Technical Memorandum

Co-Located Chemical Sampling Results at Historical Site Assessment Subarea 5B in Area IV

Santa Susana Field Laboratory
Ventura County, California

Prepared for:

Department of Energy
Energy Technology and Engineering Center
P.O. Box 10300
Canoga Park, California 91309

Prepared by:

CDM Federal Programs Corporation (CDM Smith)

Prepared under:

US Department of Energy
EM Consolidated Business Center
Contract DE-AM09-05SR22404
CDM Task Order DE-AT30-08CC60021/ET17

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I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

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Acronyms and Abbreviations

AOC	Administrative Order on Consent
ASTM	American Society for Testing and Materials
bgs	below ground surface
CDM	CDM Federal Programs Corporation
COC	chain of custody
%D	percent drift
DOE	Department of Energy
DPT	direct push technology
DQI	data quality indicators
DQO	data quality objective
DTSC	Department of Toxic Substances Control
DUAR	data usability and assessment report
EFH	extractable fuel hydrocarbons
EPA	United States Environmental Protection Agency
FTL	Field Team Leader
GRO	gasoline range organics
HGL	HydroGeoLogic, Inc.
ICP	inductively coupled plasma
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LLI	Lancaster Laboratories, Inc.
µg/L	micrograms per liter
MDL	method detection limit
mg/L	milligrams per liter
mL	milliliter
MS	matrix spike
MSD	matrix spike duplicate
NDMA	n-Nitrosodimethylamine
PAH	polycyclic aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability completeness, and sensitivity
PCB	polychlorinated biphenyl
PCT	polychlorinated triphenyl
PID	photoionization detector
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
%R	percent recovery
RCRA	Resource Conservation and Recovery Act

RFI	RCRA Facility Investigation
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery group
SIM	selective ion monitoring
SOW	statement of work
SSFL	Santa Susana Field Laboratory
SVOC	semi-volatile organic compound
TM	technical memorandum
TPH	total petroleum hydrocarbon
VOC	volatile organic compound
WP/FSAP	Work Plan/Field Sampling and Analysis Plan

Section 1
Introduction

This technical memorandum (TM) presents the results of chemical analysis of surface, subsurface, and drainage soil samples collected under the *Draft Work Plan/ Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory* (CDM Federal Programs Corporation [CDM] 2010) (WP/FSAP) and *Addendum No. 1 to Master Work Plan/Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California, EPA Subarea 5B Soil Sampling* (CDM 2011) (Addendum to the WP/FSAP). The TM addresses sampling within U.S. Environmental Protection Agency (EPA) Historical Site Assessment Subarea 5B of Area IV at Santa Susana Field Laboratory (SSFL).

This TM provides a description of the sampling activities, a discussion of the analytical data review findings, and the analytical results. The TM does not provide detailed interpretation of the results. The data provided in this TM are intended to be combined with data collected under the prior Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) efforts into the Area IV soil chemical database. A data gap analysis will be performed to assess the adequacy of Area IV data as a whole in defining nature and extent of chemicals in soil for purposes of remedy determination.

1.1 Co-Located Soil Chemical Sampling Objectives

The radiological characterization study being performed by EPA includes collection of surface and subsurface soil, and drainage sediment samples throughout Area IV of SSFL and the Northern Buffer Zone for analysis of radionuclides. The California Department of Toxic Substances Control (DTSC) and Department of Energy (DOE) suggested that soil/sediment samples collected by EPA also be analyzed for chemical analytes. DTSC and DOE agreed that the chemical sampling would be done by DOE's contractor, CDM. EPA's contractor, Hydrogeologic, Inc. (HGL) collected the EPA-proposed soil samples. CDM was responsible for the management, shipment, and laboratory analyses of the samples.

The *Administrative Order on Consent for Remedial Action* Docket Number HSA-CO 10/11-037 between DTSC and DOE was signed on December 6, 2010. The *Administrative Order on Consent* (AOC) is a legally binding order that describes the characterization of Area IV and Northern Buffer Zone soils/sediments and further defines DOE's obligations in relation to radiologic and chemical cleanup of soils within these areas. It also stipulates that during Phase 1 of the chemical investigation activities, DOE is to analyze a soil sample for chemical constituents at each location where EPA collects a sample for radiological analyses.

During development of the sampling approach for Subarea 5B, DOE requested of DTSC and DTSC agreed that DOE could be selective in application of the analytical suites for sample analysis. DOE met with DTSC to discuss analytical suites and

reached mutual agreement on the suites for each sample location. DOE and DTSC presented the approach to the community on December 9, 2010. DTSC provided its concurrence on the analytical approach on December 13, 2010.

1.2 Basis for the HSA Subarea 5B Soil Sampling

HGL's *Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California* (HGL 2010a) includes a description of the project objectives, the scope of work, laboratory analytical suites for radionuclides, and sample collection and other standard field operation methods.

Subarea 5B Field Sampling Plan Addendum, Santa Susana Field Laboratory Site, Area IV Radiological Study (HGL 2010b) was prepared by HGL to support the field implementation of their soil sampling program in Subarea 5B. The addendum provides the technical justification for location of the drainage, surface, and subsurface soil samples in Subarea 5B. CDM incorporated the HGL sampling rationale into the DOE FSAP Addendum for Subarea 5B. The chemical analytical suites were based on the data needs for each of the proposed EPA sample locations. CDM obtained soil samples for chemical analysis at each location where HGL collected soil samples for radionuclide analysis. As indicated in Section 2.1, Table 2-1, HGL did not collect samples at each location so not all proposed samples were collected.

1.3 Geology

Subarea 5B of Area IV is within the Chatsworth Formation, which is composed predominantly of sandstone interbedded with siltstone and shale. The overlying native soils encountered in Subarea 5B range from predominantly silty sands to sandy silts at shallow depths with increasing clay content to 10 feet below ground surface (bgs). Disturbed areas in Subarea 5B comprise fill soils of unknown origin and debris such as concrete, asphalt, and wood. The contact with lithified Chatsworth Formation at many soil boring locations occurs between 2 and 9 feet bgs. Additional information regarding the geology in Area IV can be found in Volume I of *Group 5 – Central Portion of Areas III and IV RCRA Facility Investigation Report, Santa Susana Field Laboratory, Ventura County, California* (CH2M Hill 2008).

1.4 Technical Memorandum Organization

This TM includes the following sections:

- **Section 1 - Introduction –** Summarizes the basis and objectives of the co-located soil sampling in Subarea 5B
- **Section 2 - Field Sampling and Analytical Methods –** Provides details regarding field sampling procedures and laboratory analytical methods
- **Section 3 - Soil Sample Analytical Results –** Provides a summary of analytical results for each chemical; the appendices provide the overall results

- **Section 4 - Data Usability Assessment –** Discusses the results of the data review and validation processes
- **Section 5 - References**

Section 2
Field Sampling and Analytical Methods

Soil samples at surface and drainage locations in Subarea 5B were collected from December 8, 2010 through February 11, 2011. Subsurface sampling was performed from December 15, 2010 through March 11, 2011 and on September 13 and 14, 2011. The samples collected on September 13 and 14 have been analyzed, but the results have not yet been validated. These sample results and their evaluation will be incorporated into the final version of this TM. All soil sample locations are shown on Figure 2-1 (northern portion of Subarea 5B) and Figure 2-2 (southern portion of Subarea 5B). Table 2-1 provides a summary of sample collection rationale for Subarea 5B. The table includes the rationale for sampling each location, sample number, and date of collection for the soil samples; location description; description of any fill materials encountered; and reasons for not sampling some locations proposed by EPA.

During sampling of locations in the vicinity of Building 4010, DTSC observed that the orientation of the Building 4010 footprint did not agree with previous maps of this building. EPA determined that they had shown the placement of Building 4010 based on an outdated map and thus the co-located sample locations were not properly located either. After making the proper adjustments to their geographical information system files, several sample locations were repositioned and given new sample location identification numbers. Table 2-2 includes each of the original sample locations that needed to be changed, what type of sample was collected from each of these locations and their date of sampling, the new location identification number, and the type and date of sample collected.

2.1 Surface and Drainage Sampling

Surface soil and drainage samples in Subarea 5B were collected from the surface to 6 inches bgs. The surface of the sample area was prepared by HGL sampling personnel by removing leaves, grass, and any other surface debris. Surface samples to be analyzed for semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs)/polychlorinated triphenyls (PCTs) were collected first using a slide hammer equipped with a 2-inch diameter and 6-inch long stainless steel sampling liner. The sampler was pounded into the soil until its top was flush with the surface and then removed from the soil. The sample sleeve was removed from the sampler and both ends capped with a Teflon liner and a plastic cap.

The soil for the remaining surface sample analytes was collected from a circular hole, approximately 12 inches in diameter, to a depth of 6 inches bgs using a stainless steel trowel and transferred to a stainless steel bowl and homogenized. Debris, wood, and/or other materials larger than 0.25 inches were removed prior to homogenization. After homogenization, the sample was placed into one or more

16-ounce glass jars. Adhesive sample labels, completed with all sampling information, were affixed to both the sample sleeves and jars. All sleeves and jars were placed into plastic baggies, and placed in a cooler with double bagged ice.

All surface and drainage samples were analyzed for "primary" sample analytes (i.e., SVOCs, PAHs, metals [including mercury], hexavalent chromium, fluoride, PCBs/PCTs, dioxins, perchlorate, pesticides, and herbicides). Selected samples were analyzed for the "secondary" analytes (i.e., total petroleum hydrocarbons - extractable fuel hydrocarbons [TPH-EFH], TPH-gasoline range organics [TPH-GRO], nitrates, pH, formaldehyde, n-Nitrosodimethylamine [NDMA], energetics, cyanide, terphenyls, glycols, and alcohols). The selection of sample analytes was discussed with DTSC representatives during the development of the FSAP Addendum for Subarea 5B and presented to the community on December 9.

2.2 Subsurface Sampling

Most of the subsurface soil sampling was performed by a California-licensed direct push technology (DPT) subcontractor under HGL oversight. The majority of the DPT borings in Subarea 5B were advanced to a targeted depth of between approximately 5 and 10 feet bgs. Table 2-1 provides the actual depths achieved at each location.

Soil cores were collected using the Geoprobe dual-tube sampling method, which comprises a 2-inch outer steel drive casing and an inner 1-3/4-inch diameter acetate soil sampling sleeve. After the acetate liner was retracted from the core barrel, it was opened lengthwise with a cutting tool. The core was screened for radioactivity using Micro R (for gamma radiation) and Pancake (for alpha and beta radiation) probes, followed by screening with a photoionization detector (PID). Based on the instrument readings and/or visual evidence of possible contamination, the sample depths were determined. If no elevated radiation or PID readings were indicated, samples were collected from the acetate sleeve by the CDM sampler at the default depths of 4 to 5 feet bgs and 9 to 10 feet bgs.

Soil for volatile organic compound (VOC), 1,4-dioxane, and TPH GRO analyses was collected from the sleeve using EnCore® Samplers. Subsurface soil for SVOC, PAH, and PCB/PCT analyses was removed from the acetate sleeve in a manner causing minimal soil disturbance and placed into 16-ounce glass jars. Soil for all other analyses was also placed into 16-ounce glass jars. Adhesive sample labels were completed with all sampling information and affixed to each sample jar, and the jars placed into plastic baggies. The Encore® samplers were all placed into one of the bags in which they are received, and the sample label affixed to the outside of the bag. All jars and EnCore® Samplers were placed in a cooler with double bagged ice.

