

**Department of Energy**

**Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
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JUN 30 2006

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DOE-0158-06

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401 East Fifth Street
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Dear Mr. Saric and Mr. Schneider:

**TRANSMITTAL OF THE DRAFT CERTIFICATION REPORT FOR AREA 6
GENERAL AREA EAST**

- References: 1) Letter DOE-0134-06, J. Reising to J. Saric and T. Schneider, "Request for Extension for Submittal of the Certification Report for Area 6 General Area East," dated May 25, 2006
- 2) Letter, T. Schneider to J. Reising, "Approval - Request for Extension A6 General Area East Certification Report," dated June 7, 2006

Enclosed for your review is the draft Certification Report for Area 6 General Area East. The commitment date for this report was extended to July 1, 2006 as approved by the Ohio Environmental Protection Agency in the above referenced letter.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

Johnny W. Reising
Director

Enclosure

Mr. James Saric
Mr. Thomas Schneider

-2-

DOE-0158-06

cc w/enclosure:

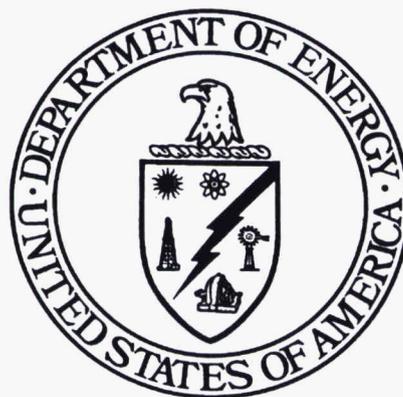
J. Desormeau, DOE-OH/FCP
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**CERTIFICATION REPORT FOR
AREA 6 GENERAL AREA EAST**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



JUNE 2006

U.S. DEPARTMENT OF ENERGY

**20600-RP-0007
REVISION A
DRAFT**

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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
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	final remediation level
HAMDC	highest allowable minimum detectable concentration
keV	kiloelectron volt
MDC	Main Drainage Corridor
µg/kg	micrograms per kilogram
MDL	minimum detectable level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RAWP	Remedial Action Work Plan
ROD	Record of Decision
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SP	Soil Stockpile
SVOC	semi-volatile organic compound
TPU	Total Propagated Uncertainty
UCL	upper confidence limit
V&V	verification and validation process
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	Validation Support Level
WAC	waste acceptance criteria

EXECUTIVE SUMMARY

1
2
3 This certification report presents the information and data used by the U.S. Department of Energy (DOE)
4 to determine that the soil in Area 6 General Area East meets the certification requirements at the Fernald
5 Closure Project (FCP).

6
7 This Certification Report includes details of the certification sampling, analysis, validation, and statistical
8 analysis that took place in the areas covered by this document. All of the areas identified and presented in
9 this certification report required extensive remedial actions. Consistent with the Sitewide Excavation
10 Plan (SEP, DOE 1998), these areas underwent predesign, excavation, and precertification activities,
11 including the use of real-time measurement systems as well as physical sampling and analysis. As a
12 result of these activities, it was determined that no further remediation was necessary prior to
13 certification.

14
15 Area 6 General Area East was subdivided into four areas - Area 6I, the Operable Unit (OU) 1 Stockpile
16 Area, Area 3B Main Drainage Corridor (MDC), and Area 6B. Area 6I and the OU1 Stockpile Area
17 combined contained seven Group 1 certification units (CUs). Area 3B MDC contained six Group 1 CUs.
18 Area 6B contained five Group 1 CUs. CU delineation for these areas is described in the Certification
19 Design Letter and Certification Project Specific Plan for Area 6 General Area East (DOE 2006).
20 Certification sampling was conducted to verify that the certification criteria were achieved. These criteria
21 state that: 1) the mean concentration or activities of the primary area-specific constituents of concern
22 (ASCOCs) within a CU must be less than the final remediation levels (FRLs) at the 95 percent upper
23 confidence level (UCL) or the 90 percent UCL for the secondary ASCOCs; and 2) no certification result
24 can exceed two times the FRL (i.e., the hotspot criterion). If either of these criteria is not met, then
25 further investigation and possible excavation is required. If both of these criteria are met for a CU, then it
26 can be released to restoration for development of the final land use.

27
28 Area 6 General Area East underwent the certification process in the spring of 2006. The results of this
29 process indicate that the CUs, as presented in this document, meet the certification criteria. During
30 certification sampling, one sub-CU in Area 6B (A6GAE-C16-11 - Figure 2-2) did not pass the hotspot
31 criterion. Because the hotspot appeared to continue into the Soil Stockpile (SP) 7 area, it was decided to
32 remove the sub-CU in question and include it as part of SP-7 for further delineation and remediation.
33 With the removal of this sub-CU from the certification area, the CU of concern passed the certification
34 criteria. This is discussed in detail in Section 3.2 of this document.

35
36 All samples related to this effort were collected in 2006 and analyzed at an off-site laboratory that is on
37 the FCP Approved Laboratories List, per the Sitewide Comprehensive Environmental Response,

1 Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 2003). The data
2 were subjected to the required validation and verification process.

3
4 On the basis of this reported information and supporting project files, DOE has determined that no
5 additional remedial actions are required in this portion of the site. The area will be considered certified
6 when the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency concur that
7 certification criteria have been met. At that time, DOE intends to proceed with final land use activities as
8 outlined in the Natural Resource Restoration Plan (DOE 2002).

9
10 DOE has restricted access to certified areas in order to maintain their integrity prior to final land use
11 development. FCP procedure EP-0008 has been developed to implement the process that protects
12 certified areas from becoming re-contaminated.

1.0 INTRODUCTION

1.1 PURPOSE

This Certification Report presents the process and data used by the U.S. Department of Energy (DOE) to determine that the existing area-specific constituents of concern (ASCOCs) in Area 6 General Area East (Figure 1-1) meet the certification requirements, and Area 6 does not require any additional soil remediation. This report presents final certification results for the certification units (CUs) identified in the Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for Area 6 General Area East (DOE 2006) except where specified in this document (Section 3.2). Also presented are the certification results for sampling done of utility trenches from within this area. Based on the information presented in this document, the DOE considers remedial goals achieved in the portion of the site addressed by this document.

1.2 BACKGROUND

In the Operable Unit (OU) 5 Record of Decision (ROD, DOE 1996a), DOE committed to excavating contaminated soil that exceeds health-based final remediation levels (FRLs), with final disposition of the excavated material in the On-Site Disposal Facility (OSDF) or an off-site disposal facility if the OSDF waste acceptance criteria (WAC) are exceeded. The OU5 Remedial Investigation Report (DOE 1995a) defined the potential extent of soil contamination exceeding the FRLs and, in general, indicated widespread contamination in approximately 430 acres of the 1,050-acre Fernald Closure Project (FCP).

In the OU5 Remedial Action Work Plan (RAWP, DOE 1996b), DOE committed to preparing a Sitewide Excavation Plan (SEP, DOE 1998), defining the overall approach to implementing the soil, and at- and below-grade debris cleanup obligations identified in the OU2 (DOE 1995b), OU3 (DOE 1996c), and OU5 RODs. In the SEP, the FCP was divided into ten remedial areas. This document addresses a portion of Remediation Area 6 identified as Area 6 General Area East (Figure 1-1).

After all necessary remediation is completed within each area/phase, the soil will be certified as attaining all clean up goals (i.e., FRLs). The SEP describes the general soil remediation and certification process at the FCP. As required by Section 4.1 of the SEP, Excavation Approach A was used in Area 6I and Area 6B, Approach B in the OU1 Stockpile Area, and Approach D in Area 3B Main Drainage Corridor (MDC). The remediation of this area is discussed in the CDL and Certification PSP for Area 6 General Area East.

1.3 AREA DESCRIPTION

The focus of this certification report is the 18.9-acre Area 6 General Area East, which consists of Area 6I, the OU1 Stockpile Area, Area 3B MDC, and Area 6B. The boundary for this area is shown on

1 Figure 1-1. As with other parts of Area 6, certification of Area 6 General Area East has been performed
2 in several phases based on the required action for each of the different sections to be found in this area.

3
4 **1.4 SCOPE**

5 The scope of this Certification Report includes details of certification sampling, analysis and validation
6 that took place in the Area 6 General Area East. This area was divided into 18 Group 1 CUs. The
7 certification design for these 18 CUs follows the general approach outlined in Section 3.4 of the SEP.

8
9 **1.5 OBJECTIVES**

10 The objectives of this Certification Report are:

- 11
- 12 • Provide an overview of the precertification and remedial activities conducted in the Area 6
13 General Area East
- 14
- 15 • Describe the analytical methods, data validation processes, data reduction and statistical
16 processes used to support the certification process
- 17
- 18 • Present the certification sampling results for the 18 CUs that make up the Area 6 General Area
19 East
- 20
- 21 • Present the statistical analysis showing that all 18 CUs have passed the certification criteria
22 (i.e., FRL attainment and hotspot criteria)
- 23
- 24 • Describe access controls implemented to prevent recontamination
- 25

26 **1.6 REPORT FORMAT**

27 This certification report is presented in six sections with supporting documentation and data in
28 Appendices A, B, C, and D. The sections of this report are as follows:

- 29
- 30 Section 1.0 Introduction: Purpose, background, area description, scope, and objectives of the
31 report
- 32
- 33 Section 2.0 Certification Approach: The CU design and approach to sampling and analysis used
34 for certification
- 35
- 36 Section 3.0 Overview of Field Activities: Area preparation/survey, sampling and changes to work
37 scope
- 38
- 39 Section 4.0 Analytical Methodologies, Data Validation Processes and Data Reduction
- 40
- 41 Section 5.0 Certification Evaluation and Conclusions
- 42
- 43 Section 6.0 Protection of Certified Areas
- 44
- 45 Appendix A Statistical Analysis of Sample Data

1 Appendix B Statistical Analysis of Truck Tanker Spill Area Data

2
3 Appendix C Statistical Analysis of Utility Trench Data

4
5 Appendix D Variance/Field Change Notices (V/FCNs) for the CDL and Certification PSP for
6 Area 6 General Area East
7

8 1.7 FCP CONTROLLED CERTIFICATION MAP

9 In order to track the status of certification at the FCP, DOE will include a site map showing the status of
10 the soil remediation areas with all Certification Reports. This map is included in this Certification Report
11 as Figure 1-2, and has been updated to reflect the status of the areas included in this document.

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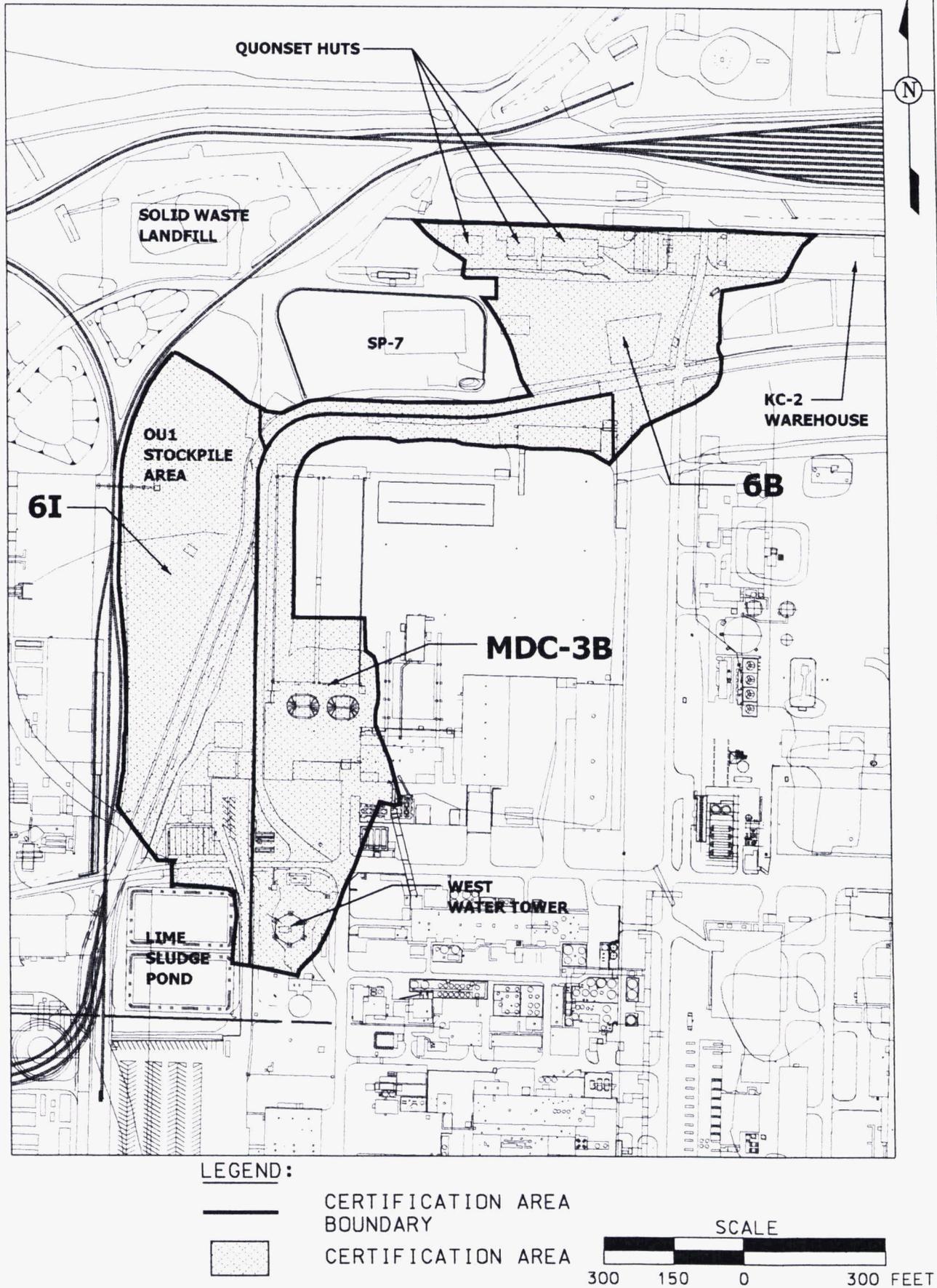
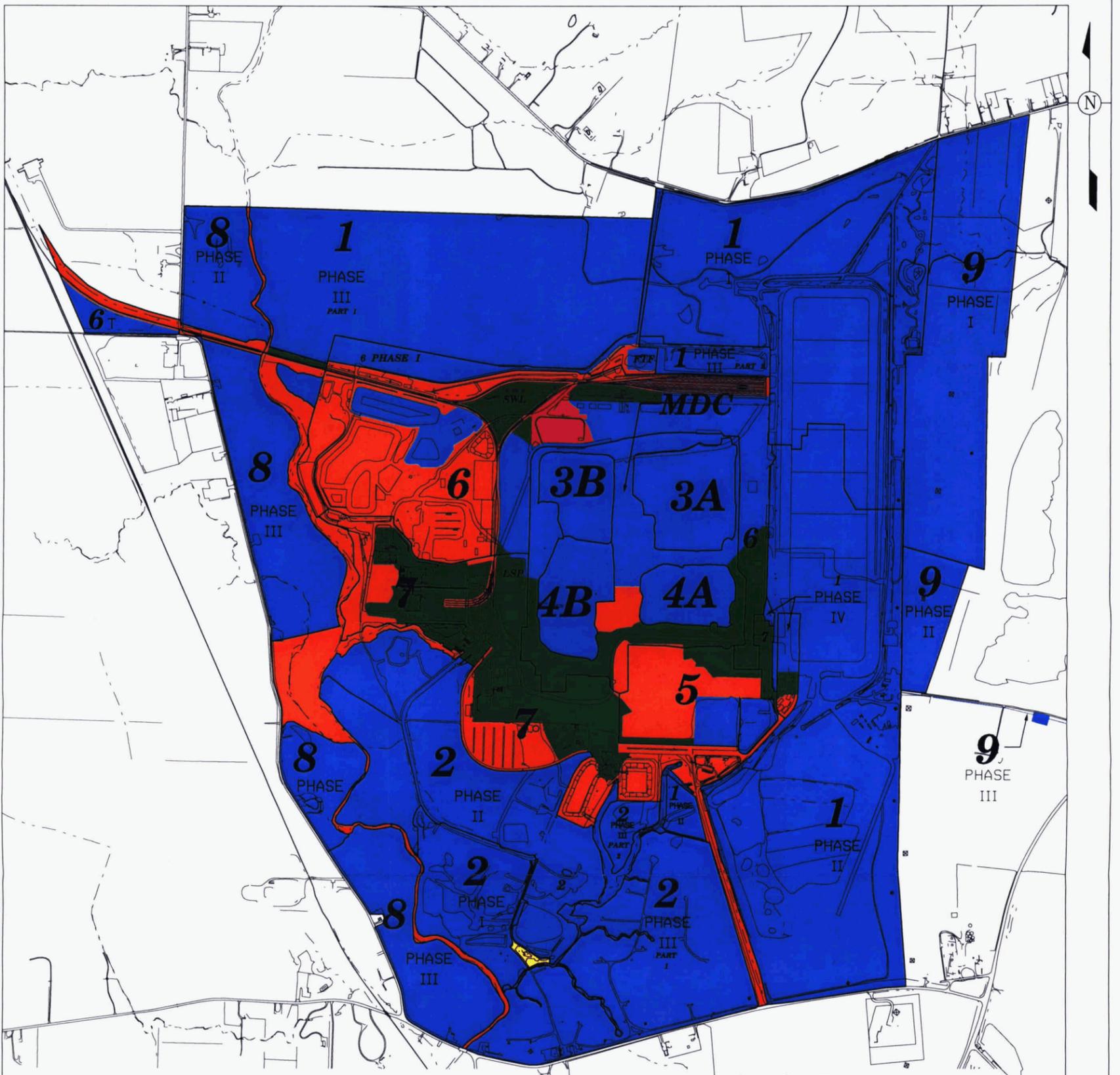


FIGURE 1-1. AREA 6 GENERAL AREA EAST CERTIFICATION LOCATION MAP WITH HISTORICAL SURFACE FEATURES



revised June 29, 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	174.7	173.9	0	0	0.8	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	15.2	4.2	0	0
AREA 6	149.5	56.1	74.3	14.4	4.8	0
AREA 7	77.2	0.3	29.9	47.0	0	0
AREA 8	98.9	98.9	0	0	0	0
MDC	39.8	21.0	4.8	14.0	0	0
PR/SSOD/PPDD	32.7	7.0	25.8	0.0	0	0
TOTAL ON SITE	1049.6	813.6	149.9	80.5	5.5	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 1-2. FCP CONTROLLED CERTIFICATION MAP

2.0 CERTIFICATION APPROACH

2.1 CERTIFICATION STRATEGY

This section summarizes the ASCOC selection process and the certification approach, including CU establishment, sampling design, and statistical analysis. The general purpose of certification sampling is to verify that the mean concentrations or activities of primary ASCOCs remaining in the soil following remedial activities are less than the FRLs at the 95 percent upper confidence level (UCL) for each primary ASCOC, and at the 90 percent UCL for secondary ASCOCs. This certification process also includes the hotspot criterion, which states that if any of the certification results exceed two times the FRL, further action is required as discussed in Section 3.4.5 of the SEP. If the mean residual ASCOC concentrations or activities are below the FRLs within the respective confidence bounds, and the hotspot criterion is met, then the remedial objectives have been achieved for the CU. It can then be released for regrading, reseeding and development of a final land use. The general certification strategy is described in Section 3.4 of the SEP, and more specifically in the CDL and Certification PSP for Area 6 General Area East.

2.1.1 Area-Specific Constituents of Concern

As committed in the SEP, total uranium, radium-226, radium-228, thorium-228, and thorium-232 (the sitewide primary ASCOCs) were retained as ASCOCs. Several COCs were retained as secondary ASCOCs. Table 2-1 lists the ASCOCs retained for sampling along with the reason for constituent retention and the applicable FRLs.

2.1.2 ASCOC Selection Criteria

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

- It was retained as an ASCOC in adjacent FCP soil remediation areas;
- It is listed as a soil constituent of concern (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;
- Analytical results show that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated contract-required detection limits (CRDLs);
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment; and
- Physical characteristics of the contaminant, such as degradation rate and volatility, indicate it is likely to persist in the soil between time of release and remediation.

1 2.1.3 ASCOC Selection Process

2 Table 2-1 lists the ASCOCs for the area and the criteria for constituent retention.
3

4 2.2 CERTIFICATION APPROACH

5 2.2.1 Certification Design

6 The intent of this effort was to certify the Area 6 General Area East. The certification design followed the
7 general approach outlined in Section 3.4 of the SEP and the SEP Addendum (DOE 2001) and is described
8 in the CDL and Certification PSP for Area 6 General Area East. A total of 18 Group 1 CUs were
9 designed to cover all of the areas within the scope of this document - seven in Area 6I/OU1 Stockpile
10 Area, six in Area 3B MDC, and five in Area 6B. The CU design is depicted on Figure 2-1. The sample
11 locations are shown on Figures 2-2 through 2-4.
12

13 The 18 Group 1 CUs established are as follows:

- 14
- 15 • CUs 1 through 6 - OU1 Stockpile Area and remainder of Area 6I
- 16 • CUs 7 through 12 - Area 3B MDC
- 17 • CUs 13 through 17 - Area 6B
- 18 • CU 18 - Southwest Corner of Area 6I
- 19

20 Several factors were taken into consideration when determining the boundaries for each CU within Area 6
21 General Area East. These factors included: historical land use, proximity to other areas of the site,
22 residual COC data, previously existing hazardous waste management unit(s), and the presence of
23 high-leachability areas. Additionally, because it was considered to be an impacted area, it was comprised
24 of Group 1 CUs to allow for more concentrated sampling and to ensure the excavation fully remediated
25 this area of the site.
26

27 2.2.2 Sample Selection Process

28 Certification sampling locations were selected according to Section 3.4.2 of the SEP. Each CU was first
29 divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly
30 selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those
31 locations against the minimum distance criteria for the CU. If the minimum distance criteria were not
32 met, an alternative random location was selected for that sub-CU, and all the locations were re-tested.
33 This process continued until all 16 random locations met the minimum distance criteria.
34

35 All sub-CUs and planned certification sampling locations are shown on Figures 2-2 through 2-4. Four of
36 the sixteen sample locations (one location from each quadrant of the CU) were designated with a "V",
37 indicating archive sample locations, which were not collected unless they were needed for additional

1 analysis. One sample location in the CU was designated with a "D", indicating a field duplicate sample
2 collection location.

3
4 Prior to commencement of certification sampling field activities, all certification sample locations were
5 surveyed and field verified to make sure no surface obstacles would prevent sample collection at the
6 planned location.

7 8 2.2.3 Certification Sampling

9 Each sample was collected from the 0 to 6-inch surface soil interval at the designated and surveyed
10 location as described in Section 2.2.2 of this document. The certification locations that were designated
11 as archive locations were identified in the field but not collected, and the other identified locations were
12 submitted for analysis. All samples were analyzed at an off-site laboratory for the five primary ASCOCs
13 using the gamma spectrometry method. Additional information regarding the certification sampling and
14 analysis including the secondary ASCOCs for individual areas may be obtained from the
15 CDL/Certification PSP for Area 6 General Area East. Also, prior to beginning and during the
16 certification process, several issues arose which impacted certification sampling in Area 6 General Area
17 East. These are described in more detail in Section 3.2 of this document.

18 19 2.2.4 Statistical Analysis

20 Once data are entered into the Sitewide Environmental Database (SED), a statistical analysis was
21 performed to evaluate the pass/fail criteria for the CUs. The statistical approach is discussed in
22 Section 3.4.3, Appendix G of the SEP.

23
24 Two criteria must be met for a CU to pass certification. If the data distribution is normal or lognormal,
25 the first criterion compares the 95 percent UCL on the mean of each primary COC to its FRL, or the
26 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with
27 the 95 percent UCL above the FRL for primary ASCOCs (or 90 percent UCL above the FRL for
28 secondary COCs) results in that CU failing certification. If the data distribution is not normal or
29 lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to
30 evaluate the second criterion. The *a posteriori* test will be performed to determine whether the sample
31 size is sufficient for a meaningful conclusion of this comparison. The second criterion is the hotspot
32 criterion, which states that primary or secondary ASCOC results must not exceed two times the FRL.
33 When the given UCL on the mean for each COC is less than its FRL and the hotspot criterion is met, the
34 CU will be considered certified.

