	0%	25%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--

<i>a posteriori</i> Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Certification Unit SWRB-Utility Trench Stats

SampleID	Aroclor-1254	Technetium-99
A7-SA4-T-1	3.9 U	1.74 U
A7-SA4-T-2	3.8 U	1.82 U
A7-SA4-T-3	4.2 J	2.16 U
A7-SA4-T-4	3.7 U	2.2 U
A7-SA4-T-5	3.5 U	1.96 U
A7-SA4-T-6	3.4 U	1.82 U
A7-SA4-T-7	3.6 U	2.11 U
A7-SA4-T-8	3.6 U	2.03 U
A7-SA4-T-9	3.4 U	1.85 U
A7-SA4-T-10	3.5 U	1.8 U
A7-SA4-T-11	75.5 -	2.4 -
A7-SA4-T-12	3.9 U	1.71 U
A7-SA4-T-13	3.9 U	1.63 U
A7-SA4-T-14	3.6 U	1.57 U
A7-SA4-T-15	3.5 U	1.73 U
A7-SA4-T-16	3.8 U	34.1 -
A7-SA4-T-29	3.8 U	0.843 U
A7-SA4-T-30	174 -	2.47 U
Limit	130	30
Units	ug/kg	pCi/g
Conf. Level	90%	90%
Max. Result	174	34.1
Max. > Limit	Yes	Yes
W-statistic Prob. #	< 0.01% (LN)	< 0.01% (LN)
Test Procedure	Proportions (Sign)	Proportions (Sign)
Sample Size	18	18
Nondetects	15	16
% Nondetects	83%	89%
Est. Mean*	1.9	0.9
UCL	--	--
Prob. > Limit	0.00	0.00
Pass / Fail	pass	pass
<i>a posteriori</i> Sample Size calculation	4 Pass	4 Pass

Utility Trench Sample Results				
Boring	Parameter	Validation Result	Val Qualifier	Units
A7-SA4-T-1	Aroclor-1260	3.9	U	µg/kg
A7-SA4-T-1	Radium-226	0.945	-	pCi/g
A7-SA4-T-1	Radium-228	0.683	-	pCi/g
A7-SA4-T-1	Thorium-228	0.648	-	pCi/g
A7-SA4-T-1	Thorium-232	0.683	-	pCi/g
A7-SA4-T-1	Uranium, Total	4.94	-	mg/kg
A7-SA4-T-10	Aroclor-1260	3.5	U	µg/kg
A7-SA4-T-10	Radium-226	0.592	-	pCi/g
A7-SA4-T-10	Radium-228	0.358	-	pCi/g
A7-SA4-T-10	Thorium-228	0.368	-	pCi/g
A7-SA4-T-10	Thorium-232	0.358	-	pCi/g
A7-SA4-T-10	Uranium, Total	1.79	U	mg/kg
A7-SA4-T-11	Aroclor-1260	32.6	-	µg/kg
A7-SA4-T-11	Radium-226	1.27	-	pCi/g
A7-SA4-T-11	Radium-228	1.3	-	pCi/g
A7-SA4-T-11	Thorium-228	1.33	-	pCi/g
A7-SA4-T-11	Thorium-232	1.3	-	pCi/g
A7-SA4-T-11	Uranium, Total	54.3	-	mg/kg
A7-SA4-T-12	Aroclor-1260	3.9	U	µg/kg
A7-SA4-T-12	Radium-226	1.39	-	pCi/g
A7-SA4-T-12	Radium-228	1.33	J	pCi/g
A7-SA4-T-12	Thorium-228	1.33	J	pCi/g
A7-SA4-T-12	Thorium-232	1.33	J	pCi/g
A7-SA4-T-12	Uranium, Total	4.83	-	mg/kg
A7-SA4-T-13	Aroclor-1260	3.9	U	µg/kg
A7-SA4-T-13	Radium-226	0.947	-	pCi/g
A7-SA4-T-13	Radium-228	0.699	J	pCi/g
A7-SA4-T-13	Thorium-228	0.708	J	pCi/g
A7-SA4-T-13	Thorium-232	0.699	J	pCi/g
A7-SA4-T-13	Uranium, Total	2.3	U	mg/kg
A7-SA4-T-14	Aroclor-1260	3.6	U	µg/kg
A7-SA4-T-14	Radium-226	0.848	-	pCi/g
A7-SA4-T-14	Radium-228	0.591	J	pCi/g
A7-SA4-T-14	Thorium-228	0.618	J	pCi/g
A7-SA4-T-14	Thorium-232	0.591	J	pCi/g
A7-SA4-T-14	Uranium, Total	3.97	-	mg/kg
A7-SA4-T-15	Aroclor-1260	3.5	U	µg/kg
A7-SA4-T-15	Radium-226	0.649	-	pCi/g
A7-SA4-T-15	Radium-228	0.409	J	pCi/g
A7-SA4-T-15	Thorium-228	0.422	J	pCi/g