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	1	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process knowledge and past facility operation history described in HSA Tech Memo	0.5	"fill (gravel)"	12/9/2010	Primary	SL-001-SA5B-SS-0.0-0.5
Surface	2	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"35% gravel (subangular fill gravel)"	12/9/2010	Primary	SL-002-SA5B-SS-0.0-0.5
Surface	3	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"10% subangular gravel (fill gravel)"	12/9/2010	Primary	SL-003-SA5B-SS-0.0-0.5
Surface	4	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	0.5	"5% nonnative gravel"	12/9/2010	Primary	SL-004-SA5B-SS-0.0-0.5
Surface	5	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% coarse gravel & asphalt"	12/9/2010	Primary	SL-005-SA5B-SS-0.0-0.5
Surface	6	Southeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	0.5	"15% coarse gravel fill"	12/9/2010	Primary	SL-006-SA5B-SS-0.0-0.5
Subsurface	6	Southeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	6	"bright red…possible crushed red concrete" from 5.5-6 ft	12/21/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-006-SA5B-SB-4.5 SL-006-SA5B-SB-4.0-5.0 SL-006-SA5B-SB-5.5 SL-006-SA5B-SB-5.0-6.0
Surface	7	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% 3/4" granite gravel"	12/9/2010	Primary	SL-007-SA5B-SS-0.0-0.5
Surface	8	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"20% pea gravel (fill)"	12/10/2010	Primary	SL-008-SA5B-SS-0.0-0.5
Surface	9	Northwest Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"20% coarse gravel"	12/10/2010	Primary	SL-009-SA5B-SS-0.0-0.5
Surface	10	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% subangular gravel (fill rock)"	12/9/2010	Primary	SL-010-SA5B-SS-0.0-0.5
Surface	11	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	0.5	"5% rock fragments (sandstone, fill gravel, asphalt)"	12/9/2010	Primary & Secondary	SL-011-SA5B-SS-0.0-0.5
Surface	12	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% subangular gravel"	12/9/2010	Primary	SL-012-SA5B-SS-0.0-0.5MS
Surface	13	Southeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	0.5	"25% coarse gravel fill"	12/9/2010	Primary	SL-013-SA5B-SS-0.0-0.5
Surface	14	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	0.5	"20% gravel fill"	12/9/2010	Primary & Secondary	SL-014-SA5B-SS-0.0-0.5
Subsurface	14	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	7	"5% gravel (fill)" from 0 to 5 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-014-SA5B-SB-4.5 SL-014-SA5B-SB-4.0-5.0
Subsurface	15	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	7.5	"Asphalt debris" noted at 1 in 4 ft , 2 ft, and "red concrete piece" noted at 6.2 ft	1/26/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-015-SA5B-SB-4.5 SL-015-SA5B-SB-4.0-5.0
Subsurface	16	Inside footprint of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"trace gravel" from 0 to 5 ft "concrete debris/concrete" from 9 to 10 ft	1/26/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-016-SA5B-SB-4.5 SL-016-SA5B-SB-4.0-5.0 SL-016-SA5B-SB-9.5 SL-016-SA5B-SB-9.0-10.0
Surface	17	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	0.5	"gravel nonnative rock fragments"	12/8/2010	Primary & Secondary	SL-017-SA5B-SS-0.0-0.5MS
Subsurface	17	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"concrete debris" from 2.6 to 6 ft "red concrete debris" from 6 to 6.9 ft "concrete debris" from 7.75 to 8.9 ft "dark staining - organic odor" from 8.9 to 9 ft "red and gray concrete debris" from 9 to 10 ft	1/27/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-017-SA5B-SB-4.5 SL-017-SA5B-SB-4.0-5.0 SL-017-SA5B-SB-9.5 SL-017-SA5B-SB-9.0-10.0
Surface	18	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	0.5	"20% gravel fill"	12/9/2010	Primary & Secondary	SL-018-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	18	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"concrete debris" from 1.6 to 1.75 ft "building material debris" from 1.9 to 2.25 ft "trace red concrete" from 6.4 to 7.4 ft "concrete debris" from 7.75 to 9.6 ft "wood debris" from 9.25 to 9.3 ft	1/26/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-018-SA5B-SB-4.5 SL-018-SA5B-SB-4.0-5.0 SL-018-SA5B-SB-9.5 SL-018-SA5B-SB-9.0-10.0
Subsurface	19	East of Building 4010 and along septic tank discharge line	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	5	No indication of fill noted.	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-019-SA5B-SB-4.5 SL-019-SA5B-SB-4.0-5.0
Surface	20	East of Building 4010 and along septic tank discharge line	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	0.5	"trace rounded rock fragments (fill pea gravel)	12/9/2010	Primary & Secondary	SL-020-SA5B-SS-0.0-0.5
Subsurface	21	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"concrete debris at 3.25 ft "trace red concrete debris" at 5.2 to 10 ft	1/27/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-021-SA5B-SB-4.5 SL-021-SA5B-SB-4.0-5.0 SL-021-SA5B-SB-9.5 SL-021-SA5B-SB-9.0-10.0
Surface	22	Along group 1 north fence	Aerial photo analysis show possible WDA-6	0.5	"25% gravel (0.5-2 inch diameter) fill and sandstone"	12/8/2010	Primary & Secondary	SL-022-SA5B-SS-0.0-0.5
Subsurface	22	Along group 1 north fence	Aerial photo analysis show possible WDA-6	3	"gravel fill" noted in surface sample	1/19/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-022-SA5B-SB-2.5 SL-022-SA5B-SB-2.0-3.0
Subsurface	23	Along group 1 north fence	Aerial photo analysis show possible WDA-6	1.8	"5% gravel " from surface to 1.8 ft	No sample collected Refusal at 2 ft bgs 1/19/11	NA	NA
Surface	24	Along group 1 north fence	Aerial photo analysis show possible OS-7	0.5	"10% rock fragments (sandstone)"	12/20/2010	Primary	SL-024-SA5B-SS-0.0-0.5
Subsurface	24	Along group 1 north fence	Aerial photo analysis show possible OS-7	10	No indication of fill noted.	1/19/2011	VOCs/Dioxane Primary Primary	SL-024-SA5B-SB-4.5 SL-024-SA5B-SB-4.0-5.0 SL-024-SA5B-SB-9.0-10.0
Subsurface	25	Along group 1 north fence	Aerial photo analysis show probable stain	10	"trace gravel" at 5 ft	1/19/2011	VOCs/Dioxane Primary Primary	SL-025-SA5B-SB-4.5 SL-025-SA5B-SB-4.0-5.0 SL-025-SA5B-SB-9.0-10.0
Surface	26	Along group 1 north fence	Aerial photo analysis show OS	0.5	"5% pea gravel (mainly fill)"	12/8/2010	Primary	SL-026-SA5B-SS-0.0-0.5
Subsurface	26	Along group 1 north fence	Aerial photo analysis show OS	10	"5% pea gravel (mainly fill)" at surface "possible staining" from 7.5 to 8 ft	12/17/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-026-SA5B-SB-4.5 SL-026-SA5B-SB-4.0-5.0 SL-026-SA5B-SB-9.5 SL-026-SA5B-SB-9.0-10.0
Surface	27	North of Building 4019	Aerial photo analysis show OS-10 and probable stain	0.5	100% "fill rock" from 0 to 1 ft "10% rock fragments (asphalt and fill rocks)"	1/5/2011	Primary	SL-027-SA5B-SS-0.0-0.5
Subsurface	27	North of Building 4019	Aerial photo analysis show OS-10 and probable stain	9	surface sample collected at 1 ft below asphalt and fill rock noted to contain "rock fragments (asphalt and fill rocks)" "no odor, some staining" noted from 4.15 to 5 ft "some staining" from 8.8 to 9 ft	12/15/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-027-SA5B-SB-4.5 SL-027-SA5B-SB-4.0-5.0 SL-027-SA5B-SB-8.5 SL-027-SA5B-SB-8.0-9.0
Subsurface	28	North of Building 4019	Aerial photo analysis show OS-10 and probable stain	2.0	None indicated	No sample collected Refusal at 2 ft bgs 12/15/10	NA	NA
Surface	29	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	0.5	"5% rock fragments"	12/8/2010	Primary	SL-029-SA5B-SS-0.0-0.5
Subsurface	29	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	10	"asphalt debris" from 1.75 to 2.5 ft "concrete debris" from 2.5 to 3 ft "piece of building material" from 3 to 4 ft "concrete debris" at 7.3 and 8.5 ft "building material debris" from 8.5 to 10 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-029-SA5B-SB-4.5 SL-029-SA5B-SB-4.0-5.0 SL-029-SA5B-SB-9.5 SL-029-SA5B-SB-9.0-10.0
Subsurface	30	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	10	"piece of plastic wiring" from 9 to 1 ft "red concrete debris" from 1 to 2.7 ft "concrete debris" noted at 1.9 ft, 7.5 ft, 8.8 ft, and 9.85 to 10 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-030-SA5B-SB-4.5 SL-030-SA5B-SB-4.0-5.0 SL-030-SA5B-SB-9.5 SL-030-SA5B-SB-9.0-10.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	31	North of Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	0.5	"5% rock fragments (siltstone and sandstone-weathered)	12/8/2010	Primary	SL-031-SA5B-SS-0.0-0.5
Subsurface	31	North of Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	10	"trace concrete debris from 2.3 to 2.7 ft	1/19/2011	VOCs/Dioxanes Primary Primary	SL-031-SA5B-SB-4.5 SL-031-SA5B-SB-4.0-5.0 SL-031-SA5B-SB-9.0-10.0
Surface	32	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	0.5	"gravel nonnative rock fragments"	12/8/2010	Primary	SL-032-SA5B-SS-0.0-0.5