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

TABLE 2-1
ASCOC LIST FOR AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

ASCOC	FRL/BTV**	Reason Retained
PRIMARY ASCOCs		
Total Uranium	82 mg/kg	Retained as a primary ASCOC sitewide
Total Uranium High-Leachability	20.0 mg/kg	Retained as a primary ASCOC sitewide
Radium-226	1.7 pCi/g	Retained as a primary ASCOC sitewide
Radium-228	1.8 pCi/g	Retained as a primary ASCOC sitewide
Thorium-228	1.7 pCi/g	Retained as a primary ASCOC sitewide
Thorium-232	1.5 pCi/g	Retained as a primary ASCOC sitewide
SECONDARY ASCOCs		
Aroclor-1254	0.13 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC
Aroclor-1260	0.13 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC
Benzo(a)pyrene	1.0 mg/kg	KC-2 Warehouse and Plant 1 Pad COC; exceeds FRL results in 6B
Beryllium	1.5 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; exceeds FRL results in all areas
Bromodichloromethane	4.0 mg/kg	Quonset Hut COC; no above-FRL results present
Cesium-137	1.4 pCi/g	Plant 1 Pad COC; above-FRL results in 6I, OU1 Stockpile Area and 3B MDC
Dibenzo(a,h)anthracene	2.0 mg/kg	KC-2 Warehouse and Plant 1 Pad COC; exceeds FRL results in 6B
1,1-Dichloroethene	0.41 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; no above-FRL results present
1,2-Dichloroethene	0.16 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; no above-FRL results present
Dieldrin	0.015 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC
Methylene Chloride	37.0 mg/kg	Quonset Hut COC; no above-FRL results present
Technetium-99	29.1 pCi/g*	Exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC
Tetrachloroethene	3.6 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; no above-FRL results present
Thorium-230	280 pCi/g	KC-2 Warehouse and Plant 1 Pad COC; no above-FRL results present
Toluene	100,000 mg/kg	Quonset Hut COC; no above-FRL results present
1,1,1-Trichloroethane	4.3 mg/kg	Quonset Hut COC; no above-FRL results present
Trichloroethene	25.0 mg/kg	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC; no above-FRL results present

TABLE 2-1
ASCOC LIST FOR AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

ASCOC	FRL/BTV**	Reason Retained
SECONDARY ASCOCs (cont.)		
Xylenes	920,000 mg/kg	Quonset Hut COC; no above-FRL results present
ECOLOGICAL ASCOCs		
Cadmium	5.0 mg/kg	KC-2 Warehouse, and Plant 1 Pad COC; retained for BTV - mapped in all areas
Silver	10.0 mg/kg	KC-2 Warehouse, and Plant 1 Pad COC; retained for BTV - mapped in 6B and 3B MDC
Antimony	10.0 mg/kg	KC-2 Warehouse, and Plant 1 Pad COC; retained for BTV - mapped in all areas
Molybdenum	10.0 mg/kg	KC-2 Warehouse, and Plant 1 Pad COC; retained for BTV - mapped in 6B and 3B MDC

1
 2 * Where the WAC is less than the FRL (as with technetium-99), the WAC value will be used when
 3 evaluating data.
 4

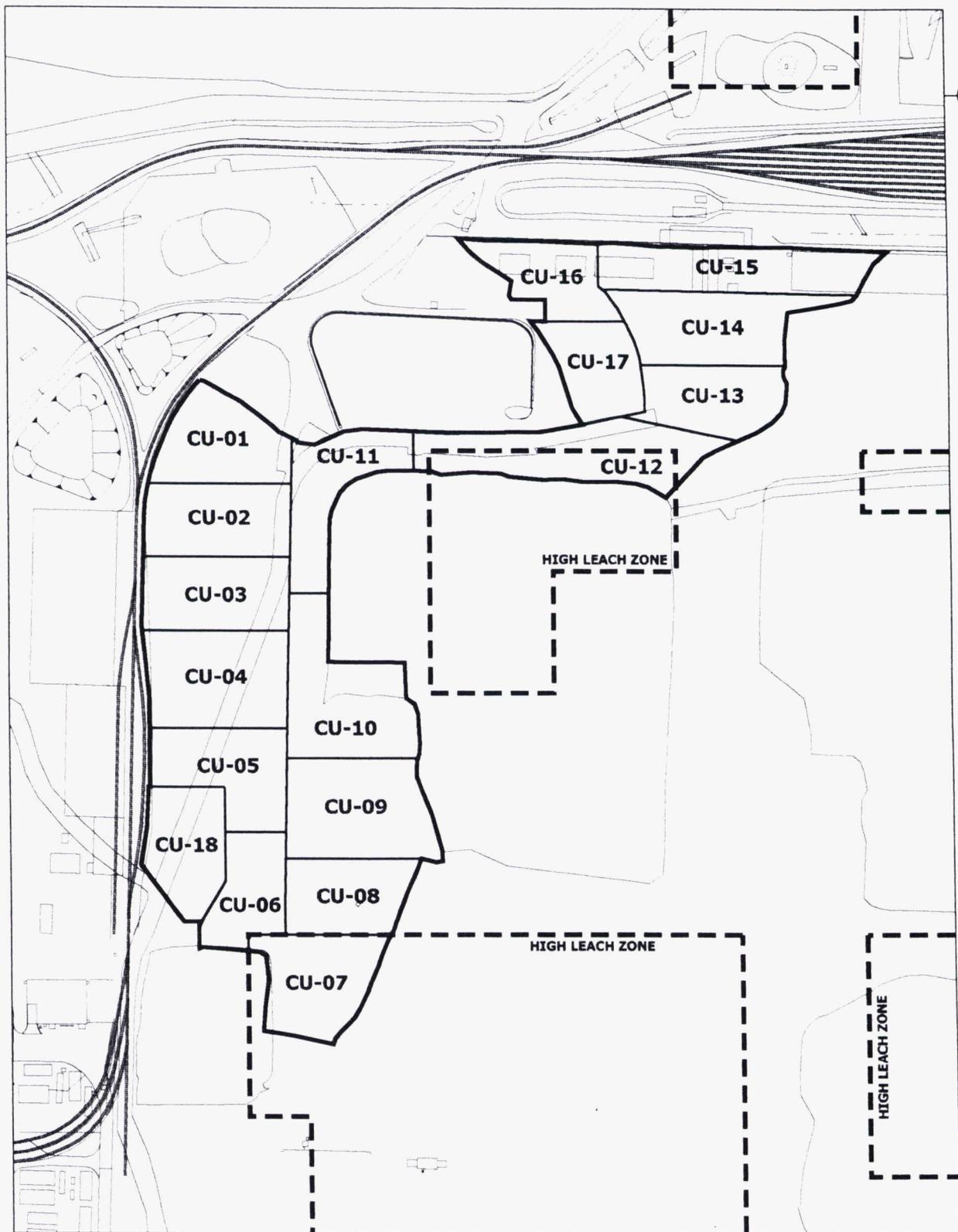
5 **BTVs apply to ecological COCs.
 6

7 BTV - benchmark toxicity level
 8 mg/kg - milligrams per kilogram
 9 pCi/g - picoCuries per gram
 10

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STATE PLANNING COORDINATE SYSTEM 1983

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LEGEND:

SCALE



FIGURE 2-1. AREA 6 GENERAL AREA EAST CU LOCATION MAP

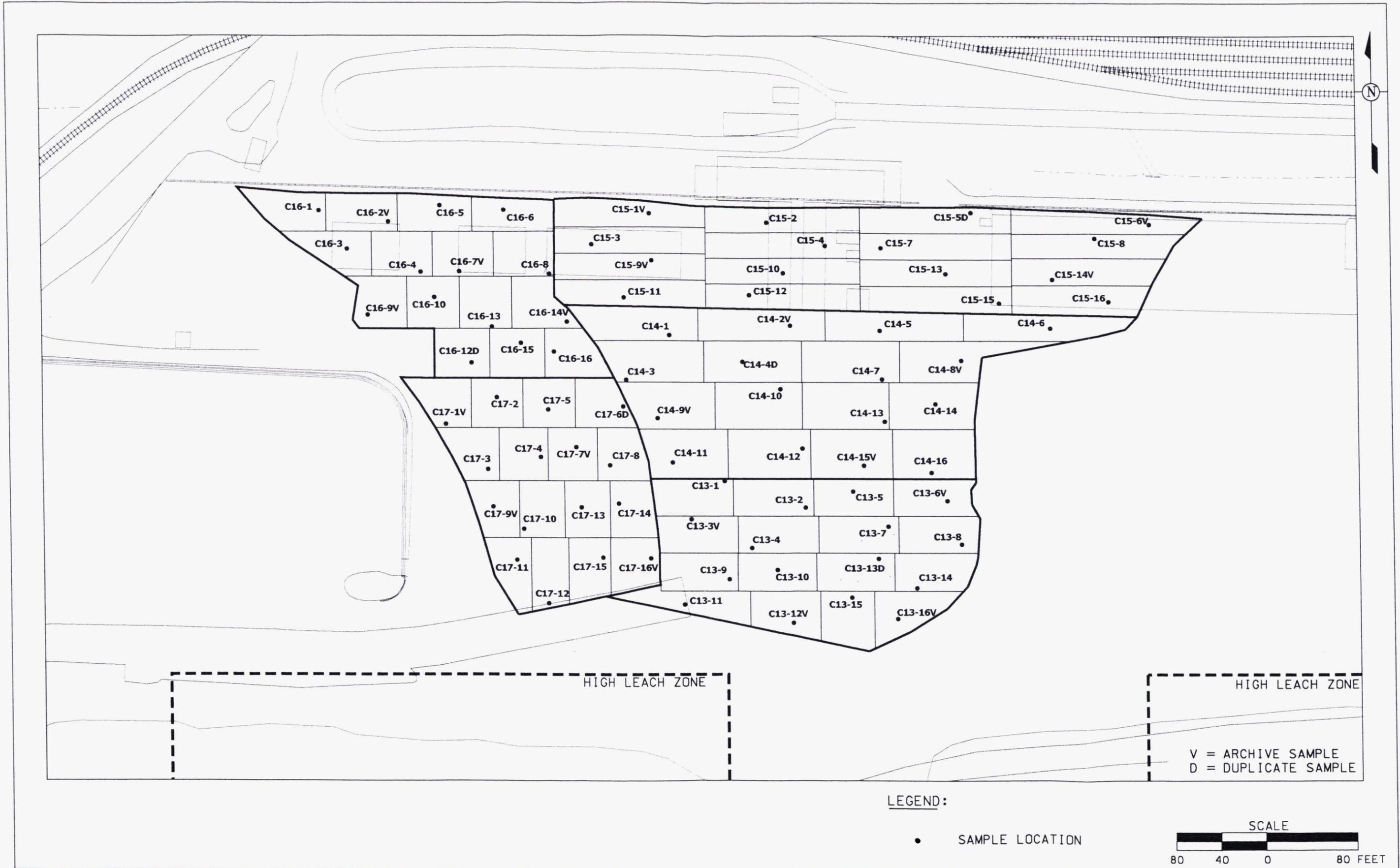


FIGURE 2-2. AREA 6 GENERAL AREA EAST SUB CU AND SAMPLE LOCATION MAP FOR AREA 6B



FIGURE 2-3. AREA 6 GENERAL AREA EAST SUB CU AND SAMPLE LOCATION MAP FOR AREA 6I (HOOPERVILLE AND DU1 STOCKPILE AREA)

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 were evaluated for remedial actions. Based on the results of sampling and scanning activities summarized in Sections 3.1 and 3.2, it has been determined that no further remedial actions are necessary.

3.1 AREA PREPARATION AND PRECERTIFICATION

Percertification surveys were performed from February 9, 2006 through April 18, 2006 per the PSP Guidelines for General Characterization for Sitewide Soil Remediation, Sections 3.0 and 6.0 (DOE 2005a).

The total population of the data used to support the conclusion that the area is ready for certification consisted of predesign data for areas requiring no remedial action and precertification data from the excavated/remediated footprints.

3.2 CHANGES TO SCOPE OF WORK

The scope of work was documented in the final CDL and Certification PSPs.

The changes in the scope of work were documented by V/FCNs as required by Section 6.4 of the CDL/Certification PSP (Appendix D). These changes are as follows.

Prior to beginning the certification process, it was thought that a portion of Area 6I would be needed to construct a load-out area for surrogate material from the Silos Project and sampling was done on the footprint of the proposed area in support of this activity. This sampling activity was done under V/FCN 20600-PSP-0016-69 which was written to the PSP for Excavation Control and Precertification of Area 6 Waste Pits and General Area (DOE 2005b). After sampling was completed, it was decided to locate the load-out area elsewhere. The sampling done under this V/FCN became CU 18.

During certification sampling, a hotspot was discovered in CU 16 at sub-CU 11 (A6GAE-C16-11, Figure 2-2). Attempts to delineate this hotspot were made across several V/FCNs - 20600-PSP-0018-1, 20600-PSP-0018-2, 20600-PSP-0018-3, and 20600-PSP-0018-4 under the CDL and Certification PSP for Area 6 General Area East. Complicating this process, the berm between this area and Soil Stockpile (SP) 7 was breached and water from the SP-7 area flowed into the area under delineation. Once it became likely that this hotspot continued beyond the berm and into SP-7, it was decided to move sub-CU A6GAE-C16-11 out of this certification effort and in to the SP-7 area where further delineation and additional remediation could be done.

1 During certification sampling, a tanker truck filled with contaminated water tipped over and spilled in to
2 CUs A6GAE-C11 and A6GAE-C12 in Area 3B MDC (Figure 2-4). These two CUs had already been
3 sampled. Under V/FCN 20600-PSP-0018-6, ten soil samples were collected within the spill impacted
4 area to show that the spill did not adversely effect the certification of the area.

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

All samples collected were sent for off-site analysis. The laboratories complied with Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 2003) requirements. 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. An ASL D data package was provided for all of the analytical data for the required ASCOCs. All data were validated. Once data were validated as required, results were entered into the FCP SED. Final certification results are provided in Appendix A. A summary of the analytical methods used follows.

4.1.1 Chemical Methods

Polychlorinated Biphenyl (PCBs)/Pesticides

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

Metals

Samples submitted for metals analyses were either analyzed by inductively coupled plasma-atomic emission spectrometry or inductively coupled plasma-mass spectrometry.

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 analyses were analyzed by gas chromatography/mass spectrometry.

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 percent recovery for duplicate samples were specified for each

1 analyte. Laboratories were required to meet these specifications using the methodologies described
2 below.

3
4 Total Uranium

5 Samples were analyzed for uranium-238 using gamma spectrometry, and the results were used to
6 calculate the total uranium value. The calculation used was as follows:

7
8
$$\text{Total Uranium (mg/kg)} = (2.998544) \times \text{Uranium-238 gamma spectrometry result (pCi/g)}$$

9
10 The validation qualifier assigned to the total uranium value was the same as the uranium-238 qualifier.

11
12 Radium-226

13 Samples were analyzed by gamma spectrometry, and radium-226 was quantified by measuring gamma
14 rays emitted by members of its decay chain. This method does not require chemical separation, but the
15 samples must be allowed a 20-day progeny in-growth period before counting. The off-site laboratory
16 used the same gamma ray emission lines and error weighted average methodology to calculate all
17 certification results.

18
19 Radium-228

20 Following gamma spectrometry analysis, radium-228 was also quantified by measuring gamma rays
21 emitted by members of its decay chain. The off-site laboratory used the same gamma ray emission lines
22 and error weighted average methodology to calculate the certification results.

23
24 Isotopic Thorium

25 Isotopic thorium (thorium-228 and thorium-232) was quantified by measuring gamma rays emitted by
26 members of its decay chain. The off-site laboratory used the same gamma ray emission lines and error
27 weighted average methodology to calculate the certification results.

28
29 Cesium-137

30 Cesium-137 was quantified by measuring its gamma. The off-site laboratory used the same gamma ray
31 emission lines and error weighted average methodology to calculate the certification results.

32
33 Technetium-99

34 Technetium-99 was quantified by using a liquid Scintillation counter.
35

1 Thorium-230

2 Samples were analyzed by alpha spectrometry and the isotope was quantified by measuring its
3 characteristic alpha rays at 4631-kiloelectron volt (keV) and 4687 keV. The off-site laboratory used the
4 combination of these two alpha lines with the help of a yield indicator, thorium-229, to quantify the
5 thorium-230 results.

6 7 4.2 DATA VERIFICATION AND VALIDATION

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

14
15 Specific parameters associated with the data were evaluated during V&V to determine whether or not the
16 data quality objectives were met. Five principal Quality Assurance parameters (i.e., precision, accuracy,
17 completeness, comparability, and representativeness) were addressed during V&V. Field sampling and
18 handling, laboratory analysis and reporting, and non-conformances and discrepancies in the data were
19 examined to ensure compliance with appropriate and applicable procedures.

20
21 The V&V process evaluated the following parameters:

- 22 ● Specific field forms for sample collection and handling
- 23 ● Chain of Custody Forms
- 24 ● Completeness of laboratory data deliverable.
- 25
- 26

27 The data validation process examined the analytical data to determine the level of confidence of the
28 results. General areas examined include the following:

- 29 ● Holding times
- 30 ● Instrument calibrations
- 31 ● Calculation of results
- 32 ● Laboratory/field duplicate precision
- 33 ● Field/Laboratory Blank contamination
- 34 ● Dry weight correction for solid samples
- 35 ● Correct detection limits reported
- 36 ● Laboratory control sample recoveries and compliance with established limits.
- 37
- 38

1 Parameters unique to the evaluation of radiochemical analyses include:

- 2
- 3 • Calibration data for specific energies
- 4 • Background checks
- 5 • Relative error ratios
- 6 • Detector efficiencies
- 7 • Background count correction.
- 8

9 For this project, all the certification sample data were reviewed and validated for all criteria noted above.
10 Per project requirements, a minimum 10 percent of the certification data were validated to Validation
11 Support Level (VSL) D. This validation included the same review process as for VSL B, but included a
12 systematic review of the raw data and recalculations. To meet this project requirement (as specified in the
13 SEP and Data Quality Objectives SL-052), all analyses from the selected data were validated to VSL D,
14 and the remaining data were validated to VSL B.

15
16 Following V&V, qualifier codes were applied to specific data points, reflecting the level of confidence
17 assigned to the particular datum. These codes can include the following:

- 18
- 19 - No qualification; the positive result or detection limit is confident as reported
- 20
- 21 J Positive result is estimated or imprecise; data point is usable for decision-making purposes.
22 Positive results less than the contract required reporting limit are also qualified in this manner
- 23
- 24 R Positive result or detection limit is considered unreliable; data point should not be used for
25 decision-making purposes
- 26
- 27 U Undetected result at the stated limit of detection
- 28
- 29 UJ Undetected result; detection limit is considered estimated or imprecise; the data point is usable
30 for decision-making purposes
- 31
- 32 N Positive result is tentatively identified - that is, there is some question regarding the actual
33 identification and quantification of the result. Compound reported is best professional
34 judgment of the interpretation of the supporting data, such as mass spectra. Caution must be
35 exercised with the use of this data
- 36
- 37 NJ Positive result is tentatively estimated; detection limit is considered estimated or imprecise
- 38
- 39 NV Not validated. The results for this sample were not validated
- 40
- 41 Z This result, or detection limit in this analysis is not the best one to use; another analysis
42 (e.g., the dilution or re-analysis) contains a more confident and usable result.
- 43

44 The V&V of this data set did not identify any problems. All the results were either not qualified (-),
45 qualified as estimated (J) and/or non-detects (U). No results were qualified as rejected.

1 **4.3 DATA REDUCTION**

2 Each sample used to support the certification decision was entered in the FCP SED with the following
3 information:

4
5 Field Information

- 6 • Sample Identification Number - A unique number assigned to each discrete sample point
- 7 • Coordinate Information - Northing and Easting locations
- 8 • Certification Unit - Each sample is assigned to a CU based on a location.

9
10 Laboratory Information

11 For each sample result the following information is entered:

- 12 • Laboratory Result - The reported analytical value from the laboratory
- 13 • Laboratory Qualifier - The qualifier reported from the lab. For radiological parameters
14 non-detect values are assigned a U qualifier
- 15 • Total Propagated Uncertainty (TPU) - This value represents the uncertainty associated with the
16 reported result. TPU includes the counting error, as well as uncertainty from other laboratory
17 measurements and data reduction (applicable to radiological parameters only)
- 18 • Units - The units in which the Laboratory Result is reported.

19
20
21
22
23
24 Validation Information

- 25 • Validation Result - The result based on the validation process. During the validation process,
26 sample results may be adjusted. If the laboratory result is less than the associated minimum
27 detectable concentration, the validation result becomes the minimum detectable concentration
28 value
- 29 • Validation TPU - The TPU based on the validation process
- 30 • Validation Qualifier - The qualifier assigned as a result of the data validation process
- 31 • Validation Units - The units in which the Validation Result is reported.

32
33
34
35
36 Using the information as summarized above, the following actions were taken for data reduction of each
37 CU data set.

- 38 1. All the data for each CU were queried from SED.
 - 39 2. The data from the validation fields were used for statistical calculations
 - 40 3. Data with a qualifier of R or Z was not used in the statistical calculations
 - 41 4. The highest of the two duplicate results was used in the statistical calculations
 - 42 5. One half of the non-detect (U or UJ) values were used in the statistical calculations.
- 43

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

Certification success or failure was based on comparing sample data from the 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 A.

5.1 CERTIFICATION RESULTS AND EVALUATION

Below is a summary of the analytical results and statistical analyses of the data for each CU in Area 6 General Area East.

A6GAE-C1, A6GAE-C2, A6GAE-C3, A6GAE-C4, A6GAE-C5, A6GAE-C6, A6GAE-C7, A6GAE-C8, A6GAE-C9, A6GAE-C10, A6GAE-C13, A6GAE-C14, A6GAE-C15, A6GAE-C17, and A6GAE-C18

All of the above-listed CUs passed the certification criteria as outlined in Section 2.2.4. Final certification data are presented in Appendix A.

A6GAE-C11 AND A6GAE-C12

During the certification process a tanker truck containing contaminated water from SP-7 tipped over and spilled the water into a portion of CUs 11 and 12. Ten samples were collected from the potentially affected area. Upon receipt of the analytical results from this investigation, the data were tested against the certification criteria both independently and as they fit into the respective CUs where the samples were collected (i.e., statistical evaluation was done on the data set independently and as part of the data sets for CUs 11 or 12). This evaluation indicated that the two CUs that contained the spilled water passed the certification criteria. The data from these statistical evaluations are presented in Appendix B.

A6GAE-C16

While sampling in CU A6GAE-C16, a hotspot was identified at sub-CU 11 (A6GAE-C16-11, Figure 2-2). After it became likely that the hotspot extended beyond the boundaries of Area 6B and into SP-7, it was decided to remove the sub-CU and continue to delineate and remediate as part of SP-7. As a result, CU 16 had only 11 sample results instead of the usual 12. However, the CU passed all certification criteria and the *a posteriori* test.

UTILITIES

During utility removal, samples were collected from the bottom of the trenches created from the removal action in order to certify the area under where the utilities had been. This data was collectively treated as three CUs. The statistical evaluations of this data are presented in Appendix C.

1 Final certification data are presented in Appendix A. Based on these results, DOE has determined that the
2 remedial objectives of the OU5 ROD have been achieved in these areas and no further remedial actions
3 are required.

4

5 **5.2 CERTIFICATION CONCLUSIONS**

6 Based on the sampling results and statistical analyses presented in this report, DOE has determined that
7 the remedial objectives in the OU5 ROD have been achieved in the Area 6 General Area East. Therefore,
8 upon EPA and Ohio Environmental Protection Agency (OEPA) concurrence, DOE has determined that no
9 further soil remedial actions are required in these areas and that the certification activities are complete.

10 The subject areas will be released for final land use.

6.0 PROTECTION OF CERTIFIED AREAS

DOE has restricted access to certified areas in order to maintain their integrity prior to transferal for final land use. FCP Procedure EP-0008, Access to a Certified Area, has been developed to implement a process to protect certified areas from being 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 Restoration 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 Restoration Group will approve requests 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.

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APPENDIX A

STATISTICAL ANALYSIS OF SAMPLE DATA

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 1

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99
A6GAE-C01-1	13.3 -	0.852 -	0.898 -	0.852 -	1.31 -	0.903 U
A6GAE-C01-2	12.4 -	0.744 -	0.737 -	0.744 -	1.03 -	0.887 U
A6GAE-C01-3	11 -	0.768 -	0.82 -	0.768 -	0.925 -	0.872 U
A6GAE-C01-6	8.07 -	0.862 -	0.811 -	0.862 -	1.17 -	0.859 U
A6GAE-C01-7	4.88 -	0.527 -	0.509 -	0.527 -	0.776 -	0.87 U
A6GAE-C01-8	11.6 -	0.759 -	0.781 -	0.759 -	0.979 -	0.884 U
A6GAE-C01-8-D	9.26 -	0.787 -	0.849 -	0.787 -	1.04 -	0.861 U
A6GAE-C01-9	19 -	0.788 -	0.858 -	0.788 -	1.12 -	0.878 U
A6GAE-C01-10	9.35 -	0.657 -	0.641 -	0.657 -	1.12 -	0.854 U
A6GAE-C01-12	11.3 -	0.669 -	0.674 -	0.669 -	0.969 -	0.883 U
A6GAE-C01-13	16.4 -	1.2 -	1.19 -	1.2 -	1.01 -	0.86 U
A6GAE-C01-15	5.02 -	0.762 -	0.763 -	0.762 -	0.979 -	0.869 U
A6GAE-C01-16	10.3 -	0.693 -	0.694 -	0.693 -	2.1 -	0.843 U
FRL	82	1.5	1.7	1.8	1.7	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	19	1.2	1.19	1.2	2.1	0.903
Max. >= Limit	NO	NO	NO	NO	Yes	NO
W-statistic Prob. #	--	--	--	--	2.7% (LN)	--
Test Procedure	--	--	--	--	Median (Sign)	--
Sample Size	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12
% Nondetects	0%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	1.035	--
UCL	--	--	--	--	1.17	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	Pass	--
a posteriori Sample Size calculation	--	--	--	--	7 Pass	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 1

Sample ID	Cesium-137	Cadmium	Beryllium	Aroclor-1260	Aroclor-1254	Antimony
A6GAE-C01-1	0.0504 J	0.255 J	0.847 -	39.2 J	57.1 J	0.585 U
A6GAE-C01-2	0.0401 J	0.183 J	0.445 -	11.5 J	20.6 J	0.705 U
A6GAE-C01-3	0.0558 U	0.15 J	0.477 -	9.6 J	15.2 J	0.569 U
A6GAE-C01-6	0.0401 U	0.235 J	0.542 -	6.4 J	13.6 J	0.679 U
A6GAE-C01-7	0.0276 U	0.185 J	0.341 -	3.7 U	3.7 U	0.69 U
A6GAE-C01-8	0.043 U	0.243 J	0.45 -	25.9 J	57.6 J	0.69 U
A6GAE-C01-8-D	0.0664 U	0.174 J	0.303 -	18.9 J	39.9 J	0.666 U
A6GAE-C01-9	0.0464 U	0.331 J	0.601 -	34 J	72 J	0.689 U
A6GAE-C01-10	0.0467 U	0.167 J	0.538 -	8.3 J	15.5 J	0.685 U
A6GAE-C01-12	0.0536 U	0.186 J	0.57 -	15.3 J	29.5 J	0.686 U
A6GAE-C01-13	0.0458 U	0.234 J	0.51 -	5 J	8.4 J	0.7 U
A6GAE-C01-15	0.0661 U	0.146 J	0.511 -	4 U	4 U	0.676 U
A6GAE-C01-16	0.0794 U	0.136 J	0.492 -	3.6 U	3.6 U	0.637 U
FRL	1.4	82	1.5	130	130	96
UNITS	pCi/g	mg/kg	mg/kg	ug/kg	ug/kg	mg/kg
Conf. Level	0.9	0.9	0.9	0.9	0.9	0.9
Max. Result	0.0794	0.331	0.847	39.2	72	0.705
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	10	0	0	3	3	12
% Nondetects	83.3%	0%	0%	25%	25%	100%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 2