Utility Trench Sample Results				
A7-SA4-T-15	Thorium-232	0.409	J	pCi/g
A7-SA4-T-15	Uranium, Total	2.77	-	mg/kg
A7-SA4-T-16	Aroclor-1260	3.8	U	µg/kg
A7-SA4-T-16	Radium-226	1.12	-	pCi/g
A7-SA4-T-16	Radium-228	0.891	J	pCi/g
A7-SA4-T-16	Thorium-228	0.859	J	pCi/g
A7-SA4-T-16	Thorium-232	0.891	J	pCi/g
A7-SA4-T-16	Uranium, Total	4.7	J	mg/kg
A7-SA4-T-2	Aroclor-1260	3.8	U	µg/kg
A7-SA4-T-2	Radium-226	0.787	-	pCi/g
A7-SA4-T-2	Radium-228	0.683	-	pCi/g
A7-SA4-T-2	Thorium-228	0.703	-	pCi/g
A7-SA4-T-2	Thorium-232	0.683	-	pCi/g
A7-SA4-T-2	Uranium, Total	5.09	-	mg/kg
A7-SA4-T-29	Aroclor-1260	3.8	U	µg/kg
A7-SA4-T-29	Radium-226	0.903	-	pCi/g
A7-SA4-T-29	Radium-228	0.714	-	pCi/g
A7-SA4-T-29	Thorium-228	0.726	-	pCi/g
A7-SA4-T-29	Thorium-232	0.714	-	pCi/g
A7-SA4-T-29	Uranium, Total	2.96	U	mg/kg
A7-SA4-T-3	Aroclor-1260	3.5	U	µg/kg
A7-SA4-T-3	Radium-226	0.971	-	pCi/g
A7-SA4-T-3	Radium-228	0.794	-	pCi/g
A7-SA4-T-3	Thorium-228	0.818	-	pCi/g
A7-SA4-T-3	Thorium-232	0.794	-	pCi/g
A7-SA4-T-3	Uranium, Total	6.91	-	mg/kg
A7-SA4-T-30	Aroclor-1260	84.1	-	µg/kg
A7-SA4-T-30	Radium-226	0.912093	-	pCi/g
A7-SA4-T-30	Radium-228	0.853	-	pCi/g
A7-SA4-T-30	Thorium-228	0.883	-	pCi/g
A7-SA4-T-30	Thorium-232	0.853	-	pCi/g
A7-SA4-T-30	Uranium, Total	5.58	-	mg/kg
A7-SA4-T-4	Aroclor-1260	3.7	U	µg/kg
A7-SA4-T-4	Radium-226	0.903	-	pCi/g
A7-SA4-T-4	Radium-228	0.798	-	pCi/g
A7-SA4-T-4	Thorium-228	0.792	-	pCi/g
A7-SA4-T-4	Thorium-232	0.798	-	pCi/g
A7-SA4-T-4	Uranium, Total	5.93	-	mg/kg
A7-SA4-T-5	Aroclor-1260	3.5	U	µg/kg
A7-SA4-T-5	Radium-226	0.543	-	pCi/g
A7-SA4-T-5	Radium-228	0.313	-	pCi/g

Utility Trench Sample Results				
A7-SA4-T-5	Thorium-228	0.321	-	pCi/g
A7-SA4-T-5	Thorium-232	0.313	-	pCi/g
A7-SA4-T-5	Uranium, Total	2.77	J	mg/kg
A7-SA4-T-6	Aroclor-1260	3.4	U	µg/kg
A7-SA4-T-6	Radium-226	0.509	-	pCi/g
A7-SA4-T-6	Radium-228	0.249	-	pCi/g
A7-SA4-T-6	Thorium-228	0.243	-	pCi/g
A7-SA4-T-6	Thorium-232	0.249	-	pCi/g
A7-SA4-T-6	Uranium, Total	2.47	-	mg/kg
A7-SA4-T-7	Aroclor-1260	3.6	U	µg/kg
A7-SA4-T-7	Radium-226	0.855	-	pCi/g
A7-SA4-T-7	Radium-228	0.607	-	pCi/g
A7-SA4-T-7	Thorium-228	0.609	-	pCi/g
A7-SA4-T-7	Thorium-232	0.607	-	pCi/g
A7-SA4-T-7	Uranium, Total	5.12	-	mg/kg
A7-SA4-T-8	Aroclor-1260	3.6	U	µg/kg
A7-SA4-T-8	Radium-226	0.917	-	pCi/g
A7-SA4-T-8	Radium-228	0.707	-	pCi/g
A7-SA4-T-8	Thorium-228	0.707	-	pCi/g
A7-SA4-T-8	Thorium-232	0.707	-	pCi/g
A7-SA4-T-8	Uranium, Total	5.35	-	mg/kg
A7-SA4-T-9	Aroclor-1260	3.4	U	µg/kg
A7-SA4-T-9	Radium-226	0.578	-	pCi/g
A7-SA4-T-9	Radium-228	0.303	-	pCi/g
A7-SA4-T-9	Thorium-228	0.309	-	pCi/g
A7-SA4-T-9	Thorium-232	0.303	-	pCi/g
A7-SA4-T-9	Uranium, Total	1.24	J	mg/kg