Subsurface	32	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	15	"common (?) gravel non-native, rock fragments" at surface "trace gravel" from surface to 7 ft	1/24/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-032-SA5B-SB-4.5 SL-032-SA5B-SB-4.0-5.0 SL-032-SA5B-SB-9.5 SL-032-SA5B-SB-9.0-10.0 SL-032-SA5B-SB-14.5 SL-032-SA5B-SB-14.0-15.0
Subsurface	33	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	15.0	"slight odor" from 11 to 14 ft "trace gravel" from surface to 13 ft	1/24/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-033-SA5B-SB-4.5 SL-033-SA5B-SB-4.0-5.0 SL-033-SA5B-SB-9.5 SL-033-SA5B-SB-9.0-10.0 SL-033-SA5B-SB-14.5 SL-033-SA5B-SB-14.0-15.0
Surface	34	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	0.5	"20% rock fragments (pea gravel)"	12/8/2010	Primary	SL-034-SA5B-SS-0.0-0.5
Subsurface	34	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	9	"pea gravel" noted in surface sample "asphalt debris" from 2.3 to 2.5 ft "concrete debris" at 2.75 ft "concrete" from 3.25 to 3.6 ft concrete and asphalt debris" from 5 to 7.3 ft	1/20/2011	VOCs/Dioxanes/GRO Primary & Secondary VOCs/Dioxanes/GRO Primary & Secondary	SL-034-SA5B-SB-4.5 SL-034-SA5B-SB-4.0-5.0 SL-034-SA5B-SB-9.5 SL-034-SA5B-SB-9.0-10.0
Surface	35	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies	0.5	"10% small pea gravel and weathered sandstone"	12/8/2010	Primary	SL-035-SA5B-SS-0.0-0.5
Subsurface	35	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies	8	"small pea gravel" noted in surface sample "20% gravel (fill rock)" from 3 to 8 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-035-SA5B-SB-4.5 SL-035-SA5B-SB-4.0-5.0 SL-035-SA5B-SB-7.5 SL-035-SA5B-SB-7.0-8.0
Surface	36	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies	0.5	"10% small pea gravel and weathered sandstone"	12/8/2010	Primary	SL-036-SA5B-SS-0.0-0.5
Subsurface	36	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies	7.5	"pea gravel" noted in surface sample "10% gravel (fill and concrete) from surface to 1 ft "concrete layer" at 3.9 ft	1/20/2011	VOCs/Dioxane Primary	SL-036-SA5B-SB-4.5 SL-036-SA5B-SB-4.0-5.0
Subsurface	37	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies; ground-penetrating radar shows potential buried metal	4.5	"15% gravel (fill rock, asphalt, red brick pieces)" from surface to 1 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-037-SA5B-SB-4.5 SL-037-SA5B-SB-4.0-5.0
Surface	38	Area between Buildings 4010 and 4012 footprints	Geophysical survey indicates potential underground anomalies	0.5	"5% rock fragments"	12/8/2010	Primary	SL-038-SA5B-SS-0.0-0.5
Surface	39	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	0.5	"15% subrounded pea gravel"	12/8/2010	Primary	SL-039-SA5B-SS-0.0-0.5
Subsurface	39	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	10	"15% pea gravel" in surface sample "trace gravel and staining-greenish gray GLEY 2 6/1" sporadically from 1.5 to 5 ft "slight HC odor" from 5 to 6.6 ft	1/17/2011	VOCs/Dioxane Primary Primary	SL-039-SA5B-SB-4.5 SL-039-SA5B-SB-4.0-5.0 SL-039-SA5B-SB-9.0-10.0
Subsurface	40	Northeast of Building 4019 (SNAP Flight System Nuclear Qual. Test Building)	Geophysical survey indicates potential underground anomalies; staining noted in aerial photo analysis	10	"slight odor, staining" from 10 inches to 2.7 ft No indication of fill noted below this depth.	12/16/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-040-SA5B-SB-2.0 SL-040-SA5B-SB-1.5-2.5 SL-040-SA5B-SB-9.5 SL-040-SA5B-SB-9.0-10.0
Subsurface	41	Northeast of Building 4019	Geophysical survey indicates potential underground anomalies	9	"some staining" from 1 to 3.25 ft "Some staining (slight then increasing with depth)" from 3.7 to 5 ft	12/16/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-041-SA5B-SB-2.0 SL-041-SA5B-SB-1.5-2.5 SL-041-SA5B-SB-8.5 SL-041-SA5B-SB-8.0-9.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	42	Northeast of Building 4019	Along the length of a sanitary sewage line	10	"No odor, stained" from 2.7 to 3.8 "asphalt" from 3.8 to 4 ft "no odor, slightly stained" from 4 to 4.7 ft "asphalt" from 4.7 to 4.8 ft "no odor, slight staining" from 4.8 to 6.1 ft "possible staining" from 8.5 to 9.2 ft	12/16/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-042-SA5B-SB-3.0 SL-042-SA5B-SB-2.5-3.5 SL-042-SA5B-SB-8.5 SL-042-SA5B-SB-8.0-9.0
Subsurface	43	Northeast of Building 4019	Along the length of a sanitary sewage line	7	"slight odor, slight staining" from 1 to 3.5 ft	12/16/2010	VOCs/Dioxane/GRO Primary & Secondary	SL-043-SA5B-SB-3.0 SL-043-SA5B-SB-2.5-3.5
Subsurface	44	South of Building 4019	Location of radioactive liquid waste hold tank outside of room 107	8.5	None indicated	12/20/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-044-SA5B-SB-4.5 SL-044-SA5B-SB-4.0-5.0MS SL-044-SA5B-SB-7.5 SL-044-SA5B-SB-7.0-8.0
Subsurface	45	South of Building 4013	Along the length of a sanitary sewage line	4	None indicated	12/20/2010	VOCs/Dioxane/GRO Primary & Secondary	SL-045-SA5B-SB-3.5 SL-045-SA5B-SB-3.0-4.0
Subsurface	46	South of Building 4013	Along the length of a sanitary sewage line	10	None indicated	12/21/2010	VOCs/Dioxane Primary Primary	SL-046-SA5B-SB-4.5MS SL-046-SA5B-SB-4.0-5.0MS SL-046-SA5B-SB-9.0-10.0
Subsurface	47	South of Building 4012	Along the length of a sanitary sewage line	6	"slight odor and staining in top 2 inches"	12/21/2010	VOCs/Dioxane Primary	SL-047-SA5B-SB-4.5 SL-047-SA5B-SB-4.0-5.0
Surface	48	East of Building 4025 (Remote Handling Mock-up Building)	Location of a ground scar shown in the aerial photo analysis	0.5	None indicated	12/10/2010	Primary	SL-048-SA5B-SS-0.0-0.5
Subsurface	48	East of Building 4025 (Remote Handling Mock-up Building)	Location of a ground scar shown in the aerial photo analysis	10.0	"asphalt, fill gravel" from surface to 5 ft "20% rock fragments (sandstone) from 5 to 8 ft	1/19/2011	VOCs/Dioxane Primary Primary	SL-048-SA5B-SB-4.5 SL-048-SA5B-SB-4.0-5.0 SL-048-SA5B-SB-9.0-10.0
Surface	49	Inside footprint of Building 4025	Location of a pit on the south end of the Building footprint	0.5	"5% small gravel (fill rock)"	2/11/2011	Primary	SL-049-SA5B-SS-0.0-0.5
Subsurface	49	Inside footprint of Building 4025	Location of a pit on the south end of the Building footprint	10	"10% gravel (fill)" form surface to 2 ft "trace sandstone rock fragments" from 4 to 9 ft	1/19/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-049-SA5B-SB-4.5 SL-049-SA5B-SB-4.0-5.0 SL-049-SA5B-SB-9.5 SL-049-SA5B-SB-9.0-10.0
Subsurface	50	South of Building 4355 footprint (Control Center for SCTI)	Location probable leakage noted in aerial photos	4	"trace gravel fill material" from 0 to 3 ft	1/6/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-050-SA5B-SB-3.5 SL 050-SA5B-SB-3.0-4.0
Surface	51	South of Building 4355 footprint	Location probable leakage noted in aerial photos	0.5	None indicated	12/10/2010	Primary	SL-051-SA5B-SS-0.0-0.5
Subsurface	51	South of Building 4355 footprint	Location probable leakage noted in aerial photos	4	"fill material, some mottling" noted from 0 3 ft	1/6/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-051-SA5B-SB-3.5 SL 051-SA5B-SB-3.0-4.0
Subsurface	52	Far lower west side of group 2 in area of Building 4335 footprint	Location of stain noted in aerial photos	2	"trace rock fragments (pea gravel)" from 0 to 2 ft	No sample collected Refusal at 2 ft bgs 1/10/11	NA	NA
Subsurface	53	Far lower west side of group 2 in area of Building 4335 footprint	Location of stain noted in aerial photos	2.75	"fill gravel" noted from surface to refusal at 2.75 ft	1/10/2011	VOCs/Dioxane Primary	SL-053-SA5B-SB-2.5 SL-053-SA5B-SB-1.8-2.8
Surface	54	Far lower west side of group 2 in area of Building 4335 footprint	Location of stain noted in aerial photos	0.5	"15% pea gravel (fill rock)"	12/14/2010	Primary	SL-054-SA5B-SS-0.0-0.5
Subsurface	54	Far lower west side of group 2 in area of Building 4335 footprint	Location of stain noted in aerial photos	4	"Fill pea gravel" noted from surface to 1 ft "Pink silty sand (probable concrete debris)" from 3 to 3.5 ft "45% fill gravel" from 3 to 4 ft	1/10/2011	VOCs/Dioxane Primary	SL-054-SA5B-SB-3.5 SL-054-SA5B-SB-3.0-4.0
Subsurface	55	Area over Building 4356 (Sodium Component Test Ins. High Bay) footprint	Geophysical survey indicates potential underground anomalies	9.5	" trace rock fragments (pea gravel)" from 0 to 1 ft	1/7/2011	VOCs/Dioxane Primary Primary	SL-055-SA5B-SB-4.5 SL-055-SA5B-SB-4.0-5.0 SL-055-SA5B-SB-8.5-9.5
Subsurface	56	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	10	"5 % rock fragments (pea gravel)" noted from 2 to 10 ft	1/7/2011	VOCs/Dioxane Primary Primary	SL-056-SA5B-SB-4.5 SL-056-SA5B-SB-4.0-5.0 SL-056-SA5B-SB-9.0-10.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	57	Area of northwest corner of Building 4356 footprint	Geophysical survey indicates potential underground anomalies	0.5	Non indicated	12/10/2010	Primary	SL-057-SA5B-SS-0.0-0.5