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Cesium-137
A6GAE-C02-2	5.11 J	0.471 -	0.487 -	0.471 -	0.737 -	0.0339 U
A6GAE-C02-3	18 J	0.876 -	0.908 -	0.876 -	1.07 -	0.0527 U
A6GAE-C02-4	3.12 U	0.855 -	0.915 -	0.855 -	0.994 -	0.0725 U
A6GAE-C02-5	7.37 J	0.728 -	0.739 -	0.728 -	0.906 -	0.0638 U
A6GAE-C02-7	9.77 J	0.831 -	0.848 -	0.831 -	1.02 -	0.0773 U
A6GAE-C02-8	10.3 J	0.706 -	0.706 -	0.706 -	1.18 -	0.0631 U
A6GAE-C02-9	4.12 U	1.03 -	1 -	1.03 -	1.28 -	0.06 U
A6GAE-C02-10	9.75 J	0.913 -	0.903 -	0.913 -	1.12 -	0.0731 U
A6GAE-C02-10-D	4.05 J	0.883 -	0.906 -	0.883 -	1.21 -	0.0707 U
A6GAE-C02-12	8.89 J	1.04 -	1.07 -	1.04 -	1.16 -	0.0878 U
A6GAE-C02-13	8.82 J	0.903 -	0.916 -	0.903 -	1.14 -	0.0755 U
A6GAE-C02-14	13.1 J	0.864 -	0.876 -	0.864 -	1.36 -	0.135 -
A6GAE-C02-15	6.7 J	0.916 -	0.905 -	0.916 -	1.29 -	0.082 U
FRL	82	1.5	1.7	1.8	1.7	1.4
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	18	1.04	1.07	1.04	1.36	0.135
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	2	0	0	0	0	11
% Nondetects	16.7%	0%	0%	0%	0%	91.7%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 2

Sample ID	Cadmium		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C02-2	0.265	J	0.364	-	3.7	U	3.7	U	0.697	U
A6GAE-C02-3	0.157	J	0.428	-	3.7	U	4.4	J	0.709	U
A6GAE-C02-4	0.188	J	0.435	-	4.4	J	15.6	-	0.717	U
A6GAE-C02-5	0.168	J	0.456	-	5.3	J	14.7	-	0.724	U
A6GAE-C02-7	0.148	J	0.509	-	4.9	J	11.9	J	0.72	U
A6GAE-C02-8	0.173	J	0.538	-	11	J	24.7	-	0.975	J
A6GAE-C02-9	0.116	U	0.344	-	3.8	U	5	J	0.742	U
A6GAE-C02-10	0.16	J	0.368	-	4.7	J	18.9	-	0.698	U
A6GAE-C02-10-D	0.136	J	0.419	-	3.7	U	12.9	J	0.683	U
A6GAE-C02-12	0.176	J	0.44	-	7.3	J	29.3	-	0.702	U
A6GAE-C02-13	0.2	J	0.546	-	25.5	-	65.9	-	0.723	U
A6GAE-C02-14	0.184	J	0.527	-	41.9	-	125	-	0.678	U
A6GAE-C02-15	0.146	J	0.475	-	8	J	24.2	-	0.676	U
FRL	82		1.5		130		130		96	
UNITS	mg/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	0.265		0.546		41.9		125		0.975	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	1		0		4		1		11	
% Nondetects	8.3%		0%		33.3%		8.3%		91.7%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 3

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Cesium-137
A6GAE-C03-1	7.59 J	0.995 -	1.01 -	0.995 -	1.19 J	0.0532 U
A6GAE-C03-1-D	7.89 J	1.02 -	1.09 -	1.02 -	1.39 J	0.0703 U
A6GAE-C03-3	11.5 J	0.881 -	0.893 -	0.881 -	0.949 J	0.0708 U
A6GAE-C03-4	7.25 J	1.2 -	1.2 -	1.2 -	1.42 J	0.0773 U
A6GAE-C03-5	6.8 J	0.896 -	0.905 -	0.896 -	0.94 J	0.0578 U
A6GAE-C03-6	8.71 J	0.823 -	0.847 -	0.823 -	0.976 J	0.0797 U
A6GAE-C03-8	7.85 J	0.924 -	0.899 -	0.924 -	0.919 J	0.0822 U
A6GAE-C03-10	6.37 J	1.12 -	1.12 -	1.12 -	1.14 J	0.044 U
A6GAE-C03-11	10.2 J	1.14 -	1.15 -	1.14 -	1.08 J	0.0873 U
A6GAE-C03-12	9.32 J	1.1 -	1.1 -	1.1 -	1.2 J	0.0587 U
A6GAE-C03-13	9.28 J	0.938 -	0.942 -	0.938 -	1.06 J	0.056 U
A6GAE-C03-14	13.9 J	0.923 -	0.939 -	0.923 -	0.969 J	0.0346 U
A6GAE-C03-16	5.13 -	1.3 -	1.34 -	1.3 -	1.09 J	0.0518 U
FRL	82	1.5	1.7	1.8	1.7	1.4
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	13.9	1.3	1.34	1.3	1.42	0.0873
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12
% Nondetects	0%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 3

Sample ID	Cadmium		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C01-1	0.561	U	0.52	-	3.9	U	5	J	0.448	UJ
A6GAE-C01-2	0.558	U	0.52	-	3.8	U	4	J	0.446	UJ
A6GAE-C01-3	0.566	U	0.52	-	15.4	-	51.1	-	0.453	UJ
A6GAE-C01-6	0.495	U	0.69	-	3.4	U	3.4	U	0.396	UJ
A6GAE-C01-7	0.582	U	0.66	-	4	U	4.9	J	0.466	UJ
A6GAE-C01-8	0.566	U	0.58	-	9.5	J	28.4	-	0.453	UJ
A6GAE-C01-8-D	0.633	U	0.66	-	9.5	J	24.2	-	0.506	UJ
A6GAE-C01-9	0.571	U	0.64	-	3.8	U	5.8	J	0.457	UJ
A6GAE-C01-10	0.489	U	0.62	-	3.4	U	5.9	J	0.391	UJ
A6GAE-C01-12	0.583	U	0.6	-	4.1	U	9.2	J	0.466	UJ
A6GAE-C01-13	0.564	U	0.56	-	3.8	U	9.4	J	0.451	UJ
A6GAE-C01-15	0.539	U	0.67	-	21.9	-	51	-	0.431	UJ
A6GAE-C01-16	0.604	U	0.77	-	4.1	U	4.1	U	0.483	UJ
FRL	82		1.5		130		130		96	
UNITS	mg/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	0.633		0.77		21.9		51.1		0.506	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	12		0		9		2		12	
% Nondetects	100%		0%		75%		16.7%		100%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 4

Sample ID	Uranium, Total		Thorium-232		Thorium-228		Radium-228		Radium-226		Cesium-137	
A6GAE-C04-1	8.04	J	1.11	-	1.12	-	1.11	-	1.44	-	0.042	U
A6GAE-C04-2	27.4	J	1.24	-	1.31	-	1.24	-	1.18	-	0.0592	U
A6GAE-C04-4	9.55	J	0.979	-	0.981	-	0.979	-	1.19	-	0.0355	U
A6GAE-C04-4-D	8.74	J	0.891	-	0.87	-	0.891	-	1.1	-	0.0373	U
A6GAE-C04-5	13.7	J	0.79	-	0.743	-	0.79	-	1.2	-	0.184	-
A6GAE-C04-6	12.8	J	0.847	-	0.771	-	0.847	-	1.01	-	0.0398	U
A6GAE-C04-7	14.8	J	0.983	-	1.02	-	0.983	-	1.15	-	0.0587	U
A6GAE-C04-9	9.12	J	1.17	-	1.18	-	1.17	-	1.4	-	0.0579	U
A6GAE-C04-10	7.88	J	0.974	-	1	-	0.974	-	1.37	-	0.065	U
A6GAE-C04-11	3.75	U	1.2	-	1.18	-	1.2	-	1.34	-	0.0646	U
A6GAE-C04-14	13.4	J	0.945	-	0.987	-	0.945	-	1.23	-	0.0655	U
A6GAE-C04-15	13.4	J	0.912	-	0.911	-	0.912	-	1.11	-	0.0563	U
A6GAE-C04-16	11.9	J	0.943	-	0.984	-	0.943	-	1.16	-	0.076	J
FRL	82		1.5		1.7		1.8		1.7		1.4	
UNITS	mg/kg		pCi/g		pCi/g		pCi/g		pCi/g		pCi/g	
Conf. Level	0.95		0.95		0.95		0.95		0.95		0.9	
Max. Result	27.4		1.24		1.31		1.24		1.44		0.184	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12	
Nondetects	1		0		0		0		0		10	
% Nondetects	8.30%		0%		0%		0%		0%		83.3%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--	

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 4

Sample ID	Cadmium		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C04-1	0.286	J	0.848	-	4.1	U	9.8	J	0.784	U
A6GAE-C04-2	0.294	J	0.55	-	3.9	U	3.9	U	0.718	U
A6GAE-C04-4	0.198	J	0.685	-	4	U	34.4	-	0.688	U
A6GAE-C04-4-D	0.214	J	0.749	-	3.99	U	46.4	-	0.741	U
A6GAE-C04-5	0.233	J	0.57	-	3.7	U	10.5	J	0.681	U
A6GAE-C04-6	0.214	J	0.867	-	14.1	-	48.8	-	0.677	U
A6GAE-C04-7	0.223	J	0.615	-	3.9	U	3.9	U	0.716	U
A6GAE-C04-9	0.2	J	0.678	-	4.1	U	4.1	U	0.702	U
A6GAE-C04-10	0.171	J	0.618	-	11.4	J	47.1	-	0.709	U
A6GAE-C04-11	0.175	J	0.635	-	4.1	U	4.1	U	0.756	U
A6GAE-C04-14	0.181	J	0.578	-	9.8	J	28.2	-	0.701	U
A6GAE-C04-15	0.191	J	0.57	-	3.8	U	10.5	J	0.636	U
A6GAE-C04-16	0.185	J	0.538	-	3.9	U	7	J	0.673	U
FRL	82		1.5		130		130		96	
UNITS	mg/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	0.294		0.867		14.1		48.8		0.784	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	0		0		9		4		12	
% Nondetects	0%		0%		75.0%		33.3%		100%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 5

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226
A6GAE-C05-2	9.9 -	0.968 J	1.3 J	0.968 J	1.09 -
A6GAE-C05-3	9.32 -	1.27 J	1.29 J	1.27 J	1.12 -
A6GAE-C05-4	6.75 -	1.07 J	1.08 J	1.07 J	0.916 -
A6GAE-C05-5	7.53 -	0.81 J	0.822 J	0.81 J	1.16 -
A6GAE-C05-6	6.92 -	0.859 J	0.871 J	0.859 J	0.843 -
A6GAE-C05-8	7.56 -	0.917 J	0.879 J	0.917 J	1.1 -
A6GAE-C05-9	2.27 U	1.12 J	1.12 J	1.12 J	1 -
A6GAE-C05-10	5.53 -	0.99 J	0.979 J	0.99 J	0.998 -
A6GAE-C05-11	10.8 -	1.16 J	1.22 J	1.16 J	1.17 -
A6GAE-C05-14	3.88 J	0.864 J	0.881 J	0.864 J	1.06 -
A6GAE-C05-15	9.42 -	0.994 J	0.975 J	0.994 J	0.919 -
A6GAE-C05-16	5.95 -	0.939 J	0.921 J	0.939 J	0.958 -
A6GAE-C05-16-D	6.4 -	1.11 J	1.14 J	1.11 J	1.12 -
FRL	82	1.5	1.7	1.8	1.7
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95
Max. Result	10.8	1.27	1.3	1.27	1.17
Max. >= Limit	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	1	0	0	0	0
% Nondetects	8.3%	0%	0%	0%	0%
Est. Mean	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 5

Sample ID	Cesium-137		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
	Value	U	Value	J	Value	U	Value	J	Value	UJ
A6GAE-C05-2	0.0421	U	0.71	J	4.1	U	4.2	J	2.45	UJ
A6GAE-C05-3	0.0603	U	0.7	J	4	U	5.3	J	2.8	U
A6GAE-C05-4	0.0552	U	0.68	J	4.8	J	6.1	J	2.27	UJ
A6GAE-C05-5	0.0724	U	0.59	J	3.8	U	3.8	U	0.79	J
A6GAE-C05-6	0.0651	U	0.58	J	13.7	-	23.9	-	2.5	U
A6GAE-C05-8	0.0712	U	0.69	J	5.8	J	17.9	-	2.5	U
A6GAE-C05-9	0.0558	U	0.88	J	4.2	U	4.2	U	2.5	UJ
A6GAE-C05-10	0.0573	U	0.6	J	3.9	U	11	J	2.25	UJ
A6GAE-C05-11	0.079	U	0.48	J	3.8	U	9.9	J	2.5	U
A6GAE-C05-14	0.0736	U	0.76	J	3.8	U	3.8	U	2.27	UJ
A6GAE-C05-15	0.108	U	0.56	J	3.8	U	8.7	J	2.8	U
A6GAE-C05-16	0.0755	U	0.67	J	3.8	U	3.8	U	2.18	UJ
A6GAE-C05-16-D	0.0559	U	0.68	J	3.9	U	3.9	U	2.31	UJ
FRL	1.4		1.5		130		130		96	
UNITS	pCi/g		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	0.108		0.88		13.7		23.9		2.8	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	12		0		9		4		11	
% Nondetects	100%		0%		75%		33.3%		91.7%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 6

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226
A6GAE-C06-1	10.6 -	0.999 -	0.996 -	0.999 -	0.969 -
A6GAE-C06-2	6.35 -	1.15 -	1.19 -	1.15 -	1.17 -
A6GAE-C06-2-D	4.65 -	1.1 -	1.1 -	1.1 -	1.24 -
A6GAE-C06-4	7.31 -	0.893 -	0.908 -	0.893 -	1.06 -
A6GAE-C06-5	7.91 -	0.822 -	0.818 -	0.822 -	0.975 -
A6GAE-C06-7	8.34 -	1.18 -	1.19 -	1.18 -	1.02 -
A6GAE-C06-8	4.95 -	0.849 -	0.874 -	0.849 -	0.9 -
A6GAE-C06-9	2.52 J	0.866 -	0.868 -	0.866 -	0.847 -
A6GAE-C06-11	8.56 -	1.05 -	1.08 -	1.05 -	1.07 -
A6GAE-C06-12	7.11 -	0.956 -	0.952 -	0.956 -	0.879 -
A6GAE-C06-13	9.53 -	0.934 -	1.04 -	0.934 -	1.04 -
A6GAE-C06-14	6.33 -	1.16 -	1.19 -	1.16 -	1.09 -
A6GAE-C06-15	6.96 -	0.914 -	0.95 -	0.914 -	0.969 -
FRL	82	1.5	1.7	1.8	1.7
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95
Max. Result	10.6	1.18	1.19	1.18	1.24
Max. >= Limit	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0%
Est. Mean	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 6

Sample ID	Cesium-137		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C06-1	0.0711	U	0.64	-	3.7	U	5.8	J	2.23	UJ
A6GAE-C06-2	0.0508	U	0.9	-	5.5	J	14.4	-	2.27	UJ
A6GAE-C06-2-D	0.0552	U	0.83	-	3.9	U	10.5	J	2.5	U
A6GAE-C06-4	0.0549	U	0.59	-	4.6	J	8.2	J	2.17	UJ
A6GAE-C06-5	0.0568	U	0.65	-	4	J	7.9	J	2.3	U
A6GAE-C06-7	0.0624	U	0.68	-	3.7	U	3.7	U	2.5	U
A6GAE-C06-8	0.0473	U	0.63	-	3.6	U	3.6	U	2.6	U
A6GAE-C06-9	0.0652	U	0.61	-	3.6	U	3.6	U	2.7	U
A6GAE-C06-11	0.0402	U	0.67	-	5.7	J	8	J	2.13	UJ
A6GAE-C06-12	0.0508	U	0.69	-	5.7	J	10.4	J	3.1	U
A6GAE-C06-13	0.0601	U	0.75	-	3.8	U	3.8	U	2.4	U
A6GAE-C06-14	0.0648	U	0.97	-	4	U	4	U	2.33	UJ
A6GAE-C06-15	0.0778	U	0.82	-	3.8	U	5.2	J	2.22	UJ
FRL	1.4		1.5		130		130		96	
UNITS	pCi/g		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	0.0778		0.97		5.7		14.4		3.1	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	12		0		8		5		12	
% Nondetects	100%		0%		66.7%		41.7%		100%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 7

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226
A6GAE-C07-1	9.34 -	1.09 -	1.13 -	1.09 -	1.31 J
A6GAE-C07-2	13.5 -	1.06 -	1.08 -	1.06 -	1.2 J
A6GAE-C07-3	9.95 -	0.88 -	0.852 -	0.88 -	2.57 J
A6GAE-C07-3-D	7.99 -	0.936 -	0.952 -	0.936 -	1.83 J
A6GAE-C07-5	13.7 -	1.01 -	1.05 -	1.01 -	1.62 J
A6GAE-C07-7	5.41 -	0.871 -	0.885 -	0.871 -	0.918 J
A6GAE-C07-8	4.01 -	0.65 -	0.65 -	0.65 -	1.02 J
A6GAE-C07-10	16.5 -	0.947 -	0.971 -	0.947 -	1.28 J
A6GAE-C07-11	5.63 -	0.847 -	0.824 -	0.847 -	1.07 J
A6GAE-C07-12	9.58 -	0.956 -	0.949 -	0.956 -	0.995 J
A6GAE-C07-13	3.06 -	0.514 -	0.502 -	0.514 -	0.714 J
A6GAE-C07-14	6.19 -	0.972 -	0.976 -	0.972 -	0.972 J
A6GAE-C07-16	7.58 -	1.05 -	1.09 -	1.05 -	1.04 J
FRL	20	1.5	1.7	1.8	1.7
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95
Max. Result	16.5	1.09	1.13	1.09	2.57
Max. >= Limit	NO	NO	NO	NO	Yes
W-statistic Prob. #	--	--	--	--	19.6% (LN)
Test Procedure	--	--	--	--	Lognormal
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0
Est. Mean	--	--	--	--	1.22
UCL	--	--	--	--	1.48
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	pass
a posteriori Sample Size calculation	--	--	--	--	6 Pass

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 7

Sample ID	Technetium-99		Cesium-137		Beryllium		Antimony	
A6GAE-C07-1	1.71	U	0.0466	U	0.76	-	0.53	J
A6GAE-C07-2	1.83	U	0.0446	U	0.89	-	0.58	UJ
A6GAE-C07-3	1.72	U	0.0668	U	0.77	-	0.452	UJ
A6GAE-C07-3-D	2.01	U	0.0618	U	0.8	-	0.449	UJ
A6GAE-C07-5	4.27	-	0.0654	U	0.72	-	0.45	UJ
A6GAE-C07-7	1.94	U	0.0512	U	0.44	-	0.438	UJ
A6GAE-C07-8	1.89	U	0.0584	U	0.5	-	0.466	UJ
A6GAE-C07-10	1.71	U	0.0744	U	0.71	-	0.45	UJ
A6GAE-C07-11	1.98	U	0.057	U	0.55	-	0.449	UJ
A6GAE-C07-12	1.85	U	0.0556	U	0.69	-	0.464	UJ
A6GAE-C07-13	1.76	U	0.0503	U	0.48	-	0.407	UJ
A6GAE-C07-14	2.02	U	0.0815	U	0.71	-	0.442	UJ
A6GAE-C07-16	1.88	U	0.0529	U	0.78	-	0.5	J
FRL	30		1.4		1.5		96	
UNITS	pCi/g		pCi/g		mg/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9	
Max. Result	4.27		0.0815		0.89		0.58	
Max. >= Limit	NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--	
Test Procedure	--		--		--		--	
Sample Size	12		12		12		12	
Nondetects	11		12		0		11	
% Nondetects	91.7%		100%		0%		91.7%	
Est. Mean	--		--		--		--	
UCL	--		--		--		--	
Prob. > Limit	--		--		--		--	
Pass / Fail	--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--	

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

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APPENDIX A
STATISTICAL ANALYSIS OF HTE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 8

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99
A6GAE-C08-1	7.93 -	1.23 -	1.25 -	1.23 -	1.03 J	1.18 U
A6GAE-C08-2	5.86 -	1.11 -	1.12 -	1.11 -	1.35 J	1.22 U
A6GAE-C08-4	5.88 J	1.16 -	1.16 -	1.16 -	1.05 J	1.17 U
A6GAE-C08-5	4.78 -	0.708 -	0.74 -	0.708 -	0.849 J	1.14 U
A6GAE-C08-6	1.8 J	0.369 -	0.365 -	0.369 -	0.518 J	1.12 U
A6GAE-C08-8	3.94 J	0.653 -	0.662 -	0.653 -	0.94 J	1.02 U
A6GAE-C08-9	12.8 -	0.848 -	0.872 -	0.848 -	0.96 J	1.09 U
A6GAE-C08-10	8.41 -	1.02 -	1.04 -	1.02 -	0.925 J	1.05 U
A6GAE-C08-12	7.75 -	0.966 -	0.948 -	0.966 -	1.03 J	1.23 U
A6GAE-C08-13	7.27 -	0.892 -	0.91 -	0.892 -	0.952 J	1.17 U
A6GAE-C08-14	3.17 J	0.528 -	0.56 -	0.528 -	0.605 J	1.13 U
A6GAE-C08-14-D	1.79 U	0.618 -	0.611 -	0.618 -	0.785 J	1 U
A6GAE-C08-16	3.13 J	0.535 -	0.532 -	0.535 -	0.64 J	1.21 U
FRL	82	1.5	1.7	1.8	1.7	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	12.8	1.23	1.25	1.23	1.35	1.23
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	1	0	0	0	0	12
% Nondetects	8.3%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF HTE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 8

Sample ID	Cesium-137		Dieldrin		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C08-1	0.0403	U	1.6	U	0.83	-	3.9	U	6.5	J	2.32	UJ
A6GAE-C08-2	0.0503	U	1.6	U	0.96	-	3.9	U	3.9	U	2.27	UJ
A6GAE-C08-4	0.0592	U	1.6	U	0.93	-	4	U	4	U	2.4	UJ
A6GAE-C08-5	0.0483	U	1.5	U	0.51	-	3.6	U	3.6	U	0.428	UJ
A6GAE-C08-6	0.0365	U	1.5	U	0.27	-	3.7	U	3.7	U	0.44	U
A6GAE-C08-8	0.0484	U	1.5	U	0.58	-	3.7	U	3.7	U	0.426	UJ
A6GAE-C08-9	0.0543	U	1.5	U	0.51	-	4.6	J	10.4	J	2.14	UJ
A6GAE-C08-10	0.0735	U	1.5	U	0.81	-	3.8	U	4.5	J	2.16	UJ
A6GAE-C08-12	0.0582	U	1.5	U	0.62	-	3.8	U	3.8	U	2.19	UJ
A6GAE-C08-13	0.067	U	1.5	U	0.6	-	3.8	U	3.8	U	2.19	UJ
A6GAE-C08-14	0.0278	U	1.6	U	0.29	-	3.9	U	3.9	U	0.68	U
A6GAE-C08-14-D	0.0397	U	1.6	U	0.29	-	3.9	U	3.9	U	0.465	UJ
A6GAE-C08-16	0.0457	U	1.5	U	0.33	-	3.7	U	3.7	U	0.444	UJ
FRL	1.4		15		1.5		130		130		96	
UNITS	pCi/g		ug/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.0735		1.6		0.96		4.6		10.4		2.4	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12	
Nondetects	12		12		0		11		10		12	
% Nondetects	100%		100%		0%		91.7%		83.3%		100%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--	

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 9

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99	Cesium-137
A6GAE-C09-1	5.37 -	1.25 -	1.23 -	1.25 -	1.31 -	0.904 U	0.0713 U
A6GAE-C09-3	5.9 -	0.866 -	0.823 -	0.866 -	1.05 -	1.19 U	0.0362 U
A6GAE-C09-4	6.64 -	1.45 -	1.4 -	1.45 -	1.15 -	0.947 U	0.0466 U
A6GAE-C09-5	5.47 -	0.755 -	0.73 -	0.755 -	0.956 J	0.835 U	0.0313 U
A6GAE-C09-6	2.91 U	0.557 -	0.576 -	0.557 -	0.745 J	0.868 U	0.0619 U
A6GAE-C09-8	3.58 J	1.15 -	1.14 -	1.15 -	1.32 -	0.925 U	0.0633 U
A6GAE-C09-10	6.33 -	0.927 -	0.913 -	0.927 -	1.06 -	1.15 U	0.0602 U
A6GAE-C09-10-D	3.73 J	0.918 -	0.924 -	0.918 -	1.19 -	0.877 U	0.083 U
A6GAE-C09-11	5.78 -	0.839 -	0.849 -	0.839 -	1.16 -	0.941 U	0.0392 U
A6GAE-C09-12	5.99 J	0.921 -	0.874 -	0.921 -	1.11 -	0.911 U	0.0695 U
A6GAE-C09-13	6.56 -	0.808 -	0.801 -	0.808 -	1.16 -	0.897 U	0.0698 U
A6GAE-C09-14	7.04 -	0.955 -	0.944 -	0.955 -	1.24 J	0.845 U	0.0367 U
A6GAE-C09-16	8.35 J	1.02 -	1.07 -	1.02 -	1.29 -	0.925 U	0.0778 U
FRL	82	1.5	1.7	1.8	1.7	30	1.4
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	8.35	1.45	1.4	1.45	1.32	1.19	0.083
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	1	0	0	0	0	12	12
% Nondetects	8.3%	0%	0%	0%	0%	100%	100%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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CERTIFICATION UNIT 9

Sample ID	Dieldrin		Cadmium		Beryllium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C09-1	1.6	U	0.253	J	0.831	J	4.1	U	4.1	U	0.743	U
A6GAE-C09-3	1.6	U	0.247	J	0.524	J	4	U	4	U	0.729	U
A6GAE-C09-4	1.7	U	0.239	J	0.764	J	4.2	U	4.2	U	0.803	U
A6GAE-C09-5	1.6	U	0.189	J	0.46	-	4.1	U	4.1	U	0.648	U
A6GAE-C09-6	1.7	U	0.325	J	0.32	-	4.1	U	4.1	U	0.638	U
A6GAE-C09-8	1.6	U	0.276	J	0.73	J	4.1	U	4.1	U	0.736	U
A6GAE-C09-10	1.6	U	0.265	J	0.618	J	4	U	4	U	0.703	U
A6GAE-C09-10-D	1.6	U	0.213	J	0.525	J	4.1	U	4.1	U	0.72	U
A6GAE-C09-11	1.7	U	0.246	J	0.652	J	4.2	U	4.2	U	0.641	U
A6GAE-C09-12	1.6	U	0.211	J	0.493	J	3.9	U	3.9	U	0.725	U
A6GAE-C09-13	1.6	U	0.205	J	0.487	J	5.4	J	10.6	J	0.646	U
A6GAE-C09-14	1.8	U	0.261	J	0.59	-	4.4	U	4.4	U	0.69	U
A6GAE-C09-16	1.7	U	0.3	J	0.526	J	4.2	U	4.2	U	0.774	U
FRL	15		82		1.5		130		130		96	
UNITS	ug/kg		mg/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.8		0.325		0.831		5.4		10.6		0.803	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12	
Nondetects	12		0		0		12		11		12	
% Nondetects	100%		0%		0%		100%		91.7%		100%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample	--		--		--		--		--		--	
Size calculation	--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 10