APPENDIX C
CORRECTION OF 7-DAY RADIUM-226 RESULTS

APPENDIX C CORRECTION OF 7-DAY RADIUM-226 RESULTS

On July 10, 2006, OEPA approved DOE's July 6, 2006 request to reduce the in-growth period for radon, with the stipulation that additional soil samples would be collected from non-certified areas to verify initial assumptions and finalize the documentation of the process. This attachment to the certification report presents the analytical results for 7- and 21-day in-growth periods for samples collected from non-certified areas, as described in variance 20810-PSP-0004-36.

Figure 1 summarizes the results for 48 samples collected from non-certified areas. A regression of the data ($R^2 = 0.9969$) yields the following equation for the estimate of the 21-day value:

$$21\text{-day value} = 1.053 \times 7\text{-day value} - 0.0156$$

This correction will be applied to 7-day analytical results to yield an estimate of the 21-day result. If statistical calculations are performed in the certification report, the estimate for 21-day results will be used to determine the pass/fail criteria for the certification units.

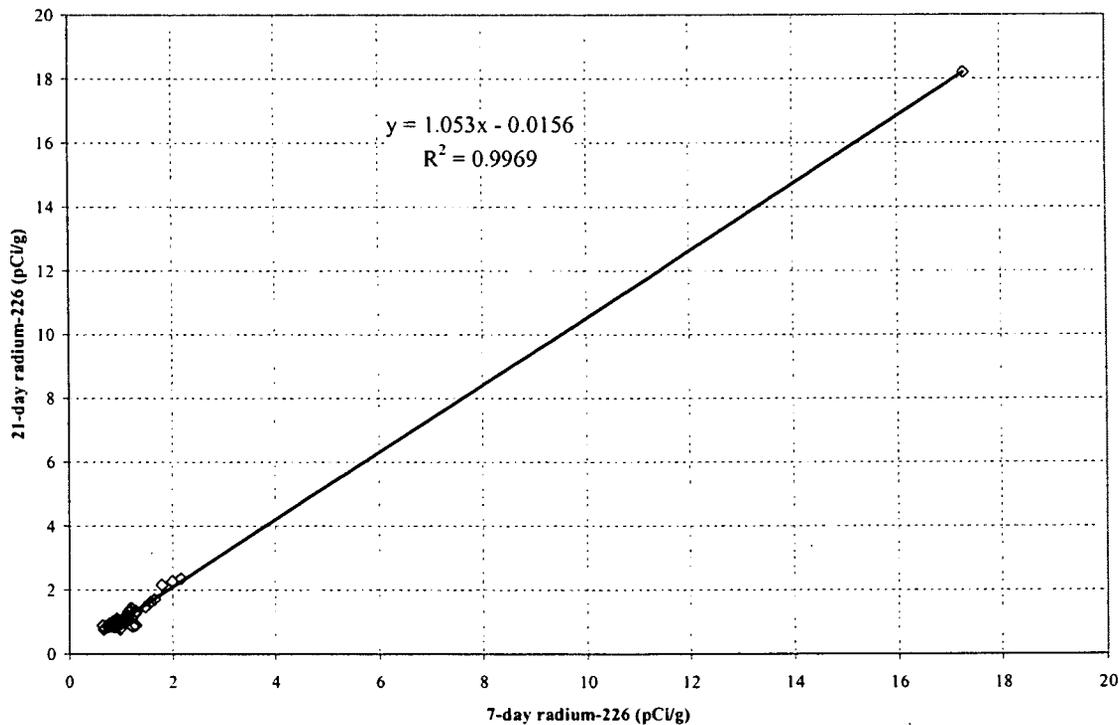


FIGURE 1. Regression analysis of radium-226 data based on 7- and 21-day ingrowth period for radon-222