Subsurface	57	Area of northwest corner of Building 4356 footprint	Geophysical survey indicates potential underground anomalies	2	None indicated	No sample collected Refusal at 2 ft bgs 1/7/11	NA	NA
Subsurface	58	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	6	None indicated	1/6/2011	VOCs/Dioxane Primary	SL-058-SA5B-SB-4.5 SL-058-SA5B-SB-4.0-5.0
Surface	59	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/10/2010	Primary	SL-059-SA5B-SS-0.0-0.5
Subsurface	59	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	9.5	"fill material (concrete gravel & asphalt) to total depth" (noted @ 2.2 ft) "some metal scrap" at approx. 3 ft" "concrete" @ approx. 4.7 ft"	1/7/2011	VOCs/Dioxane Primary Primary	SL-059-SA5B-SB-4.5 SL-059-SA5B-SB-4.0-5.0 SL-059-SA5B-SB-9.0-10.0
Subsurface	60	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	10	"trace gravel (granitic)" from 0 to 10 ft	1/7/2011	VOCs/Dioxane Primary Primary	SL-060-SA5B-SB-4.5 SL-060-SA5B-SB-4.0-5.0 SL-060-SA5B-SB-9.0-10.0
Surface	61	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/10/2010	Primary	SL-061-SA5B-SS-0.0-0.5
Subsurface	61	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	4.5	"Asphalt fragments" at 4.5 ft	1/7/2011	VOCs/Dioxane Primary	SL-061-SA5B-SB-4.5 SL-061-SA5B-SB-4.0-5.0
Surface	62	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/10/2010	Primary	SL-062-SA5B-SS-0.0-0.5
Subsurface	62	Area over Building 4356 footprint	Geophysical survey indicates potential underground anomalies	10	"fill material" at 6 ft	1/7/2011	VOCs/Dioxane Primary Primary	SL-062-SA5B-SB-4.5 SL-062-SA5B-SB-4.0-5.0 SL-062-SA5B-SB-9.0-10.0
Subsurface	63	Area northwest of Building 4457 footprint	Geophysical survey indicates potential buried metal	4	"burnt material" noted in description for interval between ~ 1 and 3.6 ft	1/6/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-063-SA5B-SB-3.5 SL-063-SA5B-SB-3.0-4.0
Surface	64	Area northwest of Building 4457 footprint	Geophysical survey indicates potential buried metal	0.5	"10% pea gravel (fill)"	12/10/2010	Primary	SL-064-SA5B-SS-0.0-0.5
Subsurface	64	Area northwest of Building 4457 footprint	Geophysical survey indicates potential buried metal	2.0	"trace gravel" from surface to 2 ft	No sample collected Refusal at 2 ft bgs 1/6/11	NA	NA
Surface	65	Area between Buildings 4457 and 4357 footprints	Aerial photos indicate presence of a possible stain	0.5	"trace gravel"	12/10/2010	Primary	SL-065-SA5B-SS-0.0-0.5
Subsurface	65	Area between Buildings 4457 and 4357 footprints	Aerial photos indicate presence of a possible stain	10	"concrete chunks" noted in description between ~0.5 and 2 ft "fill material to TD"	1/5/2011	VOCs/Dioxane Primary Primary	SL-065-SA5B-SB-4.5 SL-065-SA5B-SB-4.0-5.0 SL-065-SA5B-SB-9.0-10.0
Subsurface	66	Area between northwest of Building 4006	Aerial photos indicate presence of a possible stain	4	"trace gravel" from surface to 2.5 ft "small black streak" noted at 3 ft	1/6/2011	VOCs/Dioxane Primary	SL-066-SA5B-SB-3.5MS SL-066-SA5B-SB-3.0-4.0MS
Surface	67	Area between northwest of Building 4006	Aerial photos indicate presence of an area of dark toned material	0.5	"trace subangular pea gravel, piece of asphalt"	12/10/2010	Primary	SL-067-SA5B-SS-0.0-0.5
Subsurface	67	Area between northwest of Building 4006	Aerial photos indicate presence of an area of dark toned material	4.5	None indicated	1/5/2011	VOCs/Dioxane Primary	SL-067-SA5B-SB-4.0 SL-067-SA5B-SB-3.5-4.5
Subsurface	68	Area between northwest of Building 4006	Aerial photos indicate presence of an area of dark toned material	4	None indicated	1/5/2011	VOCs/Dioxane Primary	SL-068-SA5B-SB-3.5 SL-068-SA5B-SB-3.0-4.0
Subsurface	69	Area east of Building 4357 footprint	Past facility operation history in HSA Tech Memo; location of sodium tank pit containment sump	4	"asphalt chunk" noted at 0.5 ft	1/5/2011	VOCs/Dioxane Primary	SL-069-SA5B-SB-3.5 SL-069-SA5B-SB-3.0-4.0
Surface	70	Area east of Building 4457 footprint	Past facility operation history in HSA Tech Memo; location of sodium tank pit and trench	0.5	None indicated	12/10/2010	Primary	SL-070-SA5B-SS-0.0-0.5
Subsurface	70	Area east of Building 4457 footprint	Past facility operation history in HSA Tech Memo; location of sodium tank pit and trench	3.5	"fill material" at ~1 ft "fill" at 1 to ~3 ft	1/5/2011	VOCs/Dioxane Primary	SL-070-SA5B-SB-3.0 SL-070-SA5B-SB-2.5-3.5
Surface	71	Area south of Building 4006 (Sodium Laboratory)	Geophysical survey indicates potential buried metal; location of potential gamma anomaly	0.5	"10% rock fragments (sandstone), piece of iron wire found while digging"	12/13/2010	Primary	SL-071-SA5B-SS-0.0-0.5MS
Subsurface	71	Area south of Building 4006	Geophysical survey indicates potential buried metal; location of potential gamma anomaly	3	None indicated	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-071-SA5B-SB-2.5 SL-071-SA5B-SB-2.0-3.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	72	Area south of Building 4006	Geophysical survey indicates potential buried metal; location of potential gamma anomaly	0.5	None indicated	12/13/2010	Primary	SL-072-SA5B-SS-0.0-0.5
Subsurface	72	Area south of Building 4006	Geophysical survey indicates potential buried metal; location of potential gamma anomaly	5	None indicated	1/12/2011	VOCs/Dioxane Primary & Secondary/	SL-072-SA5B-SB-4.5 SL-072-SA5B-SB-4.0-5.0
Surface	73	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	None indicated	12/13/2010	Primary	SL-073-SA5B-SS-0.0-0.5
Subsurface	73	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	5	None indicated	1/13/2011	VOCs/Dioxane Primary	SL-073-SA5B-SB-4.5 SL-073-SA5B-SB-4.0-5.0
Surface	74	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	None indicated	12/13/2010	Primary	SL-074-SA5B-SS-0.0-0.5
Subsurface	74	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	8	None indicated	1/13/2011	VOCs/Dioxanes Primary Primary	SL-074-SA5B-SB-4.5 SL-074-SA5B-SB-4.0-5.0 SL-074-SA5B-SB-7.0-8.0
Surface	75	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	"15% gravel rock fragments"	12/13/2010	Primary	SL-075-SA5B-SS-0.0-0.5
Subsurface	75	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 1/13/11	NA	NA
Surface	76	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	None indicated	12/13/2010	Primary	SL-076-SA5B-SS-0.0-0.5
Subsurface	76	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	2.0	None indicated	No sample collected Refusal at 2 ft bgs 1/13/11	NA	NA
Surface	77	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	None indicated	12/13/2010	Primary	SL-077-SA5B-SS-0.0-0.5
Subsurface	77	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	1.5	None indicated	No sample collected Refusal at 1.5 ft bgs 1/14/11	NA	NA
Surface	78	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	0.5	"10% asphalt and sandstone gravel"	12/13/2010	Primary	SL-078-SA5B-SS-0.0-0.5
Subsurface	78	Area north of Building 4704 footprint	Location of potential gamma anomaly; location of stain noted in aerial photos	7	"asphalt debris noted" from 4.1 to 4.25 ft	1/17/2011	VOCs/Dioxane Primary	SL-078-SA5B-SB-4.5 SL-078-SA5B-SB-4.0-5.0
Subsurface	79	Area east of Building 4816 footprint	Location of stain noted in aerial photos	NA	NA	No sample collected Located in Concrete	NA	NA
Subsurface	80	Area south of Building 4816 footprint	Location of possible leakage noted in aerial photos and horizontal tank	2.0	"trace gravel" from 0 to 2 ft	No sample collected Refusal at 2 ft bgs 1/14/11	NA	NA
Subsurface	81	Area southwest of Building 4006	Location of abandoned septic tank	7	"possible staining from 2.5 to 3.5 ft"	1/14/2011	VOCs/Dioxane Primary & Secondary VOCs/Dioxane Primary & Secondary	SL-081-SA5B-SB-3.0 SL-081-SA5B-SB-2.5-3.5 SL-081-SA5B-SB-6.5 SL-081-SA5B-SB-6.0-7.0
Subsurface	82	Area southwest of Building 4006	Location of abandoned septic tank	8	"asphalt debris" from 0 to 7 ft "slight HC odor" from 2. 9 to 4.8 ft	1/17/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-082-SA5B-SB-2.75 SL-082-SA5B-SB-2.25-3.25 SL-082-SA5B-SB-7.5 SL-082-SA5B-SB-7.0-8.0
Surface	83	Area north of Building 4616 footprint	Location of potential gamma anomaly	0.5	"10% pea gravel sized sandstone rock fragments"	12/13/2010	Primary	SL-083-SA5B-SS-0.0-0.5
Subsurface	83	Area north of Building 4616 footprint	Location of potential gamma anomaly	7	"pea gravel" in surface sample	1/14/2011	VOCs/Dioxane Primary	SL-083-SA5B-SB-4.5 SL-083-SA5B-SB-4.0-5.0
Surface	84	Area south of Building 4616 footprint	Location of potential gamma anomaly	0.5	"20% siltstone gravel"	12/13/2010	Primary	SL-084-SA5B-SS-0.0-0.5
Subsurface	84	Area south of Building 4616 footprint	Location of potential gamma anomaly	2.0	None indicated	No sample collected Refusal at 2 ft bgs 1/14/11	NA	NA