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Thorium-230	Technetium-99
A6GAE-C10-1	2.88 U	0.795 -	0.787 -	0.795 -	0.936 J	1.06 J	0.819 U
A6GAE-C10-3	4.44 J	0.961 -	1 -	0.961 -	1.15 J	1.54 J	0.802 U
A6GAE-C10-4	3.3 U	1.07 -	1.09 -	1.07 -	1.34 J	1.64 J	0.8 U
A6GAE-C10-5	2.79 U	0.925 -	0.888 -	0.925 -	1.11 J	1.26 J	0.76 U
A6GAE-C10-6	3.13 U	0.868 -	0.896 -	0.868 -	1.07 J	1.53 J	0.921 U
A6GAE-C10-8	2.66 U	0.877 -	0.907 -	0.877 -	0.921 J	1.35 J	1.29 U
A6GAE-C10-9	6.12 -	0.82 -	0.828 -	0.82 -	1.05 J	1.28 J	0.951 U
A6GAE-C10-9-D	6.66 -	0.716 -	0.719 -	0.716 -	0.794 J	1.25 J	0.82 U
A6GAE-C10-10	3.2 U	1.1 -	1.09 -	1.1 -	1.28 J	1.6 J	0.886 U
A6GAE-C10-11	2.65 U	0.484 -	0.492 -	0.484 -	0.709 J	1.15 J	0.786 U
A6GAE-C10-13	10.2 -	0.911 -	0.935 -	0.911 -	1.06 J	1.76 J	0.824 U
A6GAE-C10-14	5.28 J	0.623 -	0.612 -	0.623 -	0.836 J	1.2 J	0.794 U
A6GAE-C10-16	5.92 J	0.631 -	0.672 -	0.631 -	0.994 J	1.31 J	0.93 U
FRL	82	1.5	1.7	1.8	1.7	280	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	10.2	1.1	1.09	1.1	1.34	1.76	1.29
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	7	0	0	0	0	0	12
% Nondetects	58.3%	0%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 10

Sample ID	Cesium-137		Trichloroethene		Tetrachloroethene		Silver		Molybdenum		Dieldrin		Cadmium	
A6GAE-C10-1	0.0491	U	1.1	U	1.1	U	0.27	U	2.08	-	1.5	U	0.211	J
A6GAE-C10-3	0.0509	U	1.1	U	1.1	U	0.281	U	1.23	-	1.6	U	0.206	J
A6GAE-C10-4	0.0549	U	1.1	U	1.1	U	0.502	U	1.58	-	1.6	U	0.307	J
A6GAE-C10-5	0.0494	U	1	U	1	U	0.464	U	1.38	-	1.6	U	0.236	J
A6GAE-C10-6	0.0509	U	1.2	U	1.2	U	0.265	U	1.34	-	1.6	U	0.232	J
A6GAE-C10-8	0.0475	U	1.1	U	1.1	U	0.275	U	0.916	J	1.6	U	0.266	J
A6GAE-C10-9	0.09	-	1	U	1	U	0.518	U	1.54	-	1.5	U	0.176	J
A6GAE-C10-9-D	0.0408	U	1.3	U	1.3	U	0.265	U	1.66	-	1.6	U	0.161	J
A6GAE-C10-10	0.0556	U	1.6	U	1.6	U	0.239	U	1.05	-	1.7	U	0.252	J
A6GAE-C10-11	0.0607	U	0.9	U	8.9	J	0.27	U	1.47	-	1.6	U	0.187	J
A6GAE-C10-13	0.0509	U	0.9	U	21.1	J	0.242	U	1.82	-	1.5	U	0.191	J
A6GAE-C10-14	0.0604	U	0.9	U	0.9	U	1.06	U	1.74	-	1.5	U	0.178	J
A6GAE-C10-16	0.0607	U	1.3	U	1.3	U	0.259	U	1.65	-	1.6	U	0.246	J
FRL	1.4		25000		3600		29000		2900		15		82	
UNITS	pCi/g		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.09		1.6		21.1		1.06		2.08		1.7		0.307	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		12	
Nondetects	11		12		10		12		0		12		0	
% Nondetects	91.7%		100%		83.3%		100%		0%		100%		0%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 10

Sample ID	Bromodichloro- methane		Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,1- Dichloroethene	
A6GAE-C10-1	1.1	U	3.7	U	14.6	J	0.719	U	1.1	U	1.1	U
A6GAE-C10-3	1.1	U	3.9	U	7.9	J	0.724	U	1.1	U	1.1	U
A6GAE-C10-4	1.1	U	4	U	4	U	0.747	U	1.1	U	1.1	U
A6GAE-C10-5	1	U	4	U	4	U	0.734	U	1	U	1	U
A6GAE-C10-6	1.2	U	4.1	U	4.1	U	0.706	U	1.2	U	1.7	J
A6GAE-C10-8	1.1	U	3.9	U	3.9	U	0.733	U	1.1	U	1.1	U
A6GAE-C10-9	1	U	3.7	U	3.7	U	0.638	U	1	U	1.2	J
A6GAE-C10-9-D	1.3	U	3.9	U	3.9	U	0.706	U	1.3	U	6.8	J
A6GAE-C10-10	1.6	U	4.1	U	4.1	U	0.637	U	1.6	U	2.3	J
A6GAE-C10-11	0.9	U	3.9	U	3.9	U	0.72	U	0.9	U	0.9	U
A6GAE-C10-13	0.9	U	3.8	U	4.4	J	0.646	U	0.9	U	1.5	J
A6GAE-C10-14	0.9	U	3.7	U	3.7	U	0.711	U	0.9	U	0.9	U
A6GAE-C10-16	1.3	U	4	U	41.4	J	0.69	U	1.3	U	1.3	U
FRL	4000		130		130		96		160		410	
UNITS	ug/kg		ug/kg		ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.6		4.1		41.1		0.747		1.6		6.8	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12	
Nondetects	12		12		9		12		12		8	
% Nondetects	100%		100%		75.0%		100%		100%		66.7%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample	--		--		--		--		--		--	
Size calculation	--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 11

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Thorium-230	Technetium-99
A6GAE-C11-1	8.21 J	0.643 J	0.624 J	0.643 J	0.987 J	1.84 J	0.93 -
A6GAE-C11-2	2.94 U	0.577 J	0.568 J	0.577 J	0.949 J	1.31 J	0.856 U
A6GAE-C11-3	6.15 J	0.587 J	0.575 J	0.587 J	0.854 J	1.36 J	1.06 U
A6GAE-C11-6	6.09 J	0.524 J	0.538 J	0.524 J	0.749 J	1.35 J	0.858 U
A6GAE-C11-6-D	5.55 J	0.658 J	0.643 J	0.658 J	0.799 J	1.34 J	2.13 -
A6GAE-C11-7	7.97 J	0.765 J	0.794 J	0.765 J	1.12 J	2.19 J	0.856 U
A6GAE-C11-8	2.09 U	0.553 J	0.57 J	0.553 J	2.11 J	1.54 J	0.873 U
A6GAE-C11-9	12.9 J	0.653 J	0.621 J	0.653 J	1.09 J	2.13 J	0.79 U
A6GAE-C11-10	4.59 J	0.387 J	0.417 J	0.387 J	1.02 J	1.09 J	0.903 U
A6GAE-C11-12	1.65 U	0.307 J	0.311 J	0.307 J	0.705 J	1.14 J	0.91 U
A6GAE-C11-13	5.3 J	0.783 J	0.703 J	0.783 J	1.04 J	1.61 J	0.835 U
A6GAE-C11-15	7.38 J	1.26 J	1.33 J	1.26 J	1.34 J	1.63 J	0.829 U
A6GAE-C11-16	10.5 J	0.727 J	0.755 J	0.727 J	0.927 J	1.39 J	2.31 -
FRL	82	1.5	1.7	1.8	1.7	280	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	12.9	1.26	1.33	1.26	2.11	2.19	2.31
Max. >= Limit	NO	NO	NO	NO	YES	NO	NO
W-statistic Prob. #	--	--	--	--	11.7% (LN)	--	--
Test Procedure	--	--	--	--	lognormal	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	3	0	0	0	0	0	9
% Nondetects	25%	0%	0%	0%	0%	0%	75%
Est. Mean	--	--	--	--	1.077	--	--
UCL	--	--	--	--	1.265	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	pass	--	--
a posteriori Sample Size calculation	--	--	--	--	4	--	--
	--	--	--	--	pass	--	--

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

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STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 11

Sample ID	Trichloro-ethene		Tetrachloro-ethene		Silver		Molybdenum		Dieldrin		Cadmium		Bromodichloro-methane	
A6GAE-C11-1	0.9	U	0.9	U	2.4	-	1.37	-	1.5	U	0.18	J	0.9	U
A6GAE-C11-2	1	U	1	U	0.505	U	1.61	-	1.5	U	0.173	J	1	U
A6GAE-C11-3	0.8	U	0.8	U	0.32	U	1.47	-	1.4	U	0.17	J	0.8	U
A6GAE-C11-6	1.2	U	1.2	U	0.25	U	1.69	-	1.5	U	0.172	J	1.2	U
A6GAE-C11-6-D	1.1	U	1.1	U	0.301	U	1.98	-	1.5	U	0.182	J	1.1	U
A6GAE-C11-7	1.2	U	1.2	U	0.252	U	1.43	-	1.5	U	0.176	J	1.2	U
A6GAE-C11-8	0.9	U	0.9	U	0.305	U	1.97	-	1.5	U	0.174	J	0.9	U
A6GAE-C11-9	1.1	U	1.1	U	0.265	U	1.42	-	1.5	U	0.172	J	1.1	U
A6GAE-C11-10	0.9	U	0.9	U	0.592	U	2.01	-	1.4	U	0.163	J	0.9	U
A6GAE-C11-12	1	U	1	U	0.281	U	1.35	-	1.6	U	0.182	J	1	U
A6GAE-C11-13	1	U	1	U	0.26	U	1.2	-	1.6	U	0.143	J	1	U
A6GAE-C11-15	1	U	1	U	0.251	U	1.39	-	1.7	U	0.133	J	1	U
A6GAE-C11-16	1.1	U	1.1	U	0.202	U	1.42	-	1.5	U	0.17	J	1.1	U
FRL	25000		3600		29000		2900		15		82		4000	
UNITS	ug/kg		ug/kg		mg/kg		mg/kg		ug/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.2		1.2		2.4		2.01		1.7		0.182		1.2	
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		11		0		12		0		12	
% Nondetects	100%		100%		91.7%		0%		100%		0%		100%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 11

Sample ID	Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene		1,1-Dichloroethene	
	Value	Unit	Value	Unit	Value	Unit	Value	Unit	Value	Unit
A6GAE-C11-1	36.5	-	60.1	-	0.559	U	0.9	U	0.9	U
A6GAE-C11-2	12.1	J	18.9	-	0.538	U	1	U	1	U
A6GAE-C11-3	9.6	J	13.2	-	0.687	U	0.8	U	1.9	J
A6GAE-C11-6	3.8	U	3.8	U	0.666	U	1.2	U	1.2	U
A6GAE-C11-6-D	3.8	U	3.8	U	0.595	U	1.1	U	1.1	U
A6GAE-C11-7	58.1	-	98.4	-	0.671	U	1.2	U	1.2	U
A6GAE-C11-8	3.7	U	3.7	U	0.704	U	0.9	U	0.9	U
A6GAE-C11-9	46	-	85.8	-	0.708	U	1.1	U	1.1	U
A6GAE-C11-10	3.5	U	3.5	U	0.632	U	0.9	U	0.9	U
A6GAE-C11-12	4	U	4	U	0.749	U	1	U	1	U
A6GAE-C11-13	4.1	J	4.2	J	0.692	U	1	U	1	U
A6GAE-C11-15	4.2	U	4.2	U	0.668	U	1	U	1	U
A6GAE-C11-16	23.5	-	32.9	J	0.538	U	1.1	U	1.1	U
FRL	130		130		96		160		410	
UNITS	ug/kg		ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	58.1		98.4		0.749		1.2		1.9	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	5		5		12		12		11	
% Nondetects	41.7%		41.7%		100%		100%		91.7%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 12

Sample ID	Uranium, Total		Thorium-232		Thorium-228		Radium-228		Radium-226		Technetium-99	
A6GAE-C12-1	8.4	J	0.65	J	0.647	J	0.65	J	0.614	J	1.88	U
A6GAE-C12-2	7.61	J	0.645	J	0.662	J	0.645	J	0.789	J	1.99	U
A6GAE-C12-3	2.17	U	0.639	J	0.64	J	0.639	J	0.945	J	1.85	U
A6GAE-C12-5	13.8	J	0.939	J	0.986	J	0.939	J	0.85	J	2.09	U
A6GAE-C12-7	6.12	J	1.22	J	1.25	J	1.22	J	1.17	J	1.89	U
A6GAE-C12-8	7.71	J	0.666	J	0.692	J	0.666	J	0.829	J	1.79	U
A6GAE-C12-9	7.39	J	0.679	J	0.663	J	0.679	J	0.674	J	1.94	U
A6GAE-C12-11	3.23	J	0.458	J	0.446	J	0.458	J	0.626	J	1.71	U
A6GAE-C12-11-D	7.43	J	0.673	J	0.711	J	0.673	J	0.786	J	1.88	U
A6GAE-C12-12	6.01	J	0.786	J	0.764	J	0.786	J	0.845	J	1.85	U
A6GAE-C12-13	13.1	J	0.93	J	0.962	J	0.93	J	1.17	J	1.83	U
A6GAE-C12-14	5.65	J	0.703	J	0.706	J	0.703	J	0.722	J	1.61	U
A6GAE-C12-15	4.64	J	0.96	J	0.992	J	0.96	J	0.955	J	1.67	U
FRL	20		1.5		1.7		1.8		1.7		30	
UNITS	mg/kg		pCi/g		pCi/g		pCi/g		pCi/g		pCi/g	
Conf. Level	0.95		0.95		0.95		0.95		0.95		0.9	
Max. Result	13.8		1.22		1.25		1.22		1.17		20.9	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12	
Nondetects	1		0		0		0		0		12	
% Nondetects	8.3%		0%		0%		0%		0%		100%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--	

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**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 12

Sample ID	Silver		Molybdenum		Dieldrin		Cadmium		Aroclor-1260		Aroclor-1254		Antimony	
A6GAE-C12-1	0.101	U	1.2	-	1.4	U	0.16	J	15.4	J	24.8	J	0.405	UJ
A6GAE-C12-2	0.105	U	0.94	J	1.5	U	0.105	U	9.9	J	15.7	J	0.42	UJ
A6GAE-C12-3	0.108	U	2.2	-	1.5	U	0.54	U	3.7	U	3.7	U	2.16	UJ
A6GAE-C12-5	0.105	U	0.99	J	1.4	U	0.105	U	7.4	J	12.9	J	0.65	J
A6GAE-C12-7	0.113	U	1.6	-	1.5	U	0.563	U	3.8	U	3.8	U	2.25	UJ
A6GAE-C12-8	0.121	U	1	-	1.6	U	0.121	U	7.7	J	13.2	J	0.93	J
A6GAE-C12-9	0.105	U	1.2	-	1.5	U	0.105	U	10	J	12.3	J	0.71	J
A6GAE-C12-11	0.112	U	1.9	-	1.5	U	0.112	U	3.8	U	7.9	J	0.57	J
A6GAE-C12-11-D	0.113	U	1.2	-	1.5	U	0.113	U	10.6	J	24	J	0.451	UJ
A6GAE-C12-12	0.107	U	1.2	-	1.5	U	0.107	U	3.7	U	3.8	J	0.44	J
A6GAE-C12-13	0.11	U	1.1	-	1.5	U	0.551	U	10.4	J	19.4	J	2.21	UJ
A6GAE-C12-14	0.108	U	1.5	-	1.5	U	0.24	J	3.7	U	3.7	U	0.85	J
A6GAE-C12-15	0.115	U	1.6	-	1.5	U	0.26	J	3.8	U	3.8	U	0.55	J
FRL	29000		2900		15		82		130		130		96	
UNITS	mg/kg		mg/kg		ug/kg		mg/kg		ug/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.121		2.2		1.6		0.563		15.4		24.8		2.25	
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		0		12		9		5		4		6	
% Nondetects	100%		0%		100%		75%		41.7%		33.3%		50%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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CERTIFICATION UNIT 13

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99
A6GAE-C13-1	8.88 -	1.15 -	1.17 -	1.15 -	1.47 -	1.17 U
A6GAE-C13-2	4.93 -	1.03 -	1.05 -	1.03 -	0.903 -	1.3 U
A6GAE-C13-4	18.3 -	1.22 -	1.22 -	1.22 -	1.46 -	1.07 U
A6GAE-C13-5	4.88 -	1.15 -	1.14 -	1.15 -	1.2 -	1.23 U
A6GAE-C13-7	8.45 -	0.893 -	0.894 -	0.893 -	1.02 -	1.14 U
A6GAE-C13-8	7.3 -	0.807 -	0.798 -	0.807 -	1.03 -	1.07 U
A6GAE-C13-9	16.1 -	0.985 -	0.995 -	0.985 -	1.25 -	1.02 U
A6GAE-C13-10	13.4 -	1.12 -	1.15 -	1.12 -	1.14 -	1.32 U
A6GAE-C13-11	9.38 -	0.853 -	0.848 -	0.853 -	0.948 -	1.15 U
A6GAE-C13-13	8.27 -	0.934 -	0.924 -	0.934 -	1.04 -	1.14 U
A6GAE-C13-13-D	9.31 -	0.955 -	0.949 -	0.955 -	1.05 -	1.14 U
A6GAE-C13-14	6.78 -	0.912 -	0.907 -	0.912 -	1.14 -	1.12 U
A6GAE-C13-15	9.63 -	1.04 -	1.06 -	1.04 -	1.14 -	1.23 U
FRL	82	1.5	1.7	1.8	1.7	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	18.3	1.22	1.22	1.22	1.47	1.32
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12
% Nondetects	0%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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CERTIFICATION UNIT 13

Sample ID	Silver		Molybdenum		Cadmium		Antimony	
A6GAE-C13-1	0.117	U	0.67	J	0.117	U	0.5	J
A6GAE-C13-2	0.12	U	0.62	J	0.12	U	0.66	J
A6GAE-C13-4	0.12	U	1.1	-	0.12	U	0.59	J
A6GAE-C13-5	0.123	U	0.58	J	0.123	U	0.61	J
A6GAE-C13-7	0.114	U	0.9	J	0.114	U	0.68	J
A6GAE-C13-8	0.115	U	1.3	-	0.115	U	0.46	UJ
A6GAE-C13-9	0.111	U	1	-	0.19	J	0.65	J
A6GAE-C13-10	0.117	U	0.93	J	0.117	U	0.66	J
A6GAE-C13-11	0.122	U	1.2	-	0.122	U	0.488	UJ
A6GAE-C13-13	0.116	U	0.51	J	0.116	U	0.57	J
A6GAE-C13-13-D	0.12	U	1.2	-	0.12	U	1	J
A6GAE-C13-14	0.116	U	1.1	-	0.116	U	0.464	UJ
A6GAE-C13-15	0.124	U	1.1	-	0.124	U	0.84	J
FRL	29000		2900		82		96	
UNITS	mg/kg		mg/kg		mg/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9	
Max. Result	0.124		1.3		0.19		1	
Max. >= Limit	NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--	
Test Procedure	--		--		--		--	
Sample Size	12		12		12		12	
Nondetects	12		0		11		3	
% Nondetects	100%		0%		92%		25%	
Est. Mean	--		--		--		--	
UCL	--		--		--		--	
Prob. > Limit	--		--		--		--	
Pass / Fail	--		--		--		--	

a posteriori Sample Size calculation	--	--	--	--	--	--	--
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CERTIFICATION UNIT 14

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Thorium-230
A6GAE-C14-1	10.5 -	0.998 -	0.988 J	0.998 -	1.08 -	1.45 -
A6GAE-C14-3	12.5 -	1.12 -	1.4 J	1.12 -	1.43 -	1.51 -
A6GAE-C14-4	8.39 -	1.18 -	1.18 J	1.18 -	1.11 -	1.77 -
A6GAE-C14-4-D	6.62 -	1.03 -	0.991 J	1.03 -	0.994 -	1.8 J
A6GAE-C14-5	6.42 -	1.35 -	1.39 J	1.35 -	1.19 -	1.57 -
A6GAE-C14-6	4.79 -	1.01 -	1 J	1.01 -	0.986 -	1.56 J
A6GAE-C14-7	3.93 -	1.04 -	1.04 J	1.04 -	0.948 -	1.23 -
A6GAE-C14-10	6.34 -	1.09 -	1.12 J	1.09 -	1.32 -	1.11 -
A6GAE-C14-11	9.28 -	1.07 -	1.07 J	1.07 -	1.15 -	3.09 -
A6GAE-C14-12	5.91 -	1.09 -	1.1 J	1.09 -	1.09 -	1.59 -
A6GAE-C14-13	17.6 -	1.16 -	1.15 J	1.16 -	1.12 -	1.58 -
A6GAE-C14-14	3.69 -	0.989 -	1 J	0.989 -	1.11 -	0.792 -
A6GAE-C14-16	9.09 -	0.889 -	0.905 J	0.889 -	1.01 -	1.25 -
FRL	82	1.5	1.7	1.8	1.7	280
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	17.6	1.35	1.4	1.35	1.43	3.09
Max. >= Limit	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	0	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--

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STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS
CERTIFICATION UNIT 14

Sample ID	Xylenes, Total		Trichloroethene		Toluene		Tetrachloroethene		Silver		Molybdenum		Methylene chloride	
A6GAE-C14-1	1	U	1	U	1	U	1	U	0.106	U	1.2	-	5	U
A6GAE-C14-3	0.9	U	0.9	U	0.9	U	0.9	U	0.113	U	1.1	-	4.7	U
A6GAE-C14-4	1.2	U	1.2	U	1.2	U	1.2	U	0.12	U	0.96	J	6	U
A6GAE-C14-4-D	1.1	U	1.1	U	1.1	U	1.1	U	0.122	U	0.89	J	5.5	U
A6GAE-C14-5	1.4	U	1.4	U	1.4	U	1.4	U	0.121	U	0.78	J	7	U
A6GAE-C14-6	1.1	U	1.1	U	1.1	U	1.1	U	0.124	U	0.67	J	5.6	U
A6GAE-C14-7	1.4	U	1.4	U	1.4	U	1.4	U	0.122	U	0.25	J	7.1	U
A6GAE-C14-10	0.9	U	0.9	U	0.9	U	0.9	U	0.121	U	1.4	-	4.6	U
A6GAE-C14-11	1.1	U	1.1	U	1.1	U	1.1	U	0.118	U	1.1	-	5.6	U
A6GAE-C14-12	1.2	U	1.2	U	1.2	U	1.2	U	0.124	U	0.88	J	6.1	U
A6GAE-C14-13	1.2	U	1.2	U	1.2	U	1.2	U	0.124	U	0.57	J	6.1	U
A6GAE-C14-14	0.9	U	0.9	U	0.9	U	0.9	U	0.108	U	3	-	4.3	U
A6GAE-C14-16	0.9	U	0.9	U	0.9	U	0.9	U	0.115	U	1	-	4.3	U
FRL	920000000		25000		100000000		3600		29000		2900		37000	
UNITS	ug/kg		ug/kg		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.4		1.4		1.4		1.4		0.124		3		7.1	
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		0		12	
% Nondetects	100%		100%		100%		100%		100%		0%		100%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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CERTIFICATION UNIT 14

Sample ID	Dieldrin		Dibenzo(a,h)anthracene		Cadmium		Bromodichloro-methane		Beryllium		Benzo(a)pyrene		Aroclor-1260	
A6GAE-C14-1	1.5	U	36.9	U	0.531	U	1	U	0.5	J	36.9	U	3.7	U
A6GAE-C14-3	1.6	U	39.1	U	0.567	U	0.9	U	0.91	J	39.1	U	3.9	U
A6GAE-C14-4	1.6	U	40.3	U	0.6	U	1.2	U	0.88	J	40.3	U	4	U
A6GAE-C14-4-D	1.7	U	41.2	U	0.609	U	1.1	U	0.67	J	41.2	U	4.1	U
A6GAE-C14-5	1.6	U	40.6	U	0.603	U	1.4	U	0.65	J	40.6	U	4.1	U
A6GAE-C14-6	1.7	U	42.2	U	0.619	U	1.1	U	0.64	J	42.2	U	4.2	U
A6GAE-C14-7	1.7	U	42.2	U	0.609	U	1.4	U	0.7	J	42.2	U	4.2	U
A6GAE-C14-10	1.6	U	40.6	U	0.603	U	0.9	U	0.62	J	40.6	U	4.1	U
A6GAE-C14-11	1.6	U	39.5	U	0.589	U	1.1	U	0.6	J	39.5	U	10	J
A6GAE-C14-12	1.7	U	41.3	U	0.619	U	1.2	U	0.73	J	41.3	U	4.1	U
A6GAE-C14-13	1.7	U	41.5	U	0.622	U	1.2	U	0.72	J	41.5	U	4.2	U
A6GAE-C14-14	1.5	U	36.6	U	0.542	U	0.9	U	0.47	J	36.6	U	3.7	U
A6GAE-C14-16	1.5	U	38.3	U	0.115	U	0.9	U	0.47	J	38.3	U	3.8	U
FRL	15		2000		82		4000		1.5		2000		130	
UNITS	ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.7		42.2		0.622		1.4		0.91		42.2		10	
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		0		12		12	
% Nondetects	100%		100%		100%		100%		0%		100%		100%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 14