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	85	Area south of Building 4226 footprint	Past facility operation history in HSA Tech Memo; location of former sump	0.5	"20% gravel siltstone"	12/13/2010	Primary & Secondary	SL-085-SA5B-SS-0.0-0.5
Subsurface	85	Area south of Building 4226 footprint	Past facility operation history in HSA Tech Memo; location of former sump	4	None indicated	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-085-SA5B-SB-3.5 SL-085-SA5B-SB-3.0-4.0
Surface	86	Area inside Building 4026 (Large Component Test Loop Complex) footprint	Location of potential gamma anomaly	0.5	None indicated	12/13/2010	Primary	SL-086-SA5B-SS-0.0-0.5
Subsurface	86	Area inside Building 4026 footprint	Location of potential gamma anomaly	5	None indicated	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-086-SA5B-SB-3.5 SL-086-SA5B-SB-3.0-4.0
Surface	87	Area inside Building 4026 footprint	Geophysical survey indicates potential underground anomalies and buried metal	0.5	"10% gravel"	12/13/2010	Primary	SL-087-SA5B-SS-0.0-0.5
Subsurface	87	Area inside Building 4026 footprint	Geophysical survey indicates potential underground anomalies and buried metal	4	"trace gravel (fill)" noted above 1 ft "trace gravel (concrete pieces)" from 2 ft to ~2.8 ft	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-087-SA5B-SB-3.5 SL-087-SA5B-SB-3.0-4.0
Subsurface	88	Area inside Building 4026 footprint	Geophysical survey indicates potential underground anomalies and buried metal	4	"10% rock fragments - concrete pieces" from 2 to 3 ft	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-088-SA5B-SB-3.5 SL-088-SA5B-SB-3.0-4.0
Surface	89	Area north Building 4026 footprint	Past facility operation history in HSA Tech Memo; location of former catch basin	0.5	"10% rock fragments (sandstone)"	12/13/2010	Primary	SL-089-SA5B-SS-0.0-0.5
Subsurface	89	Area north Building 4026 footprint	Past facility operation history in HSA Tech Memo; location of former catch basin	5	"trace gravel, concrete" from 0 to 3 ft	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-089-SA5B-SB-3.5 SL-089-SA5B-SB-3.0-4.0
Subsurface	90	Area inside Building 4026 footprint	Past facility operation history in HSA Tech Memo; location of former catch basin	3.5	"trace gravel, asphalt" from 0 to 2 ft	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-090-SA5B-SB-3.5 SL-090-SA5B-SB-3.0-4.0
Surface	91	Area inside Building 4026 footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks	0.5	"15% sandstone gravel"	12/13/2010	Primary	SL-091-SA5B-SS-0.0-0.5
Subsurface	91	Area inside Building 4026 footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks	6	"trace gravel" at surface	1/11/2011	VOCs/Dioxane Primary & Secondary	SL-091-SA5B-SB-3.5 SL-091-SA5B-SB-3.0-4.0
Surface	92	Area inside Building 4026 footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks	0.5	None indicated	12/13/2010	Primary	SL-092-SA5B-SS-0.0-0.5
Subsurface	92	Area inside Building 4026 footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks	5.5	"trace asphalt gravel" from 2.9 to 3.7 ft	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-092-SA5B-SB-4.5MS SL-092-SA5B-SB-4.0-5.0MS
Subsurface	93	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	4	None indicated	1/11/2011	VOCs/Dioxane Primary	SL-093-SA5B-SB-3.5 SL-093-SA5B-SB-3.0-4.0
Subsurface	94	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	6.5	"concrete rock fragments (fill material) noted at 0.5 to 1.2 ft	1/11/2011	VOCs/Dioxane Primary	SL-094-SA5B-SB-3.5 SL-094-SA5B-SB-3.0-4.0
Surface	95	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	0.5	"20% gravel siltstone"	12/13/2010	Primary	SL-095-SA5B-SS-0.0-0.5
Subsurface	95	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	6.5	"trace gravel (fill)" from 0 to 4 ft	1/12/2011	VOCs/Dioxane Primary	SL-095-SA5B-SB-3.5 SL-095-SA5B-SB-3.0-4.0
Subsurface	96	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	3	None indicated	1/12/2011	VOCs/Dioxane Primary	SL-096-SA5B-SB-2.5 SL-096-SA5B-SB-2.0-3.0
Subsurface	97	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	8	None indicated	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-097-SA5B-SB-4.5 SL-097-SA5B-SB-4.0-5.0 SL-097-SA5B-SB-7.5 SL-097-SA5B-SB-7.0-8.0
Surface	98	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	0.5	"30% subangular gravel (fill)"	12/14/2010	Primary	SL-098-SA5B-SS-0.0-0.5
Subsurface	98	Area south Building 4226 and east 4358 footprints	Location of stain noted in aerial photos	6.5	"trace pea gravel" form 0.5 ft to 5.2 ft	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-098-SA5B-SB-4.5 SL-098-SA5B-SB-4.0-5.0
Subsurface	99	Area south of Building 4334 footprint	Location of "possible saturated material" noted in aerial photos	5	None indicated	1/11/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-099-SA5B-SB-4.5 SL-099-SA5B-SB-4.0-5.0
Surface	100	Area south of Building 4334 footprint	Location of "possible saturated material" noted in aerial photos	0.5	None indicated	12/22/2010	Primary	SL-100-SA5B-SS-0.0-0.5MS
Subsurface	100	Area south of Building 4334 footprint	Location of "possible saturated material" noted in aerial photos	5	None indicated	1/11/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-100-SA5B-SB-4.5 SL-100-SA5B-SB-4.0-5.0
Surface	101	Area south of Building 4334 footprint	Location of "possible saturated material" noted in aerial photos	0.5	None indicated	12/22/2010	Primary	SL-101-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	101	Area south of Building 4334 footprint	Location of "possible saturated material" noted in aerial photos	8.5	"15% gravel (fill gravel)" surface to 2.5 ft "trace gravel (asphalt) 2.5 to 5 ft	1/17/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-101-SA5B-SB-4.5 SL-101-SA5B-SB-4.0-5.0 SL-101-SA5B-SB-8.0 SL-101-SA5B-SB-7.5-8.5
Surface	102	Inside Building 4358 footprint	Location of "possible saturated material" noted in aerial photos	0.5	None indicated	12/22/2010	Primary	SL-102-SA5B-SS-0.0-0.5
Subsurface	102	Inside Building 4358 footprint	Location of "possible saturated material" noted in aerial photos	2.4	None indicated	No sample collected Refusal at 2.5 ft bgs 1/12/11	NA	NA
Surface	103	Inside Building 4826 (Sodium Component Test Loop Test Facility) footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks and drains	0.5	None indicated	12/13/2010	Primary	SL-103-SA5B-SS-0.0-0.5
Subsurface	103	Inside Building 4826 (Sodium Component Test Loop Test Facility) footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks and drains	10	"trace gravel" from 3 to 10 ft	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-103-SA5B-SB-4.5 SL-103-SA5B-SB-4.0-5.0 SL-103-SA5B-SB-9.5 SL-103-SA5B-SB-9.0-10.0
Subsurface	104	Inside Building 4826 (Sodium Component Test Loop Test Facility) footprint	Past facility operation history in HSA Tech Memo; potential location of former sodium tanks and drains	10	"small pieces of concrete" 8.5 to 9.6 ft	1/12/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-104-SA5B-SB-4.5 SL-104-SA5B-SB-4.0-5.0 SL-104-SA5B-SB-9.5 SL-104-SA5B-SB-9.0-10.0
Surface	105	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/14/2010	Primary	SL-105-SA5B-SS-0.0-0.5
Subsurface	105	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	5	None indicated	1/10/2011	VOCs/Dioxane Primary	SL-105-SA5B-SB-4.5 SL-105-SA5B-SB-4.0-5.0
Subsurface	106	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	6	"scrap metal" surface to 1 ft "Concrete (5 in.)" from 1 to 1.4 ft	1/10/2011	VOCs/Dioxane Primary	SL-106-SA5B-SB-4.5 SL-106-SA5B-SB-4.0-5.0
Subsurface	107	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	7	"fill material" 0 to 1 ft "trace asphalt" and "fill material" from 1 ft to 5 ft "fill" from 5 to 6 ft	1/10/2011	VOCs/Dioxane Primary	SL-107-SA5B-SB-4.5 SL-107-SA5B-SB-4.0-5.0
Surface	108	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies and buried metal	0.5	"30% gravel (pea fill gravel, sandstone and asphalt chunks)	12/14/2010	Primary	SL-108-SA5B-SS-0.0-0.5
Subsurface	108	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies and buried metal	5	None indicated	1/10/2011	VOCs/Dioxane Primary	SL-108-SA5B-SB-4.5 SL-108-SA5B-SB-4.0-5.0
Surface	109	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	0.5	"25% pea gravel (fill and sandstone)"	12/14/2010	Primary	SL-109-SA5B-SS-0.0-0.5
Subsurface	109	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	7	"5% rock fragments (fill gravel)" from 0 to 1 ft	1/10/2011	VOCs/Dioxane Primary	SL-109-SA5B-SB-4.5 SL-109-SA5B-SB-4.0-5.0
Subsurface	110	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	5	"fill" from 0 to 1.5 ft	1/10/2011	VOCs/Dioxane Primary	SL-110-SA5B-SB-4.5 SL-110-SA5B-SB-4.0-5.0
Subsurface	111	Area north of Building 4334 footprint	Geophysical survey indicates potential underground anomalies	10	"fill" from 0 to 9 ft	1/10/2011	VOCs/Dioxane Primary Primary	SL-111-SA5B-SB-4.5 SL-111-SA5B-SB-4.0-5.0 SL-111-SA5B-SB-9.0-10.0
Subsurface	112	Area south of Building 4334 footprint	Potential leach field location	5	None indicated	1/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-112-SA5B-SB-4.5 SL-112-SA5B-SB-4.0-5.0
Subsurface	113	Area south of Building 4334 footprint	Potential leach field location	8.5	"15% gravel (subangular fill gravel)" from 0 to 5 ft "80% fill gravel" from 5 to 7 ft	1/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-113-SA5B-SB-4.5 SL-113-SA5B-SB-4.0-5.0
Surface	114	Area south of Building 4334 footprint	Potential leach field location	0.5	"trace gravel (asphalt piece and 2 pieces of fill gravel)"	12/22/2010	Primary & Secondary	SL-114-SA5B-SS-0.0-0.5
Subsurface	114	Area south of Building 4334 footprint	Potential leach field location	5.5	"granite fill rock" from 0 to 5 ft "water saturated gravel fill (granite)" from 5.5 to 6 ft	1/18/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-114-SA5B-SB-4.5 SL-114-SA5B-SB-4.0-5.0
Subsurface	115	Area south of Building 4334 footprint	Potential leach field location	6	"20% gravel fill consists of granite fill, brick fragments, asphalt from 0 to 5 ft "5% gravel fill" from 5 to 6 ft	1/18/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-115-SA5B-SB-4.5 SL-115-SA5B-SB-4.0-5.0
Subsurface	116	Area south of Building 4334 footprint	Potential leach field location	5.5	"20% gravel (fill)" from surface to 3 ft "gravel fill" from 5.5 to 6 ft	1/18/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-116-SA5B-SB-4.5 SL-116-SA5B-SB-4.0-5.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	117	Area south of Building 4334 footprint	Potential leach field location	0.5	"5% gravel fill"	12/22/2010	Primary & Secondary	SL-117-SA5B-SS-0.0-0.5
Subsurface	117	Area south of Building 4334 footprint	Potential leach field location	6	"5% gravel fill and asphalt pieces" noted in description from surface to 4 ft.	1/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-117-SA5B-SB-4.5 SL-117-SA5B-SB-4.0-5.0
Surface	118	Area south of Building 4334 footprint	Potential leach field location	0.5	None indicated	12/22/2010	Primary & Secondary	SL-118-SA5B-SS-0.0-0.5
Subsurface	118	Area south of Building 4334 footprint	Potential leach field location	9	"25% rock fragments (fill)" surface to 0.5 ft "10% gravel (fill)" 0.5 to 3 ft "trace fill gravel" 3 to 4.5 ft	1/18/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-118-SA5B-SB-4.5 SL-118-SA5B-SB-4.0-5.0 SL-118-SA5B-SB-8.5 SL-118-SA5B-SB-8.0-9.0
Surface	119	Central area of group 6	Location of potential gamma anomaly	0.5	None indicated	12/14/2010	Primary	SL-119-SA5B-SS-0.0-0.5
Subsurface	119	Central area of group 6	Location of potential gamma anomaly	4	None indicated	1/13/2011	VOCs/Dioxane Primary	SL-119-SA5B-SB-3.5 SL-119-SA5B-SB-3.0-4.0