Sample ID	Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,1-Dichloroethene		1,1,1-Trichloroethane	
A6GAE-C14-1	14.6	-	2.12	UJ	1	U	1	J	1	U
A6GAE-C14-3	10.8	J	2.27	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C14-4	4	U	2.4	UJ	1.2	U	1.2	U	1.2	U
A6GAE-C14-4-D	7.3	J	2.44	UJ	1.1	U	1.1	U	1.1	U
A6GAE-C14-5	4.1	U	2.41	UJ	1.4	U	1.4	U	1.4	U
A6GAE-C14-6	5.6	J	2.48	UJ	1.1	U	1.1	U	1.1	U
A6GAE-C14-7	4.2	U	2.43	UJ	1.4	U	1.4	U	1.4	U
A6GAE-C14-10	6.5	J	2.41	UJ	0.9	U	1	J	0.9	U
A6GAE-C14-11	37.2	-	2.36	UJ	1.1	U	1.1	U	1.1	U
A6GAE-C14-12	7.6	J	2.48	UJ	1.2	U	1.7	J	1.2	U
A6GAE-C14-13	4.2	U	2.49	UJ	1.2	U	1.2	U	1.2	U
A6GAE-C14-14	3.7	U	2.17	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C14-16	9.7	J	0.46	UJ	0.9	U	2.3	J	0.9	U
FRL	130		96		160		410		4300	
UNITS	ug/kg		mg/kg		ug/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	37.2		2.49		1.4		2.3		1.4	
Max. >= Limit	NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--	
Test Procedure	--		--		--		--		--	
Sample Size	12		12		12		12		12	
Nondetects	4		12		12		8		12	
% Nondetects	33.3%		100%		100%		67%		100%	
Est. Mean	--		--		--		--		--	
UCL	--		--		--		--		--	
Prob. > Limit	--		--		--		--		--	
Pass / Fail	--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 15

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Thorium-230
A6GAE-C15-2	8.15 -	0.838 J	0.834 J	0.838 J	1.16 J	2.75 J
A6GAE-C15-3	7.63 -	0.998 J	0.956 J	0.998 J	1.32 J	3.02 J
A6GAE-C15-4	8.01 -	1.32 J	1.42 J	1.32 J	1.46 J	1.65 J
A6GAE-C15-5	6.59 -	1.1 J	1 J	1.1 J	1.56 J	1.93 J
A6GAE-C15-5-D	6.22 -	1.31 J	1.34 J	1.31 J	1.46 J	2.61 J
A6GAE-C15-7	5.78 -	1.13 J	1.2 J	1.13 J	1.57 J	2.51 J
A6GAE-C15-8	3.22 U	1.18 J	1.1 J	1.18 J	1.49 J	1.87 J
A6GAE-C15-10	5.76 -	1.34 J	1.39 J	1.34 J	1.34 J	2.33 J
A6GAE-C15-11	5.21 -	0.756 J	0.729 J	0.756 J	1.32 J	2.11 J
A6GAE-C15-12	5.35 -	0.951 J	0.854 J	0.951 J	1.97 J	1.42 U
A6GAE-C15-13	4.79 -	1.03 J	0.967 J	1.03 J	1.29 J	1.76 J
A6GAE-C15-15	5.22 U	1.16 J	1.19 J	1.16 J	1.4 J	2.74 J
A6GAE-C15-16	4.5 U	1.27 J	1.27 J	1.27 J	1.44 J	2.85 J
FRL	82	1.5	1.7	1.8	1.7	280
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	8.15	1.34	1.42	1.34	1.97	3.02
Max. >= Limit	NO	NO	NO	NO	Yes	NO
W-statistic Prob. #	--	--	--	--	37.9% (LN)	--
Test Procedure	--	--	--	--	Lognormal	--
Sample Size	12	12	12	12	12	12
Nondetects	3	0	0	0	0	1
% Nondetects	25%	0%	0%	0%	0%	8%
Est. Mean	--	--	--	--	1.444	--
UCL	--	--	--	--	1.551	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	Pass	--
a posteriori Sample Size calculation	--	--	--	--	6	--
	--	--	--	--	Pass	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 15

Sample ID	Xylenes, Total		Trichloroethene		Toluene		Tetrachloro-ethene		Silver		Molybdenum		Methylene chloride	
A6GAE-C15-2	1.1	U	1.1	U	1.1	U	1.1	U	0.595	U	1.51	-	5.7	U
A6GAE-C15-3	1.2	U	1.2	U	1.2	U	1.2	U	0.697	U	1.37	U	6	U
A6GAE-C15-4	1.1	U	1.1	U	1.1	U	1.1	U	0.669	U	1.08	U	7.1	U
A6GAE-C15-5	1.1	U	1.1	U	1.1	U	1.1	U	0.649	U	0.826	U	5.6	U
A6GAE-C15-5-D	1.3	U	1.3	U	1.3	U	1.3	U	0.713	U	0.753	U	6.7	U
A6GAE-C15-7	1.2	U	1.2	U	1.2	U	1.2	U	0.687	U	0.751	U	6	U
A6GAE-C15-8	1.2	U	1.2	U	1.9	J	1.2	U	0.684	U	0.588	U	6.4	U
A6GAE-C15-10	1.1	U	1.1	U	1.1	U	1.1	U	0.673	U	0.626	U	5.4	U
A6GAE-C15-11	1.2	U	1.2	U	2	J	1.2	U	0.614	U	1.36	U	7	U
A6GAE-C15-12	1.1	U	1.1	U	1.1	U	1.1	U	0.692	U	1.53	U	5.4	U
A6GAE-C15-13	1.3	U	1.3	U	3.2	J	1.3	U	0.69	U	0.551	U	9	U
A6GAE-C15-15	1.1	U	1.1	U	1.1	U	1.1	U	0.735	U	1.11	U	6.5	U
A6GAE-C15-16	1.3	U	1.3	U	1.3	U	1.3	U	0.74	U	0.367	U	6.5	U
FRL	920000000		25000		100000000		3600		29000		2900		37000	
UNITS	ug/kg		ug/kg		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.3		1.3		3.2		1.3		0.74		1.53		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		9		12		12		11		12	
% Nondetects	100%		100%		75%		100%		100%		92%		100%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

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**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 15

Sample ID	Dieldrin	Dibenzo(a,h)anthracene	Cadmium	Bromodichloromethane	Beryllium	Benzo(a)pyrene	Aroclor-1260
A6GAE-C15-2	1.6 U	40.4 U	0.308 J	1.1 U	0.779 -	40.4 U	11.2 J
A6GAE-C15-3	1.6 U	38.6 U	0.29 U	1.2 U	0.733 -	38.6 U	10.2 J
A6GAE-C15-4	1.6 U	39.3 U	0.309 J	1.1 U	0.831 -	39.3 U	3.9 U
A6GAE-C15-5	1.6 U	40.4 U	0.341 J	1.1 U	0.869 -	40.4 U	4 U
A6GAE-C15-5-D	1.6 U	39.7 U	0.341 J	1.3 U	0.807 -	39.7 U	4 U
A6GAE-C15-7	1.5 U	37.9 U	0.29 J	1.2 U	0.803 -	37.9 U	3.8 U
A6GAE-C15-8	1.7 U	42.1 U	0.389 J	1.2 U	0.909 -	42.1 U	4.2 U
A6GAE-C15-10	1.5 U	38.1 U	0.353 J	1.1 U	0.687 -	38.1 U	3.8 U
A6GAE-C15-11	1.5 U	37 U	0.256 U	1.2 U	0.616 -	37 U	3.7 U
A6GAE-C15-12	1.5 U	37.7 U	0.288 U	1.1 U	0.763 -	37.7 U	3.8 U
A6GAE-C15-13	1.6 U	40.7 U	0.368 J	1.3 U	0.782 -	40.7 U	4.1 U
A6GAE-C15-15	1.7 U	42 U	0.306 U	1.1 U	0.723 -	42 U	4.2 U
A6GAE-C15-16	1.6 U	40.8 U	0.378 J	1.3 U	1.02 -	40.8 U	4.1 U
FRL	15	2000	82	4000	1.5	2000	130
UNITS	ug/kg	ug/kg	mg/kg	ug/kg	mg/kg	ug/kg	ug/kg
Conf. Level	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Max. Result	1.7	42.2	0.622	1.4	0.91	42.2	10
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	0	12	12
% Nondetects	100%	100%	100%	100%	0%	100%	100%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 15

Sample ID	Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,1-Dichloroethene		1,1,1-Trichloroethane	
A6GAE-C15-2	25.5	-	0.635	U	1.1	U	1.1	U	1.1	U
A6GAE-C15-3	22.4	-	0.744	U	1.2	U	1.5	J	1.2	U
A6GAE-C15-4	6.1	J	0.714	U	1.1	U	5.1	J	1.1	U
A6GAE-C15-5	4	U	0.693	U	1.1	U	1.4	J	1.1	U
A6GAE-C15-5-D	4	U	0.761	U	1.3	U	1.4	J	1.3	U
A6GAE-C15-7	3.8	U	0.733	U	1.2	U	1.2	U	1.2	U
A6GAE-C15-8	4.2	U	0.729	U	1.2	U	1.2	U	1.2	U
A6GAE-C15-10	3.8	U	0.718	U	1.1	U	1.1	U	1.1	U
A6GAE-C15-11	4.2	J	0.655	U	1.2	U	1.2	U	1.2	U
A6GAE-C15-12	3.8	U	0.738	U	1.1	U	1.1	U	1.1	U
A6GAE-C15-13	4.1	U	0.736	U	1.3	U	5.5	J	1.3	U
A6GAE-C15-15	4.2	U	0.784	U	1.1	U	1.7	J	1.1	U
A6GAE-C15-16	4.1	U	0.789	U	1.3	U	1.3	U	1.3	U
FRL	130		96		160		410		4300	
UNITS	ug/kg		mg/kg		ug/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9	
Max. Result	25.5		0.789		1.3		5.5		1.3	
Max. >= Limit	No		No		No		No		No	
W-statistic Prob. #	--		--		--					
Test Procedure	--		--		--					
Sample Size	12		12		12		12		12	
Nondetects	8		12		12		7		12	
% Nondetects	66.7%		100%		100%		58%		100%	
Est. Mean	--		--		--		--			
UCL	--		--		--		--			
Prob. > Limit	--		--		--		--			
Pass / Fail	--		--		--		--			
a posteriori Sample Size calculation	--		--		--		--			

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

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**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 16

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Thorium-230	Technetium-99
A6GAE-C16-1	44.2 J	1.38 J	1.38 J	1.38 J	0.989 J	3.35 -	1.9 U
A6GAE-C16-3	16.2 J	1.17 J	1.18 J	1.17 J	0.919 J	2.29 -	1.79 U
A6GAE-C16-4	8.38 J	1.19 J	1.23 J	1.19 J	0.975 J	1.5 -	1.87 U
A6GAE-C16-5	7.16 J	1.07 J	1.09 J	1.07 J	1.01 J	1.14 -	1.56 U
A6GAE-C16-6	10.4 J	0.93 J	0.933 J	0.93 J	1.03 J	1.69 -	1.82 U
A6GAE-C16-8	6.44 J	1.11 J	1.11 J	1.11 J	1.17 J	1.65 -	1.94 U
A6GAE-C16-10	7.42 J	1.06 J	1.05 J	1.06 J	1.04 J	1.38 -	1.85 U
A6GAE-C16-12	12.9 J	0.812 J	0.83 J	0.812 J	0.81 J	1.26 -	1.7 U
A6GAE-C16-12-D	6.86 J	0.922 J	0.925 J	0.922 J	0.883 J	1.22 -	1.65 U
A6GAE-C16-13	7.69 J	0.942 J	0.938 J	0.942 J	0.912 J	1.24 -	1.58 U
A6GAE-C16-15	5.75 J	1.03 J	1.08 J	1.03 J	1.02 J	1.45 -	1.66 U
A6GAE-C16-16	12.7 J	1.24 J	1.26 J	1.24 J	1.14 J	1.06 -	1.71 U
FRL	82	1.5	1.7	1.8	1.7	280	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	44.2	1.38	1.38	1.38	1.17	3.35	1.94
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	11	11	11	11	11	11	11
Nondetects	0	0	0	0	0	0	11
% Nondetects	0%	0%	0%	0%	0%	0%	100%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

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APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 16

Sample ID	Xylenes, Total		Trichloroethene		Toluene		Tetrachloroethene		Silver		Molybdenum	
A6GAE-C16-1	1	U	1	U	1	U	1	U	0.114	U	1.3	-
A6GAE-C16-3	0.9	U	0.9	U	0.9	U	0.9	U	0.116	U	1.4	-
A6GAE-C16-4	0.9	U	0.9	U	0.9	U	0.9	U	0.115	U	1.2	-
A6GAE-C16-5	0.9	U	0.9	U	0.9	U	0.9	U	0.117	U	0.81	J
A6GAE-C16-6	1.5	U	1.5	U	1.5	U	1.5	U	0.108	U	1.1	-
A6GAE-C16-8	0.9	U	0.9	U	0.9	U	0.9	U	0.113	U	1.2	-
A6GAE-C16-10	1.2	U	1.2	U	1.2	U	1.2	U	0.117	U	0.86	J
A6GAE-C16-12	0.9	U	0.9	U	0.9	U	0.9	U	0.116	U	1.4	-
A6GAE-C16-12-D	0.9	U	0.9	U	0.9	U	0.9	U	0.111	U	1.1	-
A6GAE-C16-13	1	U	1	U	1	U	1	U	0.576	U	1.4	-
A6GAE-C16-15	1	U	1	U	1	U	1	U	0.118	U	0.9	J
A6GAE-C16-16	1	U	1	U	1	U	1	U	0.113	U	0.96	J
FRL	920000000		25000		100000000		3600		29000		2900	
UNITS	ug/kg		ug/kg		ug/kg		ug/kg		mg/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	1.5		1.5		1.5		1.5		0.576		1.4	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	11		11		11		11		11		11	
Nondetects	11		11		11		11		11		7	
% Nondetects	100%		100%		100%		100%		100%		64%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--	

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

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STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 16

Sample ID	Methylene chloride	Dieldrin	Dibenzo(a,h)-anthracene	Cadmium	Bromodichloro-methane	Beryllium	Benzo(a)-pyrene
A6GAE-C16-1	4.8 U	1.6 U	39.7 U	0.572 U	1 U	0.69 -	60.4 J
A6GAE-C16-3	4.6 U	1.6 U	38.8 U	0.578 U	0.9 U	1.1 -	47.5 J
A6GAE-C16-4	4.3 U	1.5 U	38.5 U	0.15 J	0.9 U	0.66 -	38.5 U
A6GAE-C16-5	4.7 U	1.6 U	39.6 U	0.117 U	0.9 U	0.38 -	39.6 U
A6GAE-C16-6	7.5 U	1.5 U	37.9 U	0.14 J	1.5 U	0.7 -	46.4 J
A6GAE-C16-8	4.5 U	1.6 U	38.9 U	0.567 U	0.9 U	0.57 -	57.4 J
A6GAE-C16-10	6 U	1.6 U	40 U	0.585 U	1.2 U	1 -	40 U
A6GAE-C16-12	4.6 U	1.6 U	39.1 U	0.15 J	0.9 U	0.67 -	39.1 U
A6GAE-C16-12-D	4.4 U	1.5 U	37.4 U	0.18 J	0.9 U	0.59 -	37.4 U
A6GAE-C16-13	4.9 U	1.5 U	38.6 U	0.576 U	1 U	0.74 -	45.3 J
A6GAE-C16-15	4.9 U	1.6 U	40.5 U	0.589 U	1 U	0.83 -	40.5 U
A6GAE-C16-16	5.2 U	1.5 U	38.5 U	0.16 J	1 U	0.71 -	47.9 J
FRL	37000	15	2000	82	4000	1.5	2000
UNITS	ug/kg	ug/kg	ug/kg	mg/kg	ug/kg	mg/kg	ug/kg
Conf. Level	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Max. Result	7.5	1.6	40.5	0.589	1.5	1.1	60.4
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	11	11	11	11	11	11	11
Nondetects	11	11	11	7	11	0	5
% Nondetects	100%	100%	100%	64%	100%	0%	45%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 16

Sample ID	Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,1-Dichloroethene		1,1,1-Trichloroethane	
A6GAE-C16-1	32.8	J	31.1	J	2.29	UJ	1	U	1	U	1	U
A6GAE-C16-3	9.2	J	12.9	J	2.31	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C16-4	3.9	U	3.9	U	0.462	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C16-5	4	U	4	U	0.57	J	0.9	U	0.9	U	0.9	U
A6GAE-C16-6	5.9	J	9.6	J	0.72	J	1.5	U	1.5	U	1.5	U
A6GAE-C16-8	3.9	U	5.1	J	2.27	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C16-10	4	U	4	U	2.34	UJ	1.2	U	1.2	U	1.2	U
A6GAE-C16-12	3.9	U	3.9	U	0.466	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C16-12-D	3.7	U	3.7	U	0.446	UJ	0.9	U	0.9	U	0.9	U
A6GAE-C16-13	3.9	U	4.6	J	2.3	UJ	1	U	1	U	1	U
A6GAE-C16-15	4.1	U	4.1	U	2.36	UJ	1	U	1	U	1	U
A6GAE-C16-16	3.9	U	5.4	J	0.454	UJ	1	U	1	U	1	U
FRL	130		130		96		160		410		4300	
UNITS	ug/kg		ug/kg		mg/kg		ug/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	32.8		31.1		2.36		1.5		1.5		1.5	
Max. >= Limit	NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--	
Sample Size	11		11		11		11		11		11	
Nondetects	8		5		9		11		11		11	
% Nondetects	73%		45%		82%		100%		100%		100%	
Est. Mean	--		--		--		--		--		--	
UCL	--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 17

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99	Molybdenum
A6GAE-C17-2^RM	13 -	1.22 J	1.2 J	1.22 J	1.09 -	0.445 U	1.5 -
A6GAE-C17-3^RM	12.5 -	0.847 J	0.824 J	0.847 J	1.07 -	0.643 U	1.17 -
A6GAE-C17-4^RM	12.3 -	0.948 J	0.969 J	0.948 J	1.12 -	0.761 U	1.17 -
A6GAE-C17-5^RM	2.68 U	0.777 J	0.778 J	0.777 J	0.928 -	0.769 U	2.17 -
A6GAE-C17-6^RM	11.8 -	1.09 J	1.06 J	1.09 J	1.28 -	0.233 U	1.39 -
A6GAE-C17-6^RM-D	10.1 -	1.16 J	1.12 J	1.16 J	1.4 -	0.614 U	1.42 -
A6GAE-C17-8^RM	11.4 -	1.21 J	1.27 J	1.21 J	1.43 -	0.372 U	0.883 J
A6GAE-C17-10^RM	10.2 -	1.17 J	1.17 J	1.17 J	1.28 -	0.181 U	1.2 -
A6GAE-C17-11^RM	6.68 -	0.904 J	0.913 J	0.904 J	1.12 -	0.357 U	1.15 -
A6GAE-C17-12^RM	10.4 -	0.877 J	0.853 J	0.877 J	1.12 -	0.435 U	1.35 -
A6GAE-C17-13^RM	3.67 U	1.05 J	1.04 J	1.05 J	1.44 -	0.142 U	0.978 J
A6GAE-C17-14^RM	6.49 -	1.22 J	1.22 J	1.22 J	1.38 -	0.514 U	0.792 J
A6GAE-C17-15^RM	13.9 -	0.882 J	0.896 J	0.882 J	1.26 -	0.617 U	1.26 -
FRL	82	1.5	1.7	1.8	1.7	30	2900
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	13.9	1.22	1.27	1.22	1.44	0.769	2.17
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	2	0	0	0	0	12	0
% Nondetects	17%	0%	0%	0%	0%	100%	0%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 17

Sample ID	Cadmium		Antimony	
A6GAE-C17-2^RM	0.211	J	0.795	U
A6GAE-C17-3^RM	0.174	J	0.644	U
A6GAE-C17-4^RM	0.166	J	0.714	U
A6GAE-C17-5^RM	0.255	J	0.709	U
A6GAE-C17-6^RM	0.151	J	0.723	U
A6GAE-C17-6^RM-D	0.195	J	0.626	U
A6GAE-C17-8^RM	0.123	U	0.79	U
A6GAE-C17-10^RM	0.15	J	0.652	U
A6GAE-C17-11^RM	0.171	J	0.737	U
A6GAE-C17-12^RM	0.146	J	0.683	U
A6GAE-C17-13^RM	0.13	J	0.622	U
A6GAE-C17-14^RM	0.23	J	0.783	U
A6GAE-C17-15^RM	0.25	J	0.744	U
FRL	82		96	
UNITS	mg/kg		mg/kg	
Conf. Level	0.9		0.9	
Max. Result	0.255		0.795	
Max. >= Limit	NO		NO	
W-statistic Prob. #	--		--	
Test Procedure	--		--	
Sample Size	12		12	
Nondetects	1		12	
% Nondetects	8%		100%	
Est. Mean	--		--	
UCL	--		--	
Prob. > Limit	--		--	
Pass / Fail	--		--	
a posteriori Sample Size calculation	--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

**APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS**

CERTIFICATION UNIT 18

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Cesium-137	Antimony
A6E-TTAL-PC-1^RMP	5.47 -	0.943 -	0.949 -	0.943 -	1.02 J	0.0221 U	0.965 UJ
A6E-TTAL-PC-3^RMP	8.73 -	1.27 -	1.27 -	1.27 -	1.23 J	0.122 J	1 U
A6E-TTAL-PC-4^RMP	5.5 -	1.11 -	1.12 -	1.11 -	1.04 J	0.0519 U	0.927 UJ
A6E-TTAL-PC-5^RMP	6.92 -	0.939 -	0.932 -	0.939 -	0.996 J	0.0422 U	1.1 J
A6E-TTAL-PC-6^RMP	7.03 -	1.34 -	1.36 -	1.34 -	1.4 J	0.0429 U	0.99 J
A6E-TTAL-PC-7^RMP	8.91 -	1.17 -	1.2 -	1.17 -	1.17 J	0.0745 U	0.93 UJ
A6E-TTAL-PC-9^RMP	7.22 -	1.08 -	1.07 -	1.08 -	1.09 J	0.0762 U	0.928 UJ
A6E-TTAL-PC-9^RMP-D	6.1 -	0.961 -	0.977 -	0.961 -	0.919 J	0.0582 U	0.83 J
A6E-TTAL-PC-11^RMP	11.3 -	1.03 -	1.05 -	1.03 -	0.988 J	0.0428 U	0.916 UJ
A6E-TTAL-PC-12^RMP	6.27 J	1.5 -	1.55 -	1.5 -	1.21 J	0.0632 U	1.3 J
A6E-TTAL-PC-13^RMP	6.56 -	1.04 -	1.03 -	1.04 -	0.965 J	0.0489 U	1.6 J
A6E-TTAL-PC-14^RMP	6.05 -	1.14 -	1.15 -	1.14 -	1 J	0.0559 U	0.934 UJ
A6E-TTAL-PC-15^RMP	15.4 -	0.995 -	0.976 -	0.995 -	0.976 J	0.0557 U	0.918 UJ
A6E-TTAL-PC-17^RMP	7 -	1.07 -	1.07 -	1.07 -	0.979 J	0.0472 U	0.932 UJ
A6E-TTAL-PC-18^RMP	12.4 -	0.974 -	0.988 -	0.974 -	1.08 J	0.0775 U	0.861 UJ
A6E-TTAL-PC-19^RMP	8.01 -	0.939 -	0.945 -	0.939 -	0.883 J	0.0535 U	0.894 UJ
A6E-TTAL-PC-20^RMP	5.87 -	0.881 -	0.886 -	0.881 -	1.05 J	0.0605 U	0.943 UJ
A6E-TTAL-PC-21^RMP	8.74 -	0.874 -	0.893 -	0.874 -	0.89 J	0.0419 U	0.899 UJ
FRL	82	1.5	1.7	1.8	1.7	1.4	96
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	15.4	1.5	1.55	1.5	1.4	0.122	1.6
Max. >= Limit	NO	Yes	NO	NO	NO	NO	NO
W-statistic Prob. #	--	29.5% (LN)	--	--	--	--	--
Test Procedure	--	Lognormal	--	--	--	--	--
Sample Size	17	18	17	17	17	17	17
Nondetects	0	0	0	0	0	16	12
% Nondetects	0%	0%	0%	0%	0%	94%	71%
Est. Mean	--	1.07	--	--	--	--	--
UCL	--	1.14	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	pass	--	--	--	--	--
a posteriori Sample	--	3	--	--	--	--	--
Size calculation	--	pass	--	--	--	--	--

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX A
STATISTICAL ANALYSIS OF THE AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

CERTIFICATION UNIT 18

Sample ID	Beryllium		Cadmium		Aroclor-1260		Aroclor-1254	
A6E-TTAL-PC-1^RMP	0.79	-	0.45	J	4	U	16	-
A6E-TTAL-PC-3^RMP	0.86	-	0.82	-	6.3	J	23.5	-
A6E-TTAL-PC-4^RMP	0.72	-	0.42	J	3.9	U	3.9	U
A6E-TTAL-PC-5^RMP	0.54	-	0.26	J	3.9	U	4	J
A6E-TTAL-PC-6^RMP	0.87	-	0.3	J	4.1	U	4.1	U
A6E-TTAL-PC-7^RMP	0.76	-	0.35	J	3.9	U	6.2	J
A6E-TTAL-PC-9^RMP	0.71	-	0.46	J	4	U	4	U
A6E-TTAL-PC-9^RMP-D	0.71	-	0.39	J	4.1	U	4.1	U
A6E-TTAL-PC-11^RMP	0.55	-	0.3	J	3.9	U	10.4	J
A6E-TTAL-PC-12^RMP	0.74	-	0.31	J	4.1	U	4.4	J
A6E-TTAL-PC-13^RMP	0.77	-	0.42	J	30.8	-	47.8	-
A6E-TTAL-PC-14^RMP	0.75	-	0.35	J	3.9	U	3.9	U
A6E-TTAL-PC-15^RMP	0.75	-	0.34	J	3.9	U	3.9	U
A6E-TTAL-PC-17^RMP	0.68	-	0.37	J	4	U	10.2	J
A6E-TTAL-PC-18^RMP	0.51	-	0.29	J	3.8	U	7.7	J
A6E-TTAL-PC-19^RMP	0.68	-	0.34	J	3.9	U	3.9	U
A6E-TTAL-PC-20^RMP	0.64	-	0.32	J	4	U	6.3	J
A6E-TTAL-PC-21^RMP	0.58	-	0.29	J	9.9	J	38.3	J
FRL	82		1.5		130		130	
UNITS	mg/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9	
Max. Result	0.87		0.82		30.8		47.8	
Max. >= Limit	NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--	
Test Procedure	--		--		--		--	
Sample Size	17		17		17		17	
Nondetects	0		0		14		6	
% Nondetects	0%		0%		82%		35%	
Est. Mean	--		--		--		--	
UCL	--		--		--		--	
Prob. > Limit	--		--		--		--	
Pass / Fail	--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX B

STATISTICAL ANALYSIS FROM TRUCK TANKER SPILL DATA

APPENDIX B
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE TANKER TRUCK SPILL AREA