Surface	120	Central area of group 6	Location of potential gamma anomaly	0.5	"15% sandstone gravel"	12/14/2010	Primary	SL-120-SA5B-SS-0.0-0.5MS
Subsurface	120	Central area of group 6	Location of potential gamma anomaly	4.5	None indicated	1/13/2011	VOCs/Dioxane Primary	SL-120-SA5B-SB-3.5 SL-120-SA5B-SB-3.0-4.0
Surface	121	Central area of group 6	Location of potential gamma anomaly	0.5	"15% granite gravel & sandstone gravel"	12/14/2010	Primary	SL-121-SA5B-SS-0.0-0.5
Subsurface	121	Central area of group 6	Location of potential gamma anomaly	10	None indicated	1/13/2011	VOCs/Dioxane Primary Primary	SL-121-SA5B-SB-4.5 SL-121-SA5B-SB-4.0-5.0 SL-121-SA5B-SB-9.0-10.0
Surface	122	Central area of group 6	Location of potential gamma anomaly	0.5	"15% granite gravel & sandstone gravel"	12/14/2010	Primary	SL-122-SA5B-SS-0.0-0.5
Subsurface	122	Central area of group 6	Location of potential gamma anomaly	3	None indicated	1/13/2011	VOCs/Dioxane Primary	SL-122-SA5B-SB-2.5 SL-122-SA5B-SB-2.0-3.0
Surface	123	Central area of group 6	Location of potential gamma anomaly	0.5	"20% sandstone gravel"	12/14/2010	Primary	SL-123-SA5B-SS-0.0-0.5
Subsurface	123	Central area of group 6	Location of potential gamma anomaly	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 1/13/11	NA	NA
Surface	124	Central area of group 6	Location of potential gamma anomaly	0.5	"10% sandstone"	12/14/2010	Primary	SL-124-SA5B-SS-0.0-0.5
Subsurface	124	Central area of group 6	Location of potential gamma anomaly	8.5	"fill" noted at 5 ft	1/14/2011	VOCs/Dioxane Primary Primary	SL-124-SA5B-SB-4.5 SL-124-SA5B-SB-4.0-5.0 SL-124-SA5B-SB-7.5-8.5
Surface	125	Central area of group 6	Location of potential gamma anomaly	0.5	None indicated	12/14/2010	Primary	SL-125-SA5B-SS-0.0-0.5
Subsurface	125	Central area of group 6	Location of potential gamma anomaly	5	None indicated	1/14/2011	VOCs/Dioxane Primary	SL-125-SA5B-SB-4.5 SL-125-SA5B-SB-4.0-5.0
Surface	126	Central area of group 6	Location of potential gamma anomaly	0.5	None indicated	12/14/2010	Primary	SL-126-SA5B-SS-0.0-0.5
Subsurface	126	Central area of group 6	Location of potential gamma anomaly	3	None indicated	1/14/2011	VOCs/Dioxane Primary	SL-126-SA5B-SB-2.5 SL-126-SA5B-SB-2.0-3.0
Surface	128	Central area of group 6	Location of potential gamma anomaly	0.5	"15% sandstone gravel"	12/14/2010	Primary	SL-128-SA5B-SS-0.0-0.5
Subsurface	128	Central area of group 6	Location of potential gamma anomaly	5	None indicated	1/14/2011	VOCs/Dioxane Primary	SL-128-SA5B-SB-4.5 SL-128-SA5B-SB-4.0-5.0
Surface	129	Central area of group 6	Location of potential gamma anomaly	0.5	"10% gravel siltstone & sandstone"	12/14/2010	Primary	SL-129-SA5B-SS-0.0-0.5
Subsurface	129	Central area of group 6	Location of potential gamma anomaly	3	None indicated	1/14/2011	VOCs/Dioxane Primary	SL-129-SA5B-SB-2.5 SL-129-SA5B-SB-2.0-3.0
Drainage	131	Storm drainage channel along 18th street	Potential surface migration through storm water runoff	0.5	"5% rock fragments (sandstone and asphalt)"	12/15/2010	Primary	SL-131-SA5B-SS-0.0-0.5
Drainage	132	Storm drainage channel along 18th street	Potential surface migration through storm water runoff	0.5	"5% subrounded pea gravel and asphalt"	12/15/2010	Primary	SL-132-SA5B-SS-0.0-0.5
Drainage	133	Storm drainage channel along 18th street	Potential surface migration through storm water runoff	0.5	"5% rock fragments (fill and asphalt)"	12/15/2010	Primary	SL-133-SA5B-SS-0.0-0.5
Drainage	134	Storm drainage channel along 18th street	Potential surface migration through storm water runoff	0.5	None indicated	12/15/2010	Primary	SL-134-SA5B-SS-0.0-0.5
Drainage	135	Storm drainage channel along 18th street	Potential surface migration through storm water runoff	0.5	None indicated	12/15/2010	Primary	SL-135-SA5B-SS-0.0-0.5
Drainage	136	Storm drainage channel at corner of 17th and 18th streets	Potential surface migration through storm water runoff	0.5	None indicated	12/15/2010	Primary	SL-136-SA5B-SS-0.0-0.5
Drainage	137	Storm grate along 17th street and southeast of PZ-121	Potential surface migration through storm water runoff	0.5	None indicated	1/6/2011	Primary	SL-137-SA5B-SS-0.0-0.5
Drainage	138	Storm drainage channel along 17th street and north of Building 4006	Potential surface migration through storm water runoff	0.5	None indicated	2/11/2011	Primary	SL-138-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Drainage	139	Drainage sample along 17th street and near west corner of Building 4006	Potential surface migration through storm water runoff	0.5	"piece of black plastic found while digging"	12/13/2010	Primary	SL-139-SA5B-SS-0.0-0.5
Drainage	140	Culvert along 20th street and near upper west corner of group 6	Potential surface migration through storm water runoff	0.5	None indicated	1/4/2011	Primary	SL-140-SA5B-SS-0.0-0.5
Drainage	141	Storm drainage channel and culvert at corner of 18th and 20th street	Potential surface migration through storm water runoff	0.5	"trace gravel"	2/11/2011	Primary	SL-141-SA5B-SS-0.0-0.5
Surface	142	Lower central area of group 6	Past facility operation history in HSA Tech Memo; location of "vertical tank" noted in aerial photo	0.5	None indicated	12/14/2010	Primary	SL-142-SA5B-SS-0.0-0.5
Subsurface	142	Lower central area of group 6	Past facility operation history in HSA Tech Memo; location of "vertical tank" noted in aerial photo	2.5	"trace gravel (siltstone)" from 0 to 1.5 ft	No sample collected Refusal at 2.5 ft bgs 1/21/11	NA	NA
Surface	143	Lower central area of group 6	Location of potential gamma anomaly	0.5	"5% rock fragments (sandstone)"	12/14/2010	Primary	SL-143-SA5B-SS-0.0-0.5
Subsurface	143	Lower central area of group 6	Location of potential gamma anomaly	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 1/21/11	NA	NA
Drainage	144	Storm drainage channel at corner of 17th and G streets	Potential surface migration through storm water runoff	0.5	"5% gravel (fill rock, sandstone, asphalt)"	2/11/2011	Primary	SL-144-SA5B-SS-0.0-0.5
Subsurface	145	Northeast corner of Building 4011	Past facility operation history in HSA Tech Memo; potential location of septic tank noted in aerial photos	7	None indicated	12/22/2010	VOCs/Dioxane/GRO Primary & Secondary	SL-145-SA5B-SB-4.5 SL-145-SA5B-SB-4.0-5.0
Subsurface	146	Northeast corner of Building 4011	Past facility operation history in HSA Tech Memo; potential location of septic tank noted in aerial photos	7	"fill/silty sand" from 0 to ~6.5 ft	1/4/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-146-SA5B-SB-4.5 SL-146-SA5B-SB-4.0-5.0
Drainage	147	Drainage sample along G street and south of Building 4011	Potential surface migration through storm water runoff	0.5	None indicated	12/16/2010	Primary	SL-147-SA5B-SS-0.0-0.5
Subsurface	148	Area between G street and Building 4011	Past facility operation history in HSA Tech Memo; location of OS-20 and possible stain noted in aerial photos	5.5	"trace asphalt pieces" from surface to 1 ft	1/25/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-148-SA5B-SB-4.5 SL-148-SA5B-SB-4.0-5.0
Surface	149	Area between G street and Building 4011	Location of potential gamma anomaly	0.5	"10% pea gravel"	12/15/2010	Primary	SL-149-SA5B-SS-0.0-0.5
Subsurface	149	Area between G street and Building 4011	Location of potential gamma anomaly	4.5	None indicated	1/25/2011	VOCs/Dioxane Primary	SL-149-SA5B-SB-4.0 SL-149-SA5B-SB-3.5-4.5
Surface	150	Area between G street and Building 4011	Location of potential gamma anomaly	0.5	"10% pea gravel"	12/15/2010	Primary	SL-150-SA5B-SS-0.0-0.5
Subsurface	150	Area between G street and Building 4011	Location of potential gamma anomaly	5	None indicated	1/25/2011	VOCs/Dioxane Primary	SL-150-SA5B-SB-4.5 SL-150-SA5B-SB-4.0-5.0
Subsurface	151	Intersection of G street and 20th street	Geophysical survey indicates potential underground anomalies and probable stain noted in aerial photos	8	None indicated	1/24/2011	VOCs/Dioxane Primary Primary	SL-151-SA5B-SB-4.5 SL-151-SA5B-SB-4.0-5.0 SL-151-SA5B-SB-7.0-8.0
Subsurface	152	Intersection of G street and 20th street	Geophysical survey indicates potential underground anomalies and probable stain noted in aerial photos	10	None indicated	1/24/2011	VOCs/Dioxane Primary Primary	SL-152-SA5B-SB-4.5 SL-152-SA5B-SB-4.0-5.0 SL-152-SA5B-SB-9.0-10.0
Surface	153	Intersection of G street and 20th street	Geophysical survey indicates potential underground anomalies and probable stain noted in aerial photos	0.5	None indicated	12/15/2010	Primary	SL-153-SA5B-SS-0.0-0.5
Subsurface	153	Intersection of G street and 20th street	Geophysical survey indicates potential underground anomalies and probable stain noted in aerial photos	7.5	"concrete debris, asphalt debris" 1.8 to 2 ft "concrete debris" 3.1 to 4.2 and 3.8 to 4.2 ft	1/24/2011	VOCs/Dioxane Primary	SL-153-SA5B-SB-4.0 SL-153-SA5B-SB-3.5-4.5
Subsurface	154	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	6	None indicated	1/24/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-154-SA5B-SB-4.5 SL-154-SA5B-SB-4.0-5.0
Surface	155	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	0.5	None indicated	12/15/2010	Primary	SL-155-SA5B-SS-0.0-0.5
Subsurface	155	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	4.5	None indicated	1/24/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-155-SA5B-SB-4.0 SL-155-SA5B-SB-3.5-4.5
Surface	156	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	0.5	None indicated	12/15/2010	Primary	SL-156-SA5B-SS-0.0-0.5
Subsurface	156	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	6	None indicated	1/25/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-156-SA5B-SB-4.5 SL-156-SA5B-SB-4.0-5.0
Subsurface	157	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	9	None indicated	12/22/2010	VOCs/Dioxane Primary Primary	SL-157-SA5B-SB-4.5 SL-157-SA5B-SB-4.0-5.0 SL-157-SA5B-SB-9.0-10.0
Subsurface	158	Area between 20th street and Building 4011	Past facility operation history in HSA Tech Memo; probable stain and OS-15 noted in aerial photos	6.5	None indicated	12/22/2010	VOCs/Dioxane Primary	SL-158-SA5B-SB-4.5 SL-158-SA5B-SB-4.0-5.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	159	North of control road IV and south of group 8	Geophysical survey indicates potential underground anomaly	0.5	None indicated	12/21/2010	Primary	SL-159-SA5B-SS-0.0-0.5
Subsurface	159	North of control road IV and south of group 8	Geophysical survey indicates potential underground anomaly	9	None indicated	2/4/2011	Primary VOCs/Dioxane Primary VOCs/Dioxane	SL-159-SA5B-SB-4.0-5.0 SL-159-SA5B-SB-4.5 SL-159-SA5B-SB-8.0-9.0 SL-159-SA5B-SB-8.5
Surface	160	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	0.5	None indicated	12/17/2010	Primary	SL-160-SA5B-SS-0.0-0.5
Subsurface	160	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	5	None indicated	2/7/2011	Primary VOCs/Dioxane	SL-160-SA5B-SB-4.0-5.0 SL-160-SA5B-SB-4.5
Surface	161	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	0.5	None indicated	12/17/2010	Primary	SL-161-SA5B-SS-0.0-0.5
Subsurface	161	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	5	None indicated	2/7/2011	Primary VOCs/Dioxane	SL-161-SA5B-SB-4.0-5.0 SL-161-SA5B-SB-4.5
Surface	162	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	0.5	None indicated	12/17/2010	Primary	SL-162-SA5B-SS-0.0-0.5
Subsurface	162	Bottom of group 8 and east of PZ-051	Location of potential gamma and geophysical anomalies	5	None indicated	2/7/2011	Primary VOCs/Dioxane	SL-162-SA5B-SB-4.0-5.0 SL-162-SA5B-SB-4.5
Subsurface	163	Bottom of group 8 and east of PZ-051	Geophysical survey indicates potential underground anomaly	4.5	"strong odor - unidentifiable" from 1.5 to 2 ft	2/7/2011	Primary VOCs/Dioxane	SL-163-SA5B-SB-3.5-4.5 SL-163-SA5B-SB-3.0
Subsurface	164	Bottom of group 8 and east of PZ-051	Geophysical survey indicates potential underground anomaly	5	None indicated	2/8/2011	Primary/Secondary VOCs/Dioxane/GRO	SL-164-SA5B-SB-4.0-5.0 SL-164-SA5B-SB-4.5
Subsurface	165	Bottom of group 8 and east of PZ-051	Geophysical survey indicates potential underground anomaly	6	None indicated	2/4/2011	Primary VOCs/Dioxane	SL-165-SA5B-SB-4.0-5.0 SL-165-SA5B-SB-4.5
Surface	166	Bottom center of group 8 and east of PZ-051	Past facility operation history in HSA Tech Memo; "light toned mounded material" noted in aerial photos	0.5	None indicated	12/17/2010	Primary	SL-166-SA5B-SS-0.0-0.5
Subsurface	166	Bottom center of group 8 and east of PZ-051	Past facility operation history in HSA Tech Memo; "light toned mounded material" noted in aerial photos	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 2/4/11	NA	NA
Subsurface	167	Bottom center of group 8 and east of PZ-051	Past facility operation history in HSA Tech Memo; "light toned mounded material" noted in aerial photos	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 2/4/11	NA	NA
Subsurface	168	Bottom center of group 8 and east of PZ-051	Past facility operation history in HSA Tech Memo; "light toned mounded material" noted in aerial photos	6.5	None indicated	2/8/2011	Primary VOCs/Dioxane	SL-168-SA5B-SB-4.0-5.0 SL-168-SA5B-SB-4.5
Surface	169	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	0.5	None indicated	12/16/2010	Primary	SL-169-SA5B-SS-0.0-0.5
Subsurface	169	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 2/1/11	NA	NA
Subsurface	170	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	2.0	None indicated	No sample collected Refusal at 2 ft bgs 2/2/11	NA	NA
Subsurface	171	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	2.5	None indicated	No sample collected Refusal at 2 ft bgs 2/2/11	NA	NA
Surface	172	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	0.5	None indicated	12/16/2010	Primary	SL-172-SA5B-SS-0.0-0.5
Subsurface	172	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	3	None indicated	2/2/2011	Primary VOCs/Dioxane	SL-172-SA5B-SB-2.0-3.0 SL-172-SA5B-SB-2.5
Surface	173	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	0.5	None indicated	12/16/2010	Primary	SL-173-SA5B-SS-0.0-0.5
Subsurface	173	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	3	None indicated	2/2/2011	Primary VOCs/Dioxane	SL-173-SA5B-SB-2.0-3.0 SL-173-SA5B-SB-2.5
Subsurface	174	Bottom of group 8 and west of PZ-051	Geophysical survey indicates potential underground anomaly	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 2/2/11	NA	NA
Subsurface	175	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	4.5	"85% gravel (granite fill)" from surface to 1 ft "trace pea gravel" from 1 ft to 3.5 ft	1/31/2011	Primary VOCs/Dioxane	SL-175-SA5B-SB-4.0-5.0 SL-175-SA5B-SB-4.5
Surface	176	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-176-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	176	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	6.5	None indicated	1/31/2011	Primary VOCs/Dioxane	SL-176-SA5B-SB-4.0-5.0 SL-176-SA5B-SB-4.5
Subsurface	177	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7.5	"trace pea gravel (piece of quartz)" in description from 4.3 ft to 5 ft	1/31/2011	Primary VOCs/Dioxane	SL-177-SA5B-SB-4.0-5.0 SL-177-SA5B-SB-4.5
Surface	178	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-178-SA5B-SS-0.0-0.5
Subsurface	178	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7.5	None indicated	1/28/2011	VOCs/Dioxane Primary	SL-178-SA5B-SB-4.5 SL-178-SA5B-SB-4.0-5.0
Subsurface	179	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	8	None indicated	1/28/2011	VOCs/Dioxane Primary Primary	SL-179-SA5B-SB-4.5 SL-179-SA5B-SB-4.0-5.0 SL-179-SA5B-SB-7.0-8.0
Subsurface	180	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	10	None indicated	1/26/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-180-SA5B-SB-4.5 SL-180-SA5B-SB-4.0-5.0 SL-180-SA5B-SB-9.5 SL-180-SA5B-SB-9.0-10.0
Surface	181	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	0.5	None indicated	12/15/2010	Primary	SL-181-SA5B-SS-0.0-0.5
Subsurface	181	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	6	None indicated	1/27/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-181-SA5B-SB-4.5 SL-181-SA5B-SB-4.0-5.0
Subsurface	182	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	7	None indicated	1/31/2011	Primary/Secondary VOCs/Dioxane/GRO	SL-182-SA5B-SB-4.0-5.0MS SL-182-SA5B-SB-4.5MS
Surface	183	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	0.5	None indicated	12/21/2010	VOCs/Dioxane/GRO Primary & Secondary	SL-183-SA5B-SS-0.0-0.5
Subsurface	183	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	6.5	None indicated	1/28/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-183-SA5B-SB-4.5 SL-183-SA5B-SB-4.0-5.0
Subsurface	184	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	4	"refusal - gravel fill" at 4 ft bgs	1/28/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-184-SA5B-SB-3.5 SL-184-SA5B-SB-3.0-4.0
Subsurface	185	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	5	None indicated	1/27/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-185-SA5B-SB-4.5 SL-185-SA5B-SB-4.0-5.0
Surface	186	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-186-SA5B-SS-0.0-0.5
Subsurface	186	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7	None indicated	1/27/2011	VOCs/Dioxane Primary	SL-186-SA5B-SB-4.5 SL-186-SA5B-SB-4.0-5.0
Surface	187	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-187-SA5B-SS-0.0-0.5
Subsurface	187	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	4	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-187-SA5B-SB-4.0-5.0 SL-187-SA5B-SB-4.5
Subsurface	188	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	5	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-188-SA5B-SB-4.0-5.0 SL-188-SA5B-SB-4.5
Surface	189	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-189-SA5B-SS-0.0-0.5MS
Subsurface	189	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	4	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-189-SA5B-SB-3.0-4.0 SL-189-SA5B-SB-3.5
Subsurface	190	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	6	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-190-SA5B-SB-4.0-5.0 SL-190-SA5B-SB-4.5
Subsurface	191	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	4	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-191-SA5B-SB-4.0-5.0 SL-191-SA5B-SB-4.5
Surface	192	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	"10% rock fragments (sandstone, asphalt)"	12/16/2010	Primary	SL-192-SA5B-SS-0.0-0.5
Subsurface	192	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7.5	"asphalt debris" from 7 inches to 2 ft	1/27/2011	VOCs/Dioxane Primary	SL-192-SA5B-SB-4.5 SL-192-SA5B-SB-4.0-5.0
Subsurface	193	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	5	None indicated	1/28/2011	VOCs/Dioxane Primary	SL-193-SA5B-SB-4.5 SL-193-SA5B-SB-4.0-5.0
Surface	194	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	"5% pea gravel (fill, asphalt, sandstone)"	12/16/2010	Primary	SL-194-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	194	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	6	None indicated	1/28/2011	VOCs/Dioxane Primary	SL-194-SA5B-SB-4.5 SL-194-SA5B-SB-4.0-5.0
Subsurface	195	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	6	"asphalt debris" from 0 to 1 ft	1/31/2011	Primary VOCs/Dioxane	SL-195-SA5B-SB-4.0-5.0MS SL-195-SA5B-SB-4.5MS
Surface	196	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	"10% fill pea gravel"	12/16/2010	Primary	SL-196-SA5B-SS-0.0-0.5
Subsurface	196	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	6	None indicated	1/28/2011	VOCs/Dioxane Primary	SL-196-SA5B-SB-4.5 SL-196-SA5B-SB-4.0-5.0
Subsurface	197	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	5.5	"trace concrete, asphalt debris" from 0 to 0.5 ft "asphalt debris" at 1 ft 10 inches	1/31/2011	Primary VOCs/Dioxane	SL-197-SA5B-SB-4.0-5.0 SL-197-SA5B-SB-4.5
Surface	198	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-198-SA5B-SS-0.0-0.5
Subsurface	198	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	5	"trace asphalt debris at 1 ft bgs"	1/31/2011	Primary VOCs/Dioxane	SL-198-SA5B-SB-4.0-5.0 SL-198-SA5B-SB-4.5
Surface	199	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-199-SA5B-SS-0.0-0.5
Subsurface	199	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7	None indicated	1/31/2011	Primary VOCs/Dioxane	SL-199-SA5B-SB-4.0-5.0 SL-199-SA5B-SB-4.5
Subsurface	200	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	7.5	"asphalt" from 8 to 10 ft "1'2" - 1'3" concrete"	1/31/2011	Primary VOCs/Dioxane	SL-200-SA5B-SB-4.0-5.0 SL-200-SA5B-SB-4.5
Subsurface	201	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	10	None indicated	1/28/2011	VOCs/Dioxane Primary Primary	SL-201-SA5B-SB-4.5 SL-201-SA5B-SB-4.0-5.0 SL-201-SA5B-SB-9.0-10.0
Surface	202	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	0.5	None indicated	12/16/2010	Primary	SL-202-SA5B-SS-0.0-0.5
Subsurface	202	Southwest portion of group 8	Geophysical survey indicates potential underground anomaly and FA-11 aerial photo feature	8	"asphalt debris" from 1.2 to 1.7 ft	1/28/2011	VOCs/Dioxane Primary Primary	SL-202-SA5B-SB-4.5 SL-202-SA5B-SB-4.0-5.0 SL-202-SA5B-SB-7.0-8.0
Surface	203	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	0.5	None indicated	12/15/2010	Primary	SL-203-SA5B-SS-0.0-0.5
Subsurface	203	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	8.5	None indicated	1/27/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-203-SA5B-SB-4.5 SL-203-SA5B-SB-4.0-5.0 SL-203-SA5B-SB-8.0 SL-203-SA5B-SB-7.5-8.5
Surface	204	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	0.5	None indicated	12/15/2010	Primary	SL-204-SA5B-SS-0.0-0.5
Subsurface	204	Southwest portion of group 8	Geophysical survey indicates potential anomaly co-located with FA-11 aerial photo feature and leach field	7	None indicated	1/31/2011	Primary & Secondary VOCs/Dioxane/GRO	SL-204-SA5B-SB-4.0-5.0 SL-204-SA5B-SB-4.5
Surface	205	Southwest portion of group 8	Aerial photos indicate a ground scar	0.5	None indicated	12/16/2010	Primary	SL-205-SA5B-SS-0.0-0.5
Subsurface	205	Southwest portion of group 8	Aerial photos indicate a ground scar	3.5	None indicated	2/3/2011	Primary VOCs/Dioxane	SL-205-SA5B-SB-2.5-3.5 SL-205-SA5B-SB-3.0
Surface	206	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-206-SA5B-SS-0.0-0.5
Subsurface	206	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 2/2/11	NA	NA
Surface	207	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	0.5	"15% sandstone rock fragments"	12/17/2010	Primary	SL-207-SA5B-SS-0.0-0.5
Subsurface	207	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	3.5	None indicated	2/3/2011	Primary VOCs/Dioxane	SL-207-SA5B-SB-2.5-3.5 SL-207-SA5B-SB-3.0
Surface	208	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-208-SA5B-SS-0.0-0.5
Subsurface	208	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	2.0	None indicated	No sample collected Refusal at 2.0 ft bgs 2/2/11	NA	NA
Surface	209	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-209-SA5B-SS-0.0-0.5
Subsurface	209	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	5	None indicated	2/2/2011	Primary VOCs/Dioxane	SL-209-SA5B-SB-4.0-5.0 SL-209-SA5B-SB-4.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	210	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	0.5	"10% pea gravel (clasts of sandstone)"	12/17/2010	Primary	SL-210-SA5B-SS-0.0-0.5