CERTIFICATION DATA FOR THE TANKER TRUCK SPILL AREA

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99
A6GAE-TTS-1	1.76 U	0.436 -	0.414 -	0.436 -	0.716 -	1.81 -
A6GAE-TTS-2	28.2 -	0.652 -	0.682 -	0.652 -	1.06 -	0.766 U
A6GAE-TTS-3	12.7 -	0.853 -	0.965 -	0.853 -	1.11 -	1.49 -
A6GAE-TTS-4	2.67 U	0.658 -	0.677 -	0.658 -	0.879 -	2.28 -
A6GAE-TTS-5	10.8 -	0.803 -	0.808 -	0.803 -	0.958 -	0.734 U
A6GAE-TTS-6	6.56 -	0.516 -	0.525 -	0.516 -	0.686 -	16.1 -
A6GAE-TTS-7	6.49 -	0.651 -	0.642 -	0.651 -	0.794 -	2.17 -
A6GAE-TTS-8	5.14 -	0.432 -	0.463 -	0.432 -	0.508 -	12.6 -
FRL	20	1.5	1.7	1.8	1.7	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	28.2	0.853	0.965	0.853	1.11	16.1
Max. >= Limit	Yes	NO	NO	NO	NO	NO
W-statistic Prob. #	53.2% (LN)	--	--	--	--	--
Test Procedure	Wilcoxon	--	--	--	--	--
Sample Size	8	8	8	8	8	8
Nondetects	2	0	0	0	0	2
% Nondetects	25%	0%	0%	0%	0%	25%
Est. Mean*	6.52	--	--	--	--	--
UCL	12.7	--	--	--	--	--
Prob. > Limit	1.17%	--	--	--	--	--
Pass / Fail	Pass	--	--	--	--	--
a posteriori Sample Size calculation	7 Pass	-- --	-- --	-- --	-- --	-- --

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

The maximum value of any duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX B
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE TANKER TRUCK SPILL AREA

CERTIFICATION UNIT 11 AND ASSOCIATED SPILL RESULTS

Sample ID	Uranium, Total		Thorium-232		Thorium-228		Radium-228		Radium-226		Technetium-99	
A6GAE-C11-1	8.21	J	0.643	J	0.624	J	0.643	J	0.987	J	0.93	-
A6GAE-C11-2	2.94	U	0.577	J	0.568	J	0.577	J	0.949	J	0.856	U
A6GAE-C11-3	6.15	J	0.587	J	0.575	J	0.587	J	0.854	J	1.06	U
A6GAE-C11-6	6.09	J	0.524	J	0.538	J	0.524	J	0.749	J	0.858	U
A6GAE-C11-6-D	5.55	J	0.658	J	0.643	J	0.658	J	0.799	J	2.13	-
A6GAE-C11-7	7.97	J	0.765	J	0.794	J	0.765	J	1.12	J	0.856	U
A6GAE-C11-8	2.09	U	0.553	J	0.57	J	0.553	J	2.11	J	0.873	U
A6GAE-C11-9	12.9	J	0.653	J	0.621	J	0.653	J	1.09	J	0.79	U
A6GAE-C11-10	4.59	J	0.387	J	0.417	J	0.387	J	1.02	J	0.903	U
A6GAE-C11-12	1.65	U	0.307	J	0.311	J	0.307	J	0.705	J	0.91	U
A6GAE-C11-13	5.3	J	0.783	J	0.703	J	0.783	J	1.04	J	0.835	U
A6GAE-C11-15	7.38	J	1.26	J	1.33	J	1.26	J	1.34	J	0.829	U
A6GAE-C11-16	10.5	J	0.727	J	0.755	J	0.727	J	0.927	J	2.31	-
A6GAE-TTS-7	6.49	-	0.651	-	0.642	-	0.651	-	0.794	-	2.17	-
A6GAE-TTS-8	5.14	-	0.432	-	0.463	-	0.432	-	0.508	-	12.6	-
FRL	82		1.5		1.7		1.8		1.7		30	
UNITS	mg/kg		pCi/g		pCi/g		pCi/g		pCi/g		pCi/g	
Conf. Level	0.95		0.95		0.95		0.95		0.95		0.9	
Max. Result	12.9		1.26		1.33		1.26		2.11		12.6	
Max. >= Limit	NO		NO		NO		NO		YES		NO	
W-statistic Prob. #	--		--		--		--		45.0%		--	
Test Procedure	--		--		--		--		lognormal		--	
Sample Size	14		14		14		14		14		14	
Nondetects	3		0		0		0		0		9	
% Nondetects	21%		0%		0%		0%		0%		64%	
Est. Mean	--		--		--		--		1.02		--	
UCL	--		--		--		--		1.21		--	
Prob. > Limit	--		--		--		--		--		--	
Pass / Fail	--		--		--		--		pass		--	
a posteriori Sample Size calculation	--		--		--		--		4		--	
	--		--		--		--		pass		--	

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

The maximum value of any duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

**APPENDIX B
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE TANKER TRUCK SPILL AREA**

CERTIFICATION UNIT 12 AND ASSOCIATED SPILL RESULTS

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99
A6GAE-C12-1	8.4 J	0.65 J	0.647 J	0.65 J	0.614 J	1.88 U
A6GAE-C12-2	7.61 J	0.645 J	0.662 J	0.645 J	0.789 J	1.99 U
A6GAE-C12-3	2.17 U	0.639 J	0.64 J	0.639 J	0.945 J	1.85 U
A6GAE-C12-5	13.8 J	0.939 J	0.986 J	0.939 J	0.85 J	2.09 U
A6GAE-C12-7	6.12 J	1.22 J	1.25 J	1.22 J	1.17 J	1.89 U
A6GAE-C12-8	7.71 J	0.666 J	0.692 J	0.666 J	0.829 J	1.79 U
A6GAE-C12-9	7.39 J	0.679 J	0.663 J	0.679 J	0.674 J	1.94 U
A6GAE-C12-11	3.23 J	0.458 J	0.446 J	0.458 J	0.626 J	1.71 U
A6GAE-C12-11-D	7.43 J	0.673 J	0.711 J	0.673 J	0.786 J	1.88 U
A6GAE-C12-12	6.01 J	0.786 J	0.764 J	0.786 J	0.845 J	1.85 U
A6GAE-C12-13	13.1 J	0.93 J	0.962 J	0.93 J	1.17 J	1.83 U
A6GAE-C12-14	5.65 J	0.703 J	0.706 J	0.703 J	0.722 J	1.61 U
A6GAE-C12-15	4.64 J	0.96 J	0.992 J	0.96 J	0.955 J	1.67 U
A6GAE-TTS-1	1.76 U	0.436 -	0.414 -	0.436 -	0.716 -	1.81 -
A6GAE-TTS-2	28.2 -	0.652 -	0.682 -	0.652 -	1.06 -	0.766 U
A6GAE-TTS-3	12.7 -	0.853 -	0.965 -	0.853 -	1.11 -	1.49 -
A6GAE-TTS-4	2.67 U	0.658 -	0.677 -	0.658 -	0.879 -	2.28 -
A6GAE-TTS-5	10.8 -	0.803 -	0.808 -	0.803 -	0.958 -	0.734 U
A6GAE-TTS-6	6.56 -	0.516 -	0.525 -	0.516 -	0.686 -	16.1 -
FRL	20	1.5	1.7	1.8	1.7	30
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9
Max. Result	28.2	1.22	1.25	1.22	1.17	16.1
Max. >= Limit	Yes	NO	NO	NO	NO	NO
W-statistic Prob. #	1.9% (LN)	--	--	--	--	--
Test Procedure	Median (Sign)	--	--	--	--	--
Sample Size	18	18	18	18	18	18
Nondetects	3	0	0	0	0	12
% Nondetects	16.70%	0%	0%	0%	0%	100%
Est. Mean	7.41	--	--	--	--	--
UCL	8.4	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	Pass	--	--	--	--	--
a posteriori Sample Size calculation	6 Pass	-- --	-- --	-- --	-- --	-- --

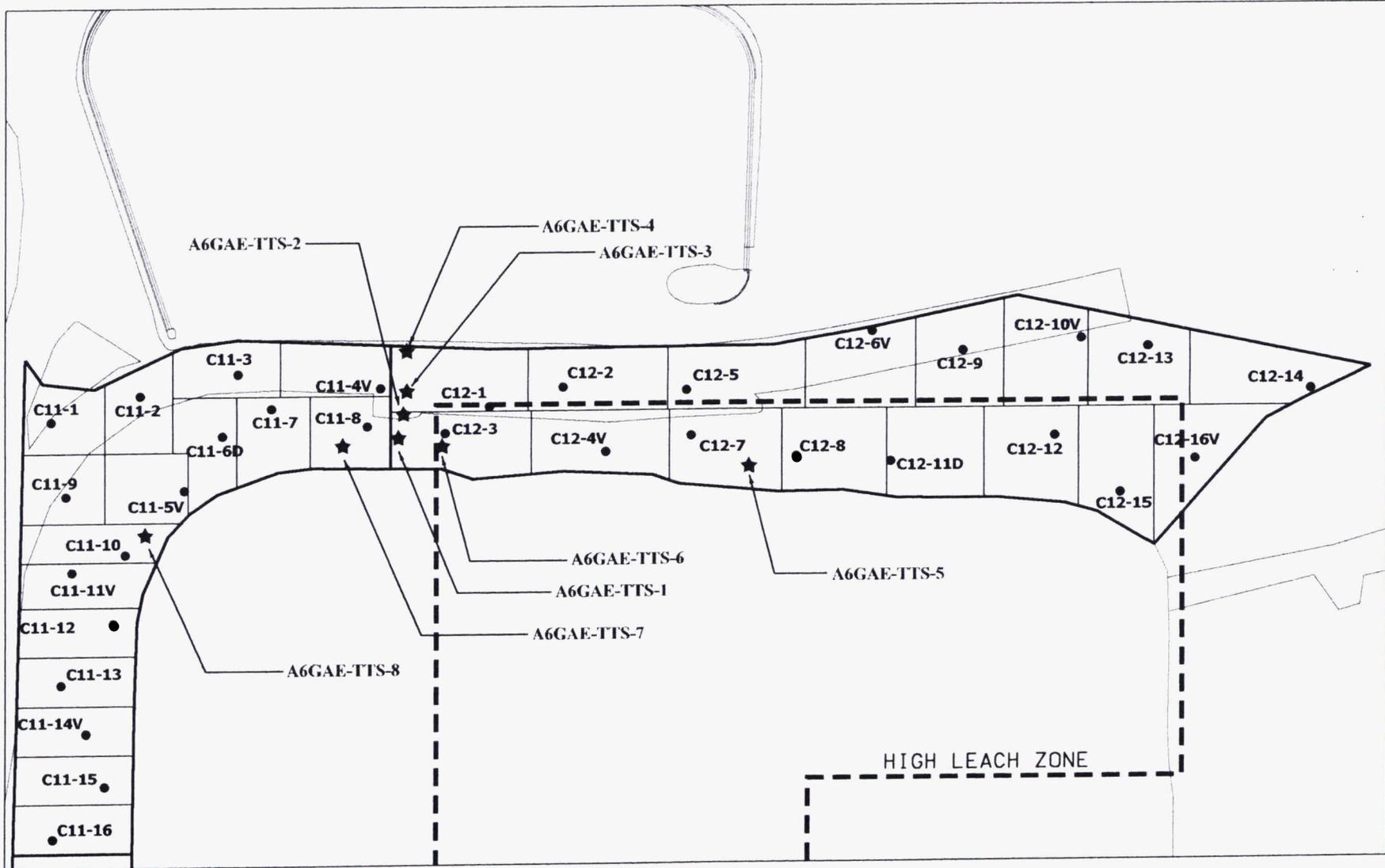
Note: Est. Mean = Estimated measure of central tendency (Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)

The maximum value of any duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

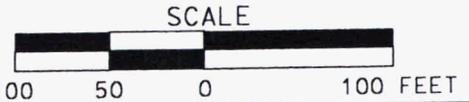
006162



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LEGEND:

- CERTIFICATION SAMPLE LOCATION
- ★ SPILL SAMPLE LOCATION



DRAFT

FIGURE B-1. SPILL SAMPLE POINTS WITH CUs A6GAE-C11 & A6GAE-C12 SAMPLE POINTS

27-JUN-2006

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APPENDIX C

STATISTICAL ANALYSIS FROM UTILITIES DATA

APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 1 RESULTS

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99	Thorium-230
A6GA-T-1	10.4 -	1.21 -	1.25 -	1.21 -	1.37 -	0.892 U	2 -
A6GA-T-2	7.95 -	1.21 -	1.16 -	1.21 -	1.36 -	0.913 U	1.87 J
A6GA-T-3	6.01 J	0.824 -	0.825 -	0.824 -	0.959 -	0.818 U	1.29 J
A6GA-T-4	5.85 J	1.2 -	1.24 -	1.2 -	1.54 -	0.872 U	1.57 J
A6GA-T-5	3.58 J	0.44 -	0.474 -	0.44 -	0.771 -	0.78 U	1.5 J
A6GA-T-6	4.56 U	1.28 -	1.31 -	1.28 -	1.62 -	0.915 U	1.74 J
A6GA-T-7	7.07 -	0.79 -	0.785 -	0.79 -	1.25 -	0.936 U	1.46 J
A6GA-T-8	17.9 -	1.03 -	0.996 -	1.03 -	1.34 -	0.895 U	1.61 J
A6GA-T-81	2.52 U	1.06 -	1.06 -	1.06 -	0.961 -	1.66 U	1.37 -
A6GA-T-82	7.46 -	1.22 -	1.25 -	1.22 -	1.1 -	1.56 U	1.95 -
A6GA-T-93	13.9 J	1.41 -	1.41 -	1.41 -	1.52 J	1.86 U	1.8 -
A6GA-T-94	5.63 J	1.23 -	1.24 -	1.23 -	1.32 J	1.71 U	1.75 -
FRL	82	1.5	1.7	1.8	1.7	30	280
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	17.9	1.41	1.41	1.41	1.62	1.86	2
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	2	0	0	0	0	12	0
% Nondetects	16.70%	0%	0%	0%	0%	100%	0%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

The maximum value of any duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 1 RESULTS

Sample ID	Cesium-137		Trichloroethene		Tetrachloroethene		Silver		Octachlorodibenzo-p-dioxin		Indeno(1,2,3-cd)pyrene		Fluoride	
A6GA-T-1	0.0826	U	1.54	U	1.54	U	0.296	U	0.0000582	-	44.2	U	2.83	J
A6GA-T-2	0.0928	U	1.1	U	1.1	U	0.293	U	0.0000191	-	42	U	0.717	J
A6GA-T-3	0.0797	U	0.894	U	0.894	U	0.277	U	0.000021	-	40	U	0.701	J
A6GA-T-4	0.093	U	1.18	U	1.18	U	0.292	U	0.000015	-	40.8	U	1.59	J
A6GA-T-5	0.0686	U	0.805	U	0.805	U	0.262	U	0.0000157	-	37.4	U	0.588	J
A6GA-T-6	0.0961	U	0.972	U	0.972	U	0.29	U	0.00000967	U	41.1	U	1.78	J
A6GA-T-7	0.0493	J	1.2	U	1.2	U	0.266	U	0.000354	-	85.1	J	1.76	J
A6GA-T-8	0.0503	U	1.1	U	1.1	U	0.286	U	0.00000888	U	171	-	2.29	J
A6GA-T-81	0.0644	U	1.2	U	1.2	U	0.18	J	0.0000108	-	40.8	U	1.08	J
A6GA-T-82	0.101	U	1.2	U	1.2	U	0.14	J	0.0000133	-	41.6	U	0.908	J
A6GA-T-93	0.0646	U	1	U	1	U	0.12	J	0.0000314	J	183	-	3.29	J
A6GA-T-94	0.0757	U	1.3	U	1.3	U	0.13	J	0.0000191	J	42.2	UJ		
FRL	1.4		25000		3600		29000		0.0088		20000		78000	
UNITS	pCi/g		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.101		1.54		1.54		0.296		0.000354		183		3.29	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		11	
Nondetects	11		12		12		8		2		9		0	
% Nondetects	91.70%		100%		100.00%		67%		24%		75%		0%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 1 RESULTS

Sample ID	Dieldrin		Dibenzo(a,h) anthracene		Cadmium		Bromodichloromethane		Beryllium		Benzo(b)fluor- anthene		Benzo(a)pyrene	
A6GA-T-1	5.3	U	44.2	U	0.318	J	1.54	U	1.05	-	44.2	U	44.2	U
A6GA-T-2	5	U	42	U	0.479	J	1.1	U	0.868	-	42	U	42	U
A6GA-T-3	4.8	U	40	U	0.193	J	0.894	U	0.494	-	40	U	40	U
A6GA-T-4	4.9	U	40.8	U	0.292	J	1.18	U	0.764	-	40.8	U	40.8	U
A6GA-T-5	4.5	U	37.4	U	0.262	J	0.805	U	0.183	-	37.4	U	37.4	U
A6GA-T-6	4.9	U	41.1	U	0.209	J	0.972	U	0.813	-	41.1	U	41.1	U
A6GA-T-7	1.6	U	40.6	U	0.301	J	1.2	U	0.775	J	77.2	J	64.4	J
A6GA-T-8	1.6	U	40	U	0.302	J	1.1	U	0.657	J	399	-	303	-
A6GA-T-81	1.6	UJ	40.8	U	0.57	-	1.2	U	1.1	-	40.8	U	40.8	U
A6GA-T-82	4.2	UJ	41.6	U	0.5	-	1.2	U	1.1	-	41.6	U	41.6	U
A6GA-T-93	1.6	U	175	-	0.38	J	1	U	0.91	-	102	-	72.7	J
A6GA-T-94	1.7	U	42.2	UJ	0.4	J	1.3	U	0.89	-	42.2	UJ	42.2	UJ
FRL	15		2000		82		4000		1.5		20000		2000	
UNITS	ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	5.3		175		0.57		1.54		1.1		399		303	
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		11		0		12		0		9		9	
% Nondetects	100.00%		92%		0%		100.00%		0%		75%		75.00%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 1 RESULTS

Sample ID	Arsenic		Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,2,3,4,6,7,8-Heptachloro-dibenzo-p-dioxin		1,1-Dichloroethene	
A6GA-T-1	9.12	J	4.4	U	4.4	U	0.789	U	1.54	U	0.0000052	-	0.881	J
A6GA-T-2	18.4	J	4.2	U	4.2	U	0.781	U	1.1	U	0.00000148	U	3.06	J
A6GA-T-3	3.75	J	4	U	4	U	0.737	U	0.894	U	0.00000142	U	2.24	J
A6GA-T-4	9.42	J	4.1	U	4.1	U	0.78	U	1.18	U	0.00000105	U	1.18	U
A6GA-T-5	1.9	J	3.7	U	3.7	U	0.699	U	0.805	U	0.000000815	U	0.805	U
A6GA-T-6	7.04	J	4.1	U	4.1	U	0.772	U	0.972	U	0.0000011	U	0.984	J
A6GA-T-7	11.5	J	12.2	U	12.2	U	0.709	U	1.2	U	0.0000219	-	1.2	U
A6GA-T-8	5.7	J	12	U	12	U	0.764	U	1.1	U	0.00000161	U	1.1	U
A6GA-T-81	10.1	J	4.1	U	4.1	U	0.48	UJ	1.2	U	0.0000017	-	1.2	U
A6GA-T-82	4.2	J	4.2	U	4.2	U	0.475	UJ	1.2	U	0.00000144	U	1.2	U
A6GA-T-93	5.8	-	4.1	U	6.5	J	3.1	U	1	U	0.00000301	-	1	U
A6GA-T-94	4.1	-	4.2	U	4.2	U	2.9	U	1.3	U	0.00000133	J	1.3	U
FRL	12		130		130		96		160		0.00088		410	
UNITS	mg/kg		ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	18.4		12.2		12.2		3.1		1.54		0.0000219		3.06	
Max. >= Limit	Yes		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	94.1% (LN)		--		--		--		--		--		--	
Test Procedure	Lognormal		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		12	
Nondetects	0		12		11		12		12		7		8	
% Nondetects	0%		100%		91.70%		100%		100%		58%		66.70%	
Est. Mean	7.782		--		--		--		--		--		--	
UCL	10.568		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	Pass		--		--		--		--		--		--	
a posteriori Sample Size calculation	6 Pass		-- --		-- --		-- --		-- --		-- --		-- --	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 2 RESULTS

Sample ID	Uranium, Total		Thorium-232		Thorium-228		Radium-228		Radium-226		Technetium-99		Thorium-230	
A6GA-T-10	6.58	-	1.32	-	1.33	-	1.32	-	1.57	-	0.93	U	1.95	J
A6GA-T-11	2.54	U	0.584	-	0.586	-	0.584	-	0.887	-	0.842	U	1.37	J
A6GA-T-12	2.67	U	0.661	-	0.662	-	0.661	-	0.872	-	0.87	U	1.15	J
A6GA-T-13	2.24	U	0.629	-	0.615	-	0.629	-	0.818	-	0.984	U	1.37	J
A6GA-T-14	5.6	-	0.715	-	0.682	-	0.715	-	0.912	-	0.986	U	1.35	J
A6GA-T-15	2.68	U	0.883	-	0.874	-	0.883	-	1.17	-	0.859	U	1.23	J
A6GA-T-28	6.91	-	0.792	-	0.787	-	0.792	-	0.994	-	0.905	U	1.26	J
A6GA-T-28	6.91	-	0.792	-	0.787	-	0.792	-	0.994	-	0.905	U	1.26	J
A6GA-T-50	4.67	J	0.798	-	0.771	-	0.798	-	1.1	J	0.794	U	1.07	J
A6GA-T-51	18.5	-	0.769	-	0.797	-	0.769	-	1	J	0.787	U	1.48	J
A6GA-T-52	3.84	U	0.617	-	0.617	-	0.617	-	0.871	J	0.803	U	1.13	J
A6GA-T-9	5.89	J	1.26	-	1.21	-	1.26	-	1.51	-	0.922	U	1.59	J
FRL	20		1.5		1.7		1.8		1.7		30		280	
UNITS	mg/kg		pCi/g		pCi/g		pCi/g		pCi/g		pCi/g		pCi/g	
Conf. Level	0.95		0.95		0.95		0.95		0.95		0.9		0.9	
Max. Result	18.5		1.32		1.33		1.32		1.57		0.986		1.95	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		12	
Nondetects	5		0		0		0		0		12		0	
% Nondetects	41.70%		0%		0%		0%		0%		100%		0%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

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**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 2 RESULTS

Sample ID	Cesium-137		Trichloroethene		Tetrachloroethene		Silver		Octachlorodibenzo-p-dioxin		Indeno(1,2,3-cd)pyrene		Fluoride	
A6GA-T-10	0.0609	U	1.3	U	1.3	U	0.262	U	0.00004	-	42.4	U	1.44	J
A6GA-T-11	0.104	-	1	U	1	U	0.264	U	0.0000235	-	38	U	1.22	J
A6GA-T-12	0.0445	U	0.9	U	0.9	U	0.224	U	0.000028	-	64.4	J	2.09	J
A6GA-T-13	0.0591	U	1.3	U	1.3	U	0.46	U	0.0000286	-	113	U	2	J
A6GA-T-14	0.0468	U	1.4	U	1.4	U	0.258	U	0.0000428	-	120	U	3.38	J
A6GA-T-15	0.0463	U	1.3	U	1.3	U	0.62	U	0.0000629	-	130	U	2.22	J
A6GA-T-28	0.0367	U	1.1	U	1.1	U	0.681	U	0.0000466	-	39.4	U	3.24	J
A6GA-T-28	0.0367	U	1.1	U	1.1	U	0.681	U	0.0000466	-	39.4	U	3.24	J
A6GA-T-50	0.0772	U	1	U	1	U	0.0483	U	0.0000296	-	40.3	U	1.37	J
A6GA-T-51	0.0793	U	1	U	1	U	0.055	J	0.000199	-	39.4	U	3.07	J
A6GA-T-52	0.0632	U	0.8	U	0.8	U	0.0456	U	0.0000117	-	38.8	U	0.722	J
A6GA-T-9	0.0552	U	1.3	U	1.3	U	0.296	U	0.0000193	-	42.1	U	1.55	J
FRL	1.4		25000		3600		29000		0.0088		20000		78000	
UNITS	pCi/g		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.104		1.4		1.4		0.681		0.000199		130		3.38	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		12	
Nondetects	11		12		12		11		0		11		0	
% Nondetects	91.70%		100%		100.00%		92%		0%		92%		0%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

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**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 2 RESULTS

Sample ID	Dieldrin		Dibenzo(a,h) anthracene		Cadmium		Bromodichloromethane		Beryllium		Benzo(b)fluor- anthene		Benzo(a)pyrene	
A6GA-T-10	1.7	U	42.4	U	0.289	J	1.3	U	1.02	J	42.4	U	42.4	U
A6GA-T-11	1.5	U	38	U	0.23	J	1	U	0.4	J	38	U	38	U
A6GA-T-12	1.5	U	38.4	U	0.341	J	0.9	U	0.399	J	38.4	U	43.7	J
A6GA-T-13	4.5	U	113	U	0.305	J	1.3	U	0.474	J	113	U	113	U
A6GA-T-14	4.8	U	120	U	0.261	J	1.4	U	0.621	J	120	U	120	U
A6GA-T-15	5.2	U	130	U	0.258	U	1.3	U	0.922	J	130	U	130	U
A6GA-T-28	1.6	U	39.4	U	0.284	U	1.1	U	0.716	J	39.4	U	39.4	U
A6GA-T-28	1.6	U	39.4	U	0.284	U	1.1	U	0.716	J	39.4	U	39.4	U
A6GA-T-50	4.8	U	40.3	U	0.17	J	1	U	0.76	-	40.3	U	40.3	U
A6GA-T-51	4.7	U	39.4	U	0.25	J	1	U	0.73	-	39.4	U	39.4	U
A6GA-T-52	4.7	U	38.8	U	0.12	J	0.8	U	0.3	-	38.8	U	38.8	U
A6GA-T-9	1.7	U	42.1	U	0.564	J	1.3	U	0.798	J	42.1	U	42.1	U
FRL	15		2000		82		4000		1.5		20000		2000	
UNITS	ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	5.2		130		0.564		1.4		1.02		130		130	
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		3		12		0		12		11	
% Nondetects	100.00%		100%		25%		100.00%		0%		100%		91.70%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 2 RESULTS

Sample ID	Arsenic		Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,2,3,4,6,7,8-Heptachloro-dibenzo-p-dioxin		1,1-Dichloroethene	
A6GA-T-10	7.83	J	12.7	U	12.7	U	0.697	U	1.3	U	0.00000182	U	1.3	U
A6GA-T-11	3.74	J	11.4	U	11.4	U	0.705	U	1	U	0.00000147	U	1	U
A6GA-T-12	4.09	J	11.5	U	11.5	U	0.598	U	0.9	U	0.00000129	U	0.9	U
A6GA-T-13	6.39	J	11.3	U	11.3	U	0.614	U	1.3	U	0.00000135	U	8.9	J
A6GA-T-14	5.97	J	12	U	12	U	0.688	U	1.4	U	0.00000215	-	1.4	U
A6GA-T-15	11.1	J	13	U	13	U	0.826	U	1.3	U	0.00000409	-	1.3	U
A6GA-T-28	6.59	-	3.9	U	3.9	U	0.726	U	1.1	U	0.0000014	U	1.1	U
A6GA-T-28	6.59	-	3.9	U	3.9	U	0.726	U	1.1	U	0.0000014	U	1.1	U
A6GA-T-50	4.9	J	12.1	U	12.1	U	0.96	U	1	U	0.00000139	U	1	U
A6GA-T-51	7.8	J	11.8	U	19	-	1.1	U	1	U	0.00000985	-	1	U
A6GA-T-52	2.5	J	11.6	U	11.6	U	0.462	UJ	0.8	U	0.00000145	U	0.8	U
A6GA-T-9	14.1	J	12.6	U	12.6	U	0.789	U	1.3	U	0.00000182	U	1.3	U
FRL	12		130		130		96		160		0.00088		410	
UNITS	mg/kg		ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	14.1		13		19		1.1		1.4		0.00000985		8.9	
Max. >= Limit	Yes		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	94.6% (LN)		--		--		--		--		--		--	
Test Procedure	Lognormal		--		--		--		--		--		--	
Sample Size	12		12		12		12		12		12		12	
Nondetects	0		12		11		12		12		9		11	
% Nondetects	0%		100%		91.70%		100%		100%		75%		91.70%	
Est. Mean	7.785		--		--		--		--		--		--	
UCL	10.568		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	Pass		--		--		--		--		--		--	
a posteriori Sample Size calculation	6 Pass		-- --		-- --		-- --		-- --		-- --		-- --	

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

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**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 3 RESULTS

Sample ID	Uranium, Total	Thorium-232	Thorium-228	Radium-228	Radium-226	Technetium-99	Thorium-230
A3B4B-T-1	5.36 -	0.837 -	0.837 -	0.837 -	1.08 -	0.862 U	
A3B4B-T-14	3.44 U	0.522 J	0.502 J	0.522 J	0.744 -	0.83 U	
A3B4B-T-2	18.2 -	0.788 -	0.817 -	0.788 -	1.3 -	0.801 U	
A3B4B-T-3	7.73 -	0.787 -	0.764 -	0.787 -	1.11 -	0.86 U	
A3B4B-T-4	17.6 -	0.861 -	0.879 -	0.861 -	1.68 -	0.807 U	
A3B4B-T-5	14.4 -	0.786 -	0.779 -	0.786 -	1.19 -	1.31 -	
A6GA-T-34	6.38 J	0.589 -	0.584 -	0.589 -	0.844 -	0.803 U	1.07 J
A6GA-T-53	7.6 -	0.958 -	0.984 -	0.958 -	1.26 J	0.837 U	1.48 J
A6GA-T-54	5.84 -	0.78 -	0.768 -	0.78 -	0.98 J	0.807 U	1.88 J
A6GA-T-55	5.19 -	0.839 -	0.855 -	0.839 -	1.1 J	0.79 U	1.45 J
A6GA-T-56	3.38 U	0.628 -	0.647 -	0.628 -	1.03 -	0.812 U	1.18 J
A6GA-T-57	3.38 J	0.412 -	0.402 -	0.412 -	0.889 -	0.812 U	1.11 J
A6GA-T-58	3.61 U	0.631 -	0.664 -	0.631 -	1.02 -	0.8 U	1.32 J
A6GA-T-59	4.69 J	0.458 -	0.46 -	0.458 -	0.875 -	0.799 U	1.17 J
FRL	20	1.5	1.7	1.8	1.7	30	280
UNITS	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
Conf. Level	0.95	0.95	0.95	0.95	0.95	0.9	0.9
Max. Result	18.2	0.958	0.984	0.958	1.68	1.31	1.88
Max. >= Limit	NO	NO	NO	NO	NO	NO	NO
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	14	14	14	14	14	14	8
Nondetects	3	0	0	0	0	13	0
% Nondetects	21.40%	0%	0%	0%	0%	93%	0%
Est. Mean	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample Size calculation	--	--	--	--	--	--	--

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

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**APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES**

TRENCH CU 3 RESULTS

Sample ID	Cesium-137		Trichloroethene		Tetrachloroethene		Silver		Octachlorodibenzo-p-dioxin		Indeno(1,2,3-cd)pyrene		Fluoride	
A3B4B-T-1							0.296	U						
A3B4B-T-14							0.596	U						
A3B4B-T-2							0.279	U						
A3B4B-T-3							0.25	U						
A3B4B-T-4							0.275	U						
A3B4B-T-5							0.275	U						
A6GA-T-34	0.0575	U	1	U	1	U	0.651	U	0.0000312	-	36	U	1.9	J
A6GA-T-53	0.0589	U	1.1	U	1.1	U	0.057	J	0.000271	-	40.4	U	2.53	J
A6GA-T-54	0.0331	U	1.1	U	1.1	U	0.048	J	0.000159	-	38.8	U	1.4	J
A6GA-T-55	0.0283	U	1	U	1	U	0.0449	U	0.0000225	-	38.3	U	0.816	J
A6GA-T-56	0.0771	U	0.9	U	0.9	U	0.043	U	0.0000242	-	108	U	1.89	J
A6GA-T-57	0.0552	U	0.9	U	0.9	U	0.0427	U	0.0000127	-	112	U	1.3	J
A6GA-T-58	0.0775	U	1.2	U	1.2	U	0.045	J	0.0000415	-	112	U	1.72	J
A6GA-T-59	0.0721	U	0.8	U	0.8	U	0.046	J	0.0000214	-	112	U	1.42	J
FRL	1.4		25000		3600		29000		0.0088		20000		78000	
UNITS	pCi/g		ug/kg		ug/kg		mg/kg		mg/kg		ug/kg		mg/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	0.0775		1.2		1.2		0.651		0.000271		112		2.53	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	8		8		8		14		8		8		8	
Nondetects	8		8		8		10		0		8		0	
% Nondetects	100.00%		100%		100.00%		71%		0%		100%		0%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 3 RESULTS

Sample ID	Dieldrin		Dibenzo(a,h) anthracene		Cadmium	Bromodichloromethane		Beryllium		Benzo(b)fluor- anthene		Benzo(a)pyrene	
A3B4B-T-1					0.292 J			0.77 J					
A3B4B-T-14					0.248 U			0.275 -					
A3B4B-T-2					0.337 J			0.567 J					
A3B4B-T-3					0.38 J			0.585 J					
A3B4B-T-4					0.292 J			0.723 J					
A3B4B-T-5					0.28 J			0.637 J					
A6GA-T-34	1.4 U		36 U		0.271 U	1 U		0.37 -		36 U		36 U	
A6GA-T-53	4.9 U		40.4 U		0.29 J	1.1 U		0.86 -		40.4 U		40.4 U	
A6GA-T-54	4.7 U		38.8 U		0.24 J	1.1 U		0.64 -		38.8 U		38.8 U	
A6GA-T-55	4.6 U		38.3 U		0.23 J	1 U		0.51 -		38.3 U		38.3 U	
A6GA-T-56	4.3 U		108 U		0.23 J	0.9 U		0.43 -		108 U		108 U	
A6GA-T-57	4.5 U		112 U		0.17 J	0.9 U		0.25 -		112 U		112 U	
A6GA-T-58	4.5 U		112 U		0.23 J	1.2 U		0.5 -		112 U		112 U	
A6GA-T-59	4.5 U		112 U		0.27 J	0.8 U		0.37 -		112 U		112 U	
FRL	15		2000		82	4000		1.5		20000		2000	
UNITS	ug/kg		ug/kg		mg/kg	ug/kg		mg/kg		ug/kg		ug/kg	
Conf. Level	0.9		0.9		0.9	0.9		0.9		0.9		0.9	
Max. Result	4.9		112		0.38	1.2		0.86		112		112	
Max. >= Limit	NO		NO		NO	NO		NO		NO		NO	
W-statistic Prob. #	--		--		--	--		--		--		--	
Test Procedure	--		--		--	--		--		--		--	
Sample Size	8		8		14	8		14		8		8	
Nondetects	8		8		12	8		0		8		8	
% Nondetects	100.00%		100%		86%	100.00%		0%		100%		100.00%	
Est. Mean	--		--		--	--		--		--		--	
UCL	--		--		--	--		--		--		--	
Prob. > Limit	--		--		--	--		--		--		--	
Pass / Fail	--		--		--	--		--		--		--	
a posteriori Sample Size calculation	--		--		--	--		--		--		--	

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APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 3 RESULTS

Sample ID	Arsenic		Aroclor-1260		Aroclor-1254		Antimony		1,2-Dichloroethene (Total)		1,2,3,4,6,7,8-Heptachloro-dibenzo-p-dioxin		1,1-Dichloroethene	
A3B4B-T-1					12.1	U	0.788	U						
A3B4B-T-14					10.5	U	0.635	U						
A3B4B-T-2					13.9	-	0.744	U						
A3B4B-T-3					11.8	U	0.668	U						
A3B4B-T-4					12.7	U	0.734	U						
A3B4B-T-5					11.9	U	0.732	U						
A6GA-T-34	4.4	-	3.6	U	3.6	U	0.694	UJ	1	U	0.00000134	U	1.9	-
A6GA-T-53	7.7	J	12.1	U	12.1	U	1.3	U	1.1	U	0.0000148	-	1.1	U
A6GA-T-54	6.3	J	16.9	-	32.1	-	0.85	U	1.1	U	0.00000828	-	3.1	J
A6GA-T-55	4.6	J	11.5	U	11.5	U	1.4	U	1	U	0.00000134	U	1	U
A6GA-T-56	4.8	-	10.8	U	10.8	U	2.3	J	0.9	U	0.000000762	J	0.9	U
A6GA-T-57	4	-	11.2	U	11.2	U	1.8	J	0.9	U	0.00000137	U	0.9	U
A6GA-T-58	4.9	-	11.2	U	11.2	U	0.93	J	1.2	U	0.00000172	-	1.7	J
A6GA-T-59	5.5	-	11.2	U	11.8	J	0.47	J	0.8	U	0.00000131	U	0.8	U
FRL	12		130		130		96		160		0.00088		410	
UNITS	mg/kg		ug/kg		ug/kg		mg/kg		ug/kg		mg/kg		ug/kg	
Conf. Level	0.9		0.9		0.9		0.9		0.9		0.9		0.9	
Max. Result	7.7		16.9		32.1		2.3		1.2		0.0000148		3.1	
Max. >= Limit	NO		NO		NO		NO		NO		NO		NO	
W-statistic Prob. #	--		--		--		--		--		--		--	
Test Procedure	--		--		--		--		--		--		--	
Sample Size	8		8		14		14		8		8		8	
Nondetects	0		7		11		10		8		4		5	
% Nondetects	0%		88%		78.60%		71%		100%		50%		62.50%	
Est. Mean	--		--		--		--		--		--		--	
UCL	--		--		--		--		--		--		--	
Prob. > Limit	--		--		--		--		--		--		--	
Pass / Fail	--		--		--		--		--		--		--	
a posteriori Sample Size calculation	--		--		--		--		--		--		--	

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

The maximum value of the two duplicates was used in all statistical equations.

#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

APPENDIX C
STATISTICAL EVALUATION OF DATA ASSOCIATED WITH THE UTILITY TRENCHES
TRENCH CU 3 RESULTS

Sample ID	Molybdenum
A3B4B-T-1	1.5 -
A3B4B-T-14	1.45 -
A3B4B-T-2	2.51 -
A3B4B-T-3	2.78 -
A3B4B-T-4	2.24 -
A3B4B-T-5	1.62 -
A6GA-T-34	
A6GA-T-53	
A6GA-T-54	
A6GA-T-55	
A6GA-T-56	
A6GA-T-57	
A6GA-T-58	
A6GA-T-59	
FRL	2900
UNITS	mg/kg
Conf. Level	0.9
Max. Result	2.78
Max. >= Limit	NO
W-statistic Prob. #	--
Test Procedure	--
Sample Size	6
Nondetects	0
% Nondetects	0%
Est. Mean	--
UCL	--
Prob. > Limit	--
Pass / Fail	--

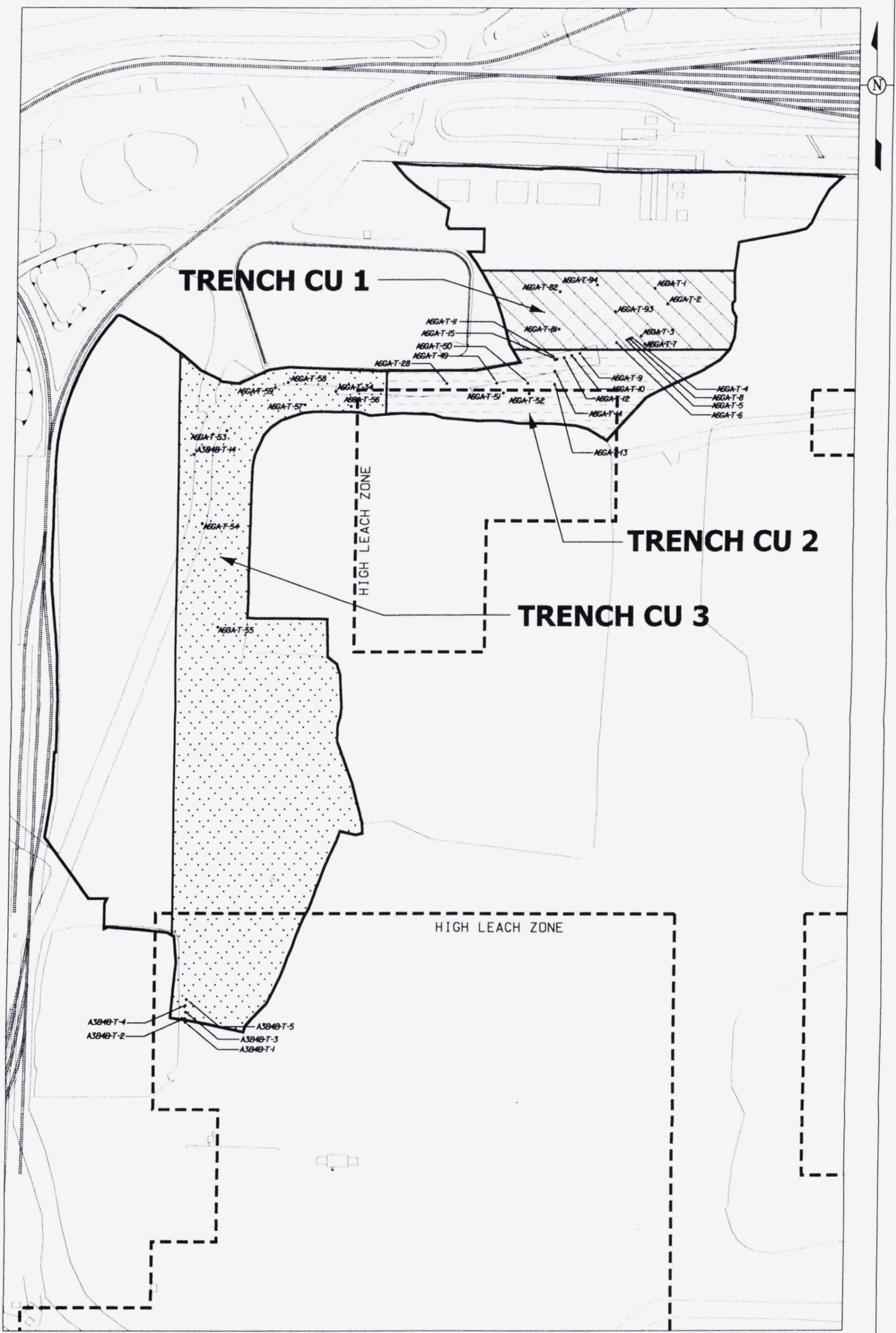
a posteriori Sample	--
Size calculation	--

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

The maximum value of the two duplicates was used in all statistical equations.

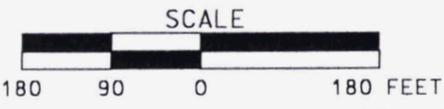
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.

The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.



LEGEND:

A3B4B-T-3 TRENCH SAMPLE



DRAFT

FIGURE C-1. UTILITY TRENCH SAMPLE POINTS

APPENDIX D

**VARIANCE/FIELD CHANGE NOTICES FOR THE CDL AND
CERTIFICATION PSP FOR AREA 6 GENERAL AREA EAST**

**VARIANCE/FIELD CHANGE NOTICE LOG THE CERTIFICATION DESIGN LETTER
AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 GENERAL AREA EAST**

Variance No.	Variance Date	Variance Description	Significant? (Y or N)	Date Signed	Date Distributed	EPA/OEPA Approval
Revision A						
20600-PSP-0018-1	4/11/06	Variance to delineate hot spot discovered during certification sampling - sample point A6GAE-C16-11	N	4/11/06	4/21/06	NA
20600-PSP-0018-2	4/12/06	Variance to further delineate hot spot in 6B	N	4/12/06	4/21/06	NA
20600-PSP-0018-3	4/17/06	Variance to further delineate hot spot in 6B	N	4/17/06	4/21/06	NA
20600-PSP-0018-4	4/19/06	Variance to further delineate hot spot in 6B.	N	4/19/06	4/21/06	NA
20600-PSP-0018-5	4/21/06	CANCELLED	N	4/21/06		NA
20600-PSP-0018-6	4/27/06	Variance to sample soil in area of tanker spill in 3B-MDC.	N	4/27/06	5/24/06	NA

VARIANCE / FIELD CHANGE NOTICE

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

V/F: 20600-PSP-0018-1

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0018 Rev. A

Page: 1 of 2

PROJECT TITLE: Certification Design Letter and Certification Project Specific Plan For Area 6 General Area East

Date: 4/7/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of additional soil samples from Area 6B in Area 6 General Area East in order to delineate an above-FRL sampling location in CU 16 (sub-CU 11 A6GAE-C16-11).

Samples will be collected at 3 intervals from the original sample location – 0.5-1.0', 1.0-1.5', and 1.5-2.0'. Also, samples will be collected from the 0.0-0.5' interval 5 feet from the original sample location in the 4 cardinal directions. All samples will be analyzed for total uranium, radium-228, thorium-228, and thorium-232 (TAL O).

See Attachment 1 for the TAL and the Sampling and Analytical Requirements. The Sample Ids and their associated locations are as listed on Attachment 1.

Field sketch required: No

Surveying Required: Yes, Surveyors will survey these sample points prior to sampling.

Field data validation: Yes

Justification:

Results in excess of 3 times the FRL were detected for radium-228, thorium-228, and thorium-232 in this sub-CU, which requires delineation. The samples to be collected will serve as horizontal and vertical bounding for this location. Per Section 4.3 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 4/7/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R Friske <i>[Signature]</i>	4-21-06	X	PROJECT MANAGER J.D. Chiou <i>[Signature]</i>	4/11/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER F Miller <i>[Signature]</i>	4/10/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul S. McLurgan <i>[Signature]</i>	4/11/06		RTIMP Manager	
X	WAO dma 4/11/06		X	SAMPLING MANAGER E. Bultrage <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	Method	Matrix	ASL	TAT	Preservative	Container ^a	Minimum Mass/Volume
O	Gamma Spec	Soil	B	24 hour	None	Plastic or Glass	300 g

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):

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

Analytical Data Validation is required - VSL B.

Data Package Requirement – COAs within 24 hours. Full ASL D/E data package within 7 days.

Historical Data for shipping: Total Uranium = 116 mg/kg, Radium-228 = 8.38 pCi/g, Thorium-228 = 8.43 pCi/g, and Thorium-232 = 8.38 pCi/g from boring A6GAE-C16-11.

TAL 20600-PSP-0018-O

(7 estimated soil analysis specified in V/FCN)

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
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

SAMPLE LOCATIONS AND IDENTIFICATION

Location ID	Northing	Easting	Sample Interval	TAL	Sample ID
A6GAE-C16-11	482076.2	1348843	0.5-1.0'	O	A6GAE-C16-11^2-R
			1.0-1.5'		A6GAE-C16-11^3-R
			1.5-2.0'		A6GAE-C16-11^4-R
A6GAE-C16-11N	482081.2	1348843	0.0-0.5'	O	A6GAE-C16-11N^R
A6GAE-C16-11S	482071.2	1348843	0.0-0.5'	O	A6GAE-C16-11S^R
A6GAE-C16-11E	482076.2	1348848	0.0-0.5'	O	A6GAE-C16-11E^R
A6GAE-C16-11W	482076.2	1348838	0.0-0.5'	O	A6GAE-C16-11W^R

VARIANCE / FIELD CHANGE NOTICE

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

V/F: 20600-PSP-0018-2

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0018 Rev. A

Page: 1 of 2

PROJECT TITLE: Certification Design Letter and Certification Project Specific Plan For Area 6 General Area East

Date: 4/12/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of additional soil samples from CU 16 of Area 6B in Area 6 General Area East in order to further delineate an above-FRL total uranium, radium-228, thorium-228, and thorium-232 sampling location (A6GAE-C16-11 – see Figure 1).

Additional samples will be collected from the sample locations identified as above-FRL in V/FCN 20600-PSP-0018-1 (A6GAE-C16-11S and A6GAE-C16-11W) to attain vertical bounding. Samples will also be collected from one location southeast of the south sample (A6GAE-C16-11S) to attain horizontal bounding. All samples will be analyzed for total uranium, radium-228, thorium-228, and thorium-232 (TAL O).

See Attachment 1 for the TAL and the Sampling and Analytical Requirements. The Sample Ids and their associated locations are as listed on Attachment 1.

Field sketch required: No

Surveying Required: Yes, Surveyors will survey these sample points prior to sampling.

Field data validation: Yes

Justification:

Results in excess of 3 times the FRL were detected for radium-228, thorium-228, and thorium-232 in this sub-CU 16-11, which requires delineation. VFCN 20600-PSP-0018-1 failed to delineate the above-FRL area. Therefore, further sample collection is required. The samples to be collected will serve as horizontal and vertical bounding for this area. Per Section 4.3 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 4/12/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R. Friske <i>R. Friske</i>	4-21-06	X	PROJECT MANAGER J.D. Chiou <i>J.D. Chiou</i>	4/13/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER F. Miller <i>F. Miller</i>	4/12/06
X	ANALYTICAL CUSTOMER SUPPORT WAO <i>Amy Miller</i>	4/17/06		RTIMP Manager	
X			X	SAMPLING MANAGER T. Burridge <i>T. Burridge</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:

02

ATTACHMENT 1

SAMPLING AND ANALYTICAL REQUIREMENTS

TAL	Method	Matrix	ASL	TAT	Preservative	Container ^a	Minimum Mass/Volume
O	Gamma Spec	Soil	B	24 hour	None	Plastic or Glass	300 g

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):

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

Analytical Data Validation is required - VSL B.

Data Package Requirement – COAs within 24 hours. Full ASL D/E data package within 7 days.

Historical Data for shipping: Total Uranium = 583 mg/kg, Radium-228 = 49.8 pCi/g, Thorium-228 = 48.8 pCi/g, and Thorium-232 = 49.8 pCi/g from boring A6GAE-C16-11W.

TAL 20600-PSP-0018-O

(7 estimated soil analysis specified in V/FCN)

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
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

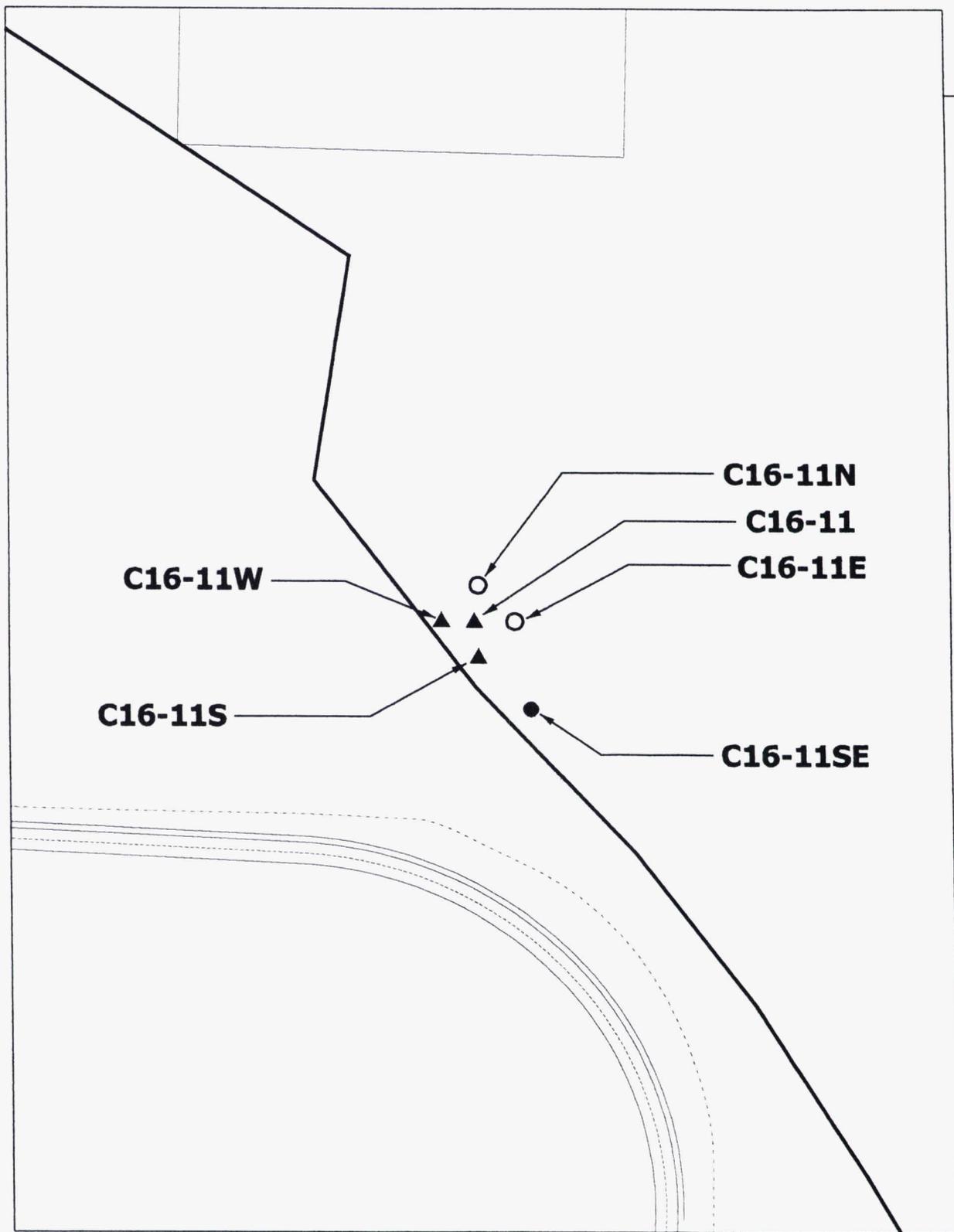
SAMPLE LOCATIONS AND IDENTIFICATION

Location ID	Northing	Easting	Sample Interval	TAL	Sample ID
A6GAE-C16-11W	482076.2	1348838	0.5-1.0'	O	A6GAE-C16-11W^2-R
			1.0-1.5'		A6GAE-C16-11W^3-R
			1.5-2.0'		A6GAE-C16-11W^4-R
A6GAE-C16-11S	482071.2	1348843	0.5-1.0'	O	A6GAE-C16-11S^2-R
			1.0-1.5'		A6GAE-C16-11S^3-R
			1.5-2.0'		A6GAE-C16-11S^4-R
A6GAE-C16-11SE	482064.13	1348850.1	0.0-0.5'	O	A6GAE-C16-11SE^1-R
			0.5-1.0'		A6GAE-C16-11SE^2-R
			1.0-1.5'		A6GAE-C16-11SE^3-R
			1.5-2.0'		A6GAE-C16-11SE^4-R

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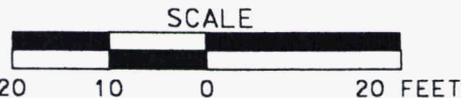
STATE PLANAR COORDINATE SYSTEM 1983

12-APR-2006



LEGEND:

- ▲ ABOVE-FRL SAMPLE
- BELOW-FRL SAMPLE
- PROPOSED SAMPLE



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FIGURE 1. HOT SPOT IN AREA 6B

VARIANCE / FIELD CHANGE NOTICE

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

V/F: 20600-PSP-0018-3

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0018 Rev. A

Page: 1 of 2

PROJECT TITLE: Certification Design Letter and Certification Project Specific Plan For Area 6 General Area East

Date: 4/17/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of additional soil samples from CU 16 of Area 6B in Area 6 General Area East in order to further delineate an above-FRL total uranium, radium-228, thorium-228, and thorium-232 sampling location (A6GAE-C16-11 – see Figure 1).

Additional samples will be collected (one from 10' to the southeast and one from 10' to the east of sample location A6GAE-C16-11SE) in association with the sample location identified in V/FCN 20600-PSP-0018-2 to provide horizontal bounding. All samples will be analyzed for total uranium, radium-228, thorium-228, and thorium-232 (TAL O).

See Attachment 1 for the TAL and the Sampling and Analytical Requirements. The Sample Ids and their associated locations are as listed on Attachment 1.

Field sketch required: No

Surveying Required: Yes, Samplers will field locate the sample points with follow-up surveying by surveyors.

Field data validation: Yes

Justification:

Results in excess of 3 times the FRL were detected for radium-228, thorium-228, and thorium-232 in sub-CU 16-11, which require delineation. Both VFCNs 200600-PSP-0018-1 and 20600-PSP-0018-2 failed to delineate the above-FRL area. Therefore, further sample collection is required. The samples to be collected will serve as horizontal and vertical bounding for this area. Per Section 4.3 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 4/17/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R. Friske <i>R. Friske</i>	4-21-06	X	PROJECT MANAGER J.D. Chiou <i>J.D. Chiou</i>	4/21/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER F. Miller <i>F. Miller</i>	4/17/06
X	ANALYTICAL CUSTOMER SUPPORT <i>Amy Meyer</i>	4/17/06		RTIMP Manager	
X <i>WAO</i> 4/21/06			X	SAMPLING MANAGER T. Puhring <i>T. Puhring</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	Method	Matrix	ASL	TAT	Preservative	Container ^a	Minimum Mass/Volume
O	Gamma Spec	Soil	B	24 hour	None	Plastic or Glass	300 g

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):

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

Analytical Data Validation is required - VSL B.

Data Package Requirement – COAs within 24, hours. Full ASL D/E data package within 7 days.

Historical Data for shipping: Total Uranium = 583 mg/kg, Radium-228 = 49.8 pCi/g, Thorium-228 = 48.8 pCi/g, and Thorium-232 = 49.8 pCi/g from boring A6GAE-C16-11W.

TAL 20600-PSP-0018-O

(7 estimated soil analysis specified in V/FCN)

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
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

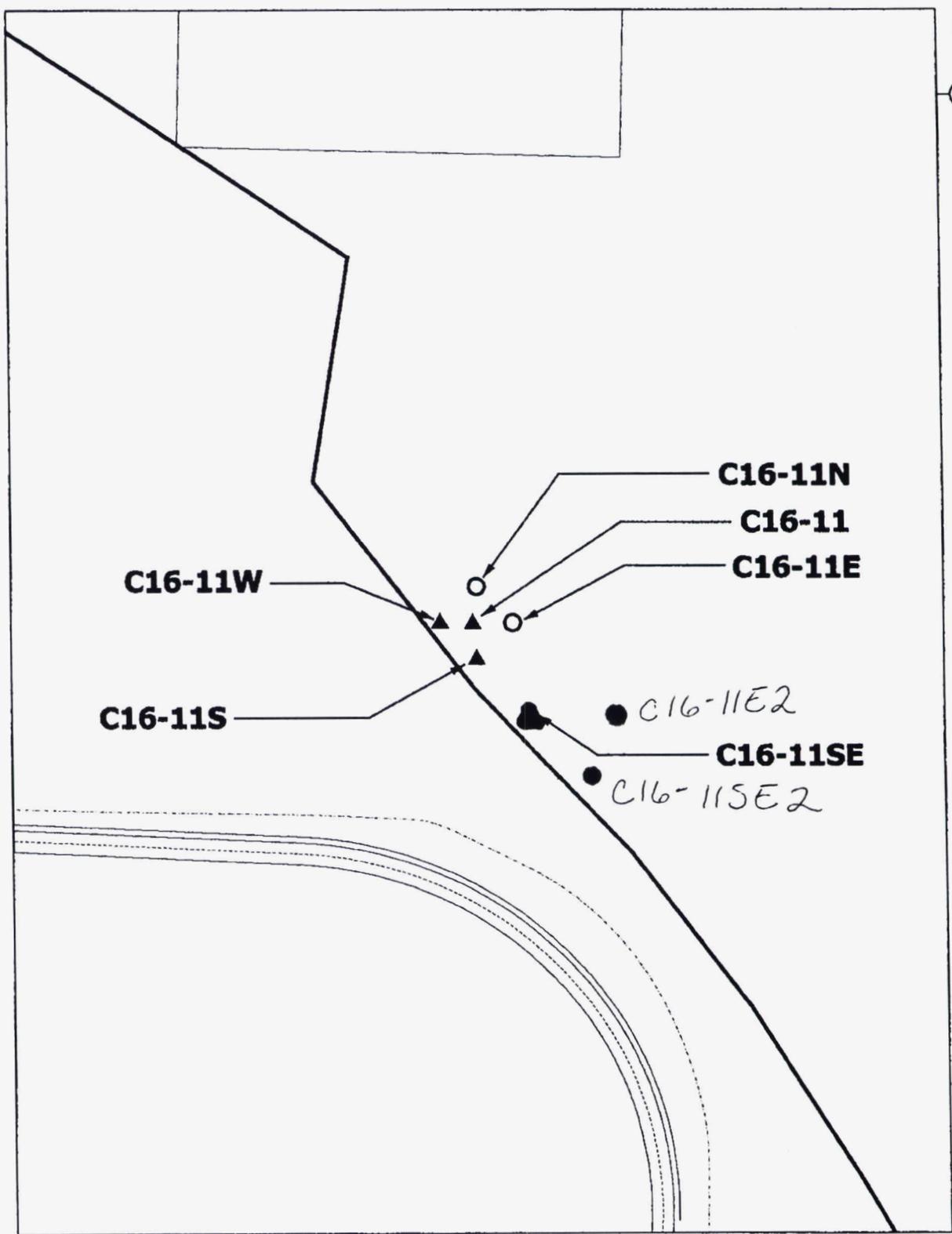
SAMPLE LOCATIONS AND IDENTIFICATION

Location ID	Northing	Easting	Sample Interval	TAL	Sample ID
A6GAE-C16-11E2	TBD	TBD	0.0-0.5'	O	A6GAE-C16-11E2^1-R
			0.5-1.0'		A6GAE-C16-11E2^2-R
			1.0-1.5'		A6GAE-C16-11E2^3-R
			1.5-2.0'		A6GAE-C16-11E2^4-R
A6GAE-C16-11SE2	TBD	TBD	0.0-0.5'	O	A6GAE-C16-11SE2^1-R
			0.5-1.0'		A6GAE-C16-11SE2^2-R
			1.0-1.5'		A6GAE-C16-11SE2^3-R
			1.5-2.0'		A6GAE-C16-11SE2^4-R

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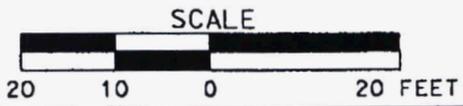
STATE PLANNING COORDINATE SYSTEM 1983

12-APR-2006



LEGEND:

- ▲ ABOVE-FRL SAMPLE
- BELOW-FRL SAMPLE
- PROPOSED SAMPLE



DRAFT

FIGURE 1. HOT SPOT IN AREA 6B

VARIANCE / FIELD CHANGE NOTICE

Significant?

(Yes or No): **NO**

V/F: 20600-PSP-0018-4

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0018 Rev. A

Page: 1 of 2

PROJECT TITLE: Certification Design Letter and Certification Project Specific Plan For Area 6 General Area East

Date: 4/19/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of additional soil samples from CU 16 of Area 6B in Area 6 General Area East in order to further delineate an above-FRL total uranium, radium-228, thorium-228, and thorium-232 sampling location (A6GAE-C16-11 – see Figure 1).

to determine HAS 4/21/06

Additional samples will be collected from one sample location in association with the sample location identified in V/FCN 20600-PSP-0018-3 to provide horizontal bounding. All samples will be analyzed for total uranium, radium-228, thorium-228, and thorium-232 (TAL O).

See Attachment 1 for the TAL and the Sampling and Analytical Requirements. The Sample Ids and their associated locations are as listed on Attachment 1.

Field sketch required: No

Surveying Required: Yes, Samplers will field locate the sample points with follow-up surveying by surveyors.

Field data validation: Yes

Justification:

Results in excess of 3 times the FRL were detected for radium-228, thorium-228, and thorium-232 in sub-CU 16-11, which require delineation. VFCNs 200600-PSP-0018-1, 200600-PSP-0018-2 and 200600-PSP-0018-3 failed to delineate the above-FRL area. Therefore, further sample collection is required. The samples to be collected will serve as horizontal and vertical bounding for this area. Per Section 4.3 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 4/19/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske <i>[Signature]</i>	4-21-06	X	PROJECT MANAGER: J.D. Chiou <i>[Signature]</i>	4/21/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller <i>[Signature]</i>	4/19/06
X	ANALYTICAL CUSTOMER SUPPORT			RTIMP Manager	
X	WAO <i>[Signature]</i>		X	SAMPLING MANAGER: J. Buhrige <i>[Signature]</i>	4/20/06

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

DB 4/2/04

TAL	Method	Matrix	ASL	TAT	Preservative	Container ^a	Minimum Mass/Volume
O	Gamma Spec	Soil	<i>DB</i>	24 hour	None	Plastic or Glass	300 g

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):

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

Analytical Data Validation is required - VSL B.

Data Package Requirement – COAs within 24 hours. Full ASL D/E data package within 7 days.

Historical Data for shipping: Total Uranium = 583 mg/kg, Radium-228 = 49.8 pCi/g, Thorium-228 = 48.8 pCi/g, and Thorium-232 = 49.8 pCi/g from boring A6GAE-C16-11W.

TAL 20600-PSP-0018-O

(7 estimated soil analysis specified in V/FCN)

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
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

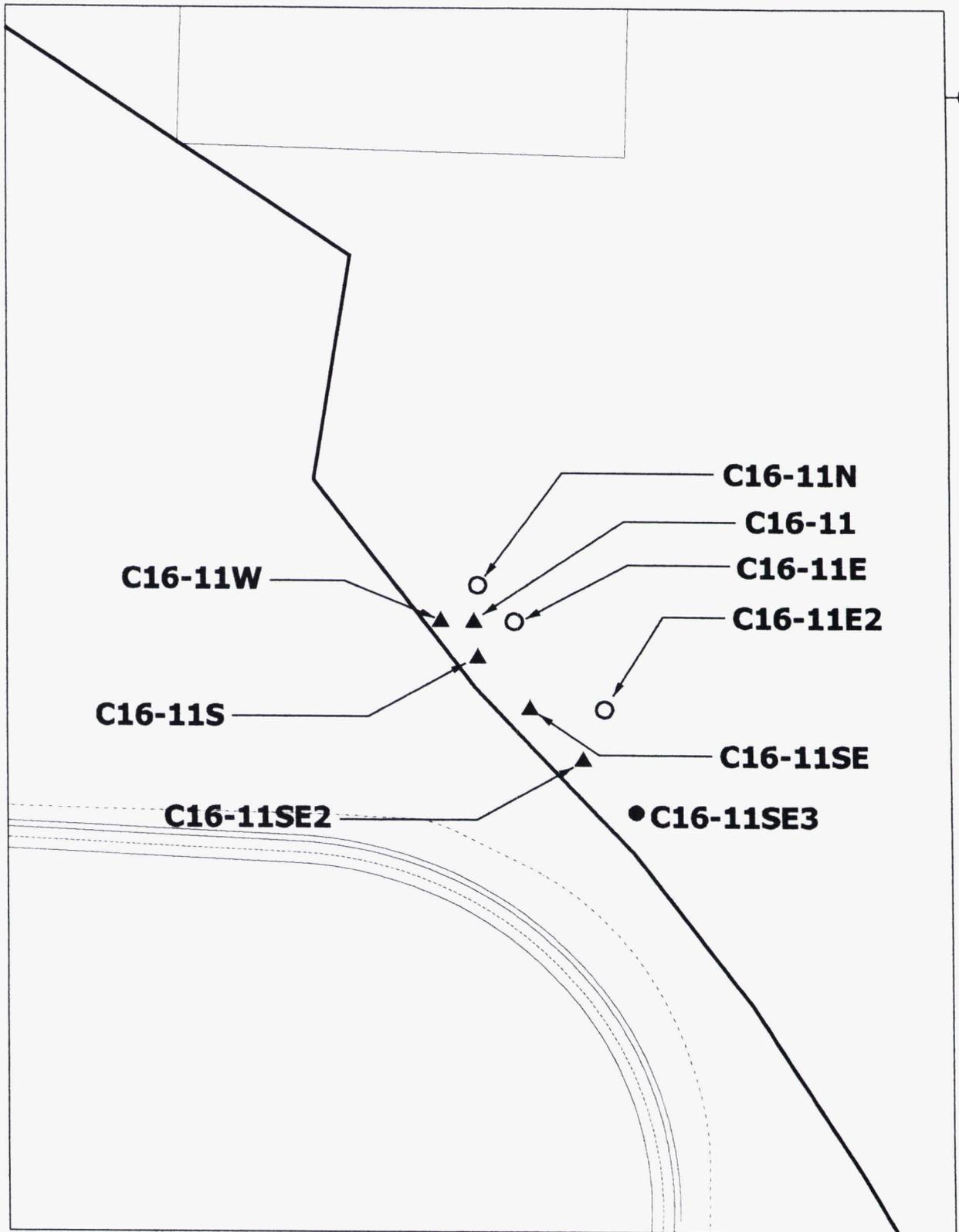
SAMPLE LOCATIONS AND IDENTIFICATION

Location ID	Northing	Easting	Sample Interval	TAL	Sample ID
A6GAE-C16-11SE3	TBD	TBD	0.0-0.5'	O	A6GAE-C16-11SE3^1-R
			0.5-1.0'		A6GAE-C16-11SE3^2-R
			1.0-1.5'		A6GAE-C16-11SE3^3-R
			1.5-2.0'		A6GAE-C16-11SE3^4-R

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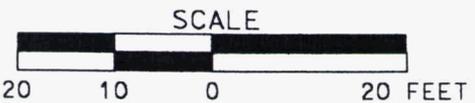
STATE PLANNING COORDINATE SYSTEM 1983

19-APR-2006



LEGEND:

- ▲ ABOVE-FRL SAMPLE
- BELOW-FRL SAMPLE
- PROPOSED SAMPLE



DRAFT

FIGURE 1. HOT SPOT IN AREA 6B

VARIANCE / FIELD CHANGE NOTICE

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

V/F: 20600-PSP-0018-6

WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0018 Rev. A

Page: 1 of 2

PROJECT TITLE: Certification Design Letter and Certification Project Specific Plan For Area 6 General Area East

Date: 4/27/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of soil samples from the area impacted by the spill of water from a tanker truck (3B MDC) in order to confirm/verify that no contamination in excess of the FRL was spread in this area.

Eight samples will be collected within the area impacted by the spill (See Figure 1). Four samples will be collected from the length of the ditch line and 4 from the area in the direct path of the spill (1 on the road, 1 where the tanker truck tipped over, 1 on the slope and 1 at the base of the ditch – See cross-section on Figure 1).

Samples will be analyzed for total uranium, and technetium-99 (TALs A and E).

See Attachment 1 for the TAL and the Sampling and Analytical Requirements. The Sample Ids and their associated locations are as listed on Attachment 1. The first sample location will be A6GAE-TTS-1^R. All other samples will be numbered consecutively.

Where:

- A6GAE - Area 6 General Area East
- TTS - Tanker Truck Spill Area
- 1, 2, 3, - Consecutive Sample Locations
- R - Radiological Sample

Field sketch required: Yes

Surveying Required: Yes, Initial sample points will be field located with follow-up by surveying.

Field data validation: Yes

Justification:

A tanker truck tipped over, spilling it's contents of contaminated (total uranium/technetium-99) water and sediment in the road and into a ditch line that runs around the north of 3B. Construction cleaned up the affected area. Sampling is required to verify/confirm that no residual contamination is present in the impacted area. Per Section 4.3 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 4/27/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R. Fistic <i>[Signature]</i>	5-1-06	X	PROJECT MANAGER J.D. Chiou <i>[Signature]</i>	5/8/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER F. Miller <i>[Signature]</i>	4/27/06
X	ANALYTICAL CUSTOMER SUPPORT Paul S. McCusgan <i>[Signature]</i>	5/18/06		RTIMP Manager	
X	WAO <i>[Signature]</i>	5-23-06	X	SAMPLING MANAGER T. Bultrage <i>[Signature]</i> for T.E.B	5/12/06
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 AND TALs**

Analyte	Method	Sample Matrix	ASL	Preservation	Hold Time	TAT	Container ^b	Minimum Mass/ Volume
Radiological (TALs A and E)	Gamma Spec and LSC or GPC	Solid	D/E ^a	Cool to 4°C	12 months	3-day preliminary for gamma spec (2-day in-growth for Ra-226) 30-day final for final gamma spec	Glass with Teflon-lined lid	700 g (2100 g) ^c
Radiological (TALs A and E)	Gamma Spec and LSC or SPC	Liquid ^d	D/E ^a	HNO ₃ to pH<2	6 months	30 days	Polyethylene	4 Liters

Special Instructions (samplers):

^a Samples will be analyzed according to ASL D requirements but the minimum detection level may cause some analyses to be considered ASL E.

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

^c At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

^d If "push tubes" are used for sampling, the off-site laboratories will be sent container blanks. If an alternative sample method is used, a rinsate will be collected by the Field Technicians.

Special Instructions (SPL/Lab):

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

Analytical Data Validation is required - VSL B.

Data Package Requirement – COAs within 3 days. Full ASL D/E data package within 30 days.

Historical Data for shipping: Total Uranium = 583 mg/kg, Radium-228 = 49.8 pCi/g, Thorium-228 = 48.8 pCi/g, and Thorium-232 = 49.8 pCi/g from boring A6GAE-C16-11W.

20600-PSP-0018-A

(ASL D/E¹)

(Estimated 8 analyses)

Analyte	FRL	MDL	MDL (water)
Total Uranium	82 mg/kg	8.2 mg/kg	3000 µg/L
Radium-226	1.7 pCi/g	0.17 pCi/g	255 pCi/L
Radium-228	1.8 pCi/g	0.18 pCi/g	270 pCi/L
Thorium-228	1.7 pCi/g	0.17 pCi/g	255 pCi/L
Thorium-232	1.5 pCi/g	0.15 pCi/g	210 pCi/L

20600-PSP-0018-E

(ASL D/E¹)

(Estimated 8 analyses)

Analyte	FRL	MDL	MDL (water)
Technetium-99	29.1 mg/kg ²	2.91 mg/kg ²	45,000 pCi/L

SAMPLE LOCATIONS AND IDENTIFICATION

Location ID	Northing	Easting	Sample Interval	TAL	Sample ID
A6GAE-TTS-1	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-1^R
A6GAE-TTS-2	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-2^R
A6GAE-TTS-3	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-3^R
A6GAE-TTS-4	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-4^R
A6GAE-TTS-5	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-5^R
A6GAE-TTS-6	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-6^R
A6GAE-TTS-7	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-7^R
A6GAE-TTS-8	TBD	TBD	0.0-0.5'	AE	A6GAE-TTS-8^R

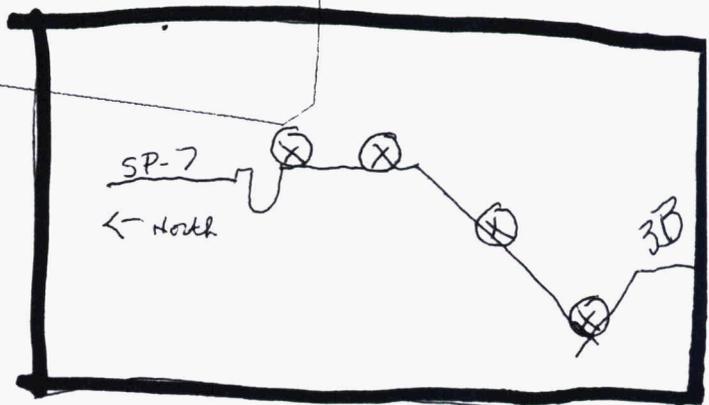
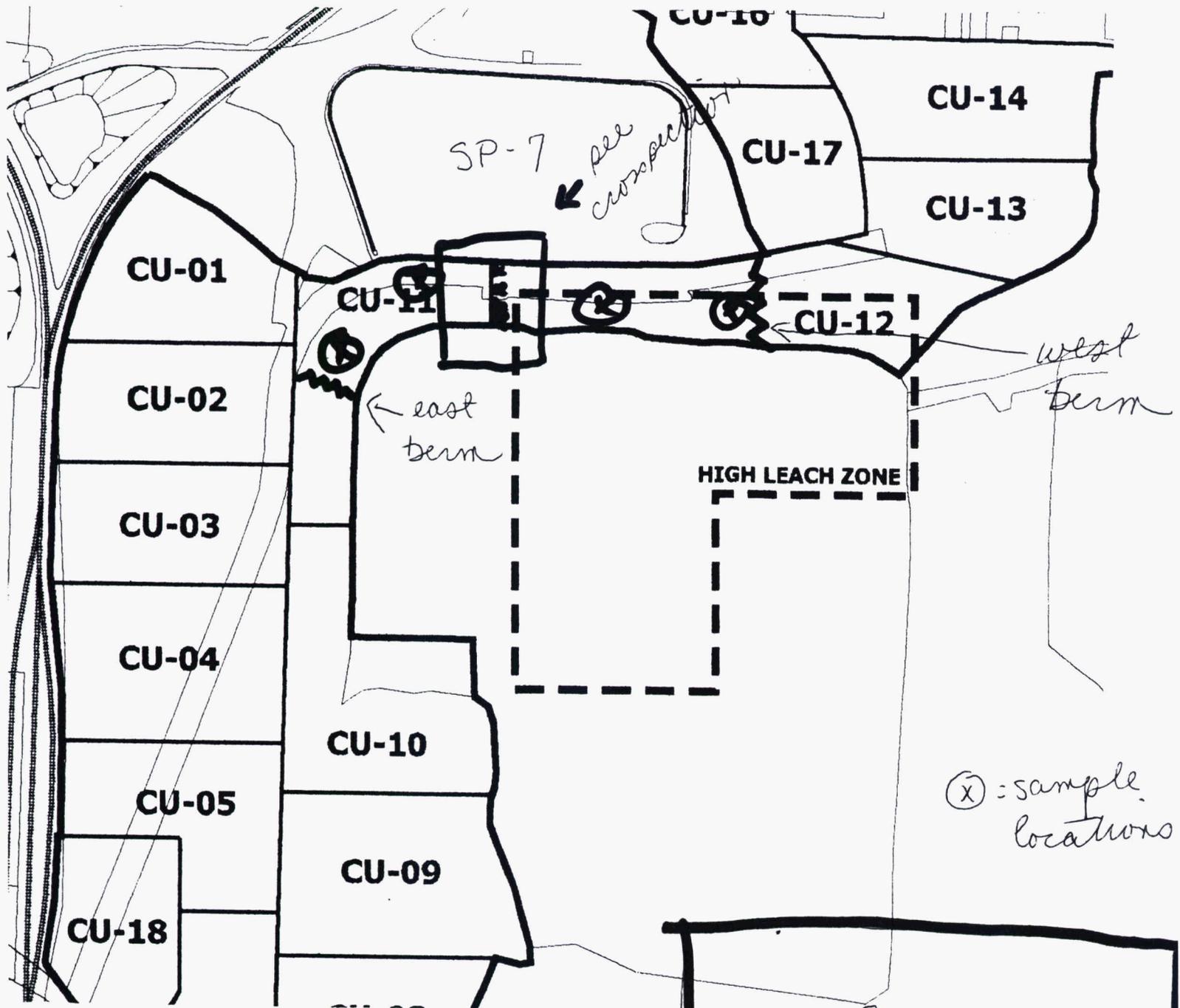


Figure 1