Subsurface	210	Eastern portion of group 8 and north and west of PZ-052	Location of potential gamma anomaly	5	"trace brick fragments" noted in description from 0 to 1.5 ft	2/3/2011	Primary VOCs/Dioxane	SL-210-SA5B-SB-4.0-5.0 SL-210-SA5B-SB-4.5
Surface	211	Eastern portion of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-211-SA5B-SS-0.0-0.5MS
Subsurface	211	Eastern portion of group 8	Location of potential gamma anomaly	7	None indicated	2/3/2011	Primary VOCs/Dioxane	SL-211-SA5B-SB-4.0-5.0 SL-211-SA5B-SB-4.5
Drainage	212	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-212-SA5B-SS-0.0-0.5
Drainage	213	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-213-SA5B-SS-0.0-0.5
Drainage	214	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-214-SA5B-SS-0.0-0.5
Drainage	215	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-215-SA5B-SS-0.0-0.5MS
Drainage	216	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-216-SA5B-SS-0.0-0.5
Drainage	217	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-217-SA5B-SS-0.0-0.5
Drainage	219	Channel that drains into 17th street drainage area (north of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/21/2010	Primary	SL-219-SA5B-SS-0.0-0.5
Surface	225	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/21/2010	Primary	SL-225-SA5B-SS-0.0-0.5
Subsurface	225	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	3	None indicated	3/9/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-225-SA5B-SB-2.5 SL-225-SA5B-SB-2.0-3.0
Surface	226	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/21/2010	Primary	SL-226-SA5B-SS-0.0-0.5
Subsurface	226	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	2.5	None indicated	No sample collected Refusal at 2.5 ft bgs 3/9/11	NA	NA
Surface	227	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/21/2010	Primary	SL-227-SA5B-SS-0.0-0.5
Subsurface	227	Channel that drains into 17th street drainage area (south of berm)	Potential surface migration through storm water runoff	3.5	None indicated	3/11/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-227-SA5B-SB-3.0 SL-227-SA5B-SB-2.5-3.5
Surface	228	Inside footprint of Building 4025	Improve general coverage of round 1 sampling	0.5	None indicated	12/10/2010	Primary	SL-228-SA5B-SS-0.0-0.5
Surface	229	East of Building 4010	Past facility operation history in HSA Tech Memo; location of SNAP 8 ER experimental reactor test	0.5	None indicated	12/10/2010	Primary	SL-229-SA5B-SS-0.0-0.5
Subsurface	229	East of Building 4010	Past facility operation history in HSA Tech Memo; location of SNAP 8 ER experimental reactor test	5	"wood debris, asphalt debris, concrete debris" from 0 to 8 ft	2/3/2011	Primary/Secondary VOCs/Dioxane/GRO	SL-229-SA5B-SB-2.0-3.0 SL-229-SA5B-SB-2.5
Surface	230	East of Building 4010	Past facility operation history in HSA Tech Memo; location of SNAP 8 ER experimental reactor test	0.5	"15% gravel (fill gravel-angular)"	12/9/2010	Primary	SL-230-SA5B-SS-0.0-0.5
Subsurface	230	East of Building 4010	Past facility operation history in HSA Tech Memo; location of SNAP 8 ER experimental reactor test	3	"asphalt debris" from 3 to 7 inches	2/3/2011	Primary/Secondary VOCs/Dioxane/GRO	SL-230-SA5B-SB-2.0-3.0 SL-230-SA5B-SB-2.5
Surface	231	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"35% gravel (subangular fill gravel)"	12/9/2010	Primary	SL-231-SA5B-SS-0.0-0.5
Surface	232	Between Building 4356 and B Street	Improve general coverage of round 1 sampling	0.5	None indicated	12/10/2010	Primary	SL-232-SA5B-SS-0.0-0.5
Surface	233	Between Building 4356 and B Street	Improve general coverage of round 1 sampling	0.5	"rock fragments"	12/10/2010	Primary	SL-233-SA5B-SS-0.0-0.5
Surface	234	West of Building 4356	Improve general coverage of round 1 sampling	0.5	None indicated	12/10/2010	Primary	SL-234-SA5B-SS-0.0-0.5
Subsurface	234	West of Building 4356	Improve general coverage of round 1 sampling	3.5	None indicated	1/7/2011	VOCs/Dioxane Primary	SL-234-SA5B-SB-3.0 SL-234-SA5B-SB-2.5-3.5
Surface	235	Area between 20th street and Building 4356	Improve general coverage of round 1 sampling	0.5	None indicated	12/10/2010	Primary	SL-235-SA5B-SS-0.0-0.5
Subsurface	235	Area between 20th street and Building 4356	Improve general coverage of round 1 sampling	2.0	None indicated	No sample collected Refusal at 2 ft bgs 1/7/11	NA	NA
Surface	236	Area north Building 4026 footprint	Improve general coverage of round 1 sampling	0.5	"10% rock fragments"	12/13/2010	Primary	SL-236-SA5B-SS-0.0-0.5
Surface	240	Far west side of group 5	Improve general coverage of round 1 sampling	0.5	"15% pea gravel (fill rock)"	12/14/2010	Primary	SL-240-SA5B-SS-0.0-0.5
Subsurface	240	Far west side of group 5	Improve general coverage of round 1 sampling	10	"5% gravel (fill)" from 0 to 7 ft	1/10/2011	VOCs, Dioxane Primary Primary	SL-240-SA5B-SB-4.5 SL-240-SA5B-SB-4.0-5.0 SL-240-SA5B-SB-9.0-10.0
Surface	253	Open area on lower southwest corner of group 6	Improve general coverage of round 1 sampling	0.5	None indicated	2/11/2011	Primary	SL-253-SA5B-SS-0.0-0.5
Subsurface	253	Open area on lower southwest corner of group 6	Improve general coverage of round 1 sampling	4	None indicated	1/21/2011	VOCs, Dioxane Primary	SL-253-SA5B-SB-3.5MS SL-253-SA5B-SB-3.0-4.0MS
Surface	254	Open area on lower southwest corner of group 6	Improve general coverage of round 1 sampling	0.5	"trace asphalt fragments"	2/11/2011	Primary	SL-254-SA5B-SS-0.0-0.5
Subsurface	254	Open area on lower southwest corner of group 6	Improve general coverage of round 1 sampling	4.5	None indicated	1/21/2011	VOCs, Dioxane Primary	SL-254-SA5B-SB-4.0 SL-254-SA5B-SB-3.5-4.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	255	Channel that drains into 17th street drainage area (west of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/20/2010	Primary	SL-255-SA5B-SS-0.0-0.5
Subsurface	255	Channel that drains into 17th street drainage area (west of berm)	Potential surface migration through storm water runoff		None indicated	No sample collected Refusal at 2.5 ft bgs 3/9/11	NA	NA
Drainage	257	Storm drainage channel at corner of 17th and 18th streets	Potential surface migration through storm water runoff	0.5	None indicated	12/15/2010	Primary	SL-257-SA5B-SS-0.0-0.5
Subsurface	258	Area north of Building 4500	Past facility operation history in HSA Tech Memo; location of OS-20 and possible stain noted in aerial photos		None indicated	No sample collected Refusal at 2 ft bgs 1/4/11	NA	NA
Subsurface	259	Area north of Building 4500	Past facility operation history in HSA Tech Memo; location of OS-20 and possible stain noted in aerial photos (HAND AUGERED)	5	None indicated	1/4/2011	VOCs, Dioxane Primary	SL-259-SA5B-SB-4.5 SL-259-SA5B-SB-4.0-5.0
Surface	262	Area south of Building 4007 footprint	Location of potential gamma anomaly	0.5	"10% pea gravel"	12/15/2010	Primary	SL-262-SA5B-SS-0.0-0.5MS
Subsurface	262	Area south of Building 4007 footprint	Location of potential gamma anomaly	7.5	None indicated	1/26/2011	VOCs, Dioxane Primary	SL-262-SA5B-SB-4.5 SL-262-SA5B-SB-4.0-5.0
Surface	263	Area between Buildings 4007 and 4008 footprints	Improve general coverage of round 1 sampling	0.5	"25% gravel and cobbles (fill rock and sandstone rock fragments)"	12/15/2010	Primary	SL-263-SA5B-SS-0.0-0.5
Subsurface	263	Area between Buildings 4007 and 4008 footprints	Improve general coverage of round 1 sampling	3	None indicated	1/26/2011	VOCs, Dioxane Primary	SL-263-SA5B-SB-2.5 SL-263-SA5B-SB-2.0-3.0
Surface	264	Area south of Building 4007 footprint	Location of potential gamma anomaly	0.5	None indicated	12/15/2010	Primary	SL-264-SA5B-SS-0.0-0.5
Subsurface	264	Area south of Building 4007 footprint	Location of potential gamma anomaly	NA	NA	No sample collected Refusal at ~1 ft bgs 1/26/11	NA	NA
Surface	269	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Subsurface	269	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Surface	270	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Subsurface	270	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Surface	271	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Subsurface	271	Area of southeast corner of group 8	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Surface	272	Eastern portion of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-272-SA5B-SS-0.0-0.5
Subsurface	272	Eastern portion of group 8	Location of potential gamma anomaly	5	None indicated	2/4/2011	Primary VOCs/Dioxane	SL-272-SA5B-SB-4.0-5.0 SL-272-SA5B-SB-4.5
Surface	273	Eastern portion of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-273-SA5B-SS-0.0-0.5
Subsurface	273	Eastern portion of group 8	Location of potential gamma anomaly	3	None indicated	2/4/2011	Primary VOCs/Dioxane	SL-273-SA5B-SB-2.0-3.0 SL-273-SA5B-SB-2.5
Surface	274	Eastern portion of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-274-SA5B-SS-0.0-0.5
Subsurface	274	Eastern portion of group 8	Location of potential gamma anomaly	5	None indicated	2/3/2011	Primary VOCs/Dioxane	SL-274-SA5B-SB-4.0-5.0 SL-274-SA5B-SB-4.5
Surface	275	Northeast corner of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-275-SA5B-SS-0.0-0.5
Subsurface	275	Northeast corner of group 8	Location of potential gamma anomaly	4.5	None indicated	2/2/2011	Primary VOCs/Dioxane	SL-275-SA5B-SB-3.5-4.5 SL-275-SA5B-SB-4.0
Surface	276	Northeast corner of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-276-SA5B-SS-0.0-0.5
Subsurface	276	Northeast corner of group 8	Location of potential gamma anomaly	5	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-276-SA5B-SB-4.0-5.0 SL-276-SA5B-SB-4.5
Surface	277	Northeast corner of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-277-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	277	Northeast corner of group 8	Location of potential gamma anomaly	3.5	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-277-SA5B-SB-2.5-3.5 SL-277-SA5B-SB-3.0
Surface	278	Northeast corner of group 8	Location of potential gamma anomaly	0.5	"trace wire and scrap metal"	12/17/2010	Primary	SL-278-SA5B-SS-0.0-0.5
Subsurface	278	Northeast corner of group 8	Location of potential gamma anomaly	3	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-278-SA5B-SB-2.0-3.0 SL-278-SA5B-SB-2.5
Surface	279	Northeast corner of group 8	Location of potential gamma anomaly	0.5	None indicated	12/17/2010	Primary	SL-279-SA5B-SS-0.0-0.5
Subsurface	279	Northeast corner of group 8	Location of potential gamma anomaly	3.5	None indicated	2/1/2011	Primary VOCs/Dioxane	SL-279-SA5B-SB-2.5-3.5 SL-279-SA5B-SB-3.0
Surface	280	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	"30% subrounded rock fragments (sandstone-weathered pea gravel)"	12/8/2010	Primary	SL-280-SA5B-SS-0.0-0.5
Subsurface	280	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	10	"trace gravel-subangular" from 0 to 1 ft	1/18/2011	VOCs/Dioxane Primary Primary	SL-280-SA5B-SB-4.5 SL-280-SA5B-SB-4.0-5.0 SL-280-SA5B-SB-9.0-10.0
Surface	281	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	25% pea gravel (fill and asphalt)	12/8/2010	Primary	SL-281-SA5B-SS-0.0-0.5
Subsurface	281	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	9	"10% gravel: max size 1.5 inches" from 1 to 5 ft	12/17/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-281-SA5B-SB-4.5 SL-281-SA5B-SB-4.0-5.0 SL-281-SA5B-SB-8.5 SL-281-SA5B-SB-8.0-9.0
Surface	282	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	"gravel rock fragments (non-native)"	12/8/2010	Primary	SL-282-SA5B-SS-0.0-0.5
Subsurface	282	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	8	"5% gravel (granite quartzite)" from 0 to 2.5 ft "staining (black, greenish gray) from 3'10" -7'2")"	12/17/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-282-SA5B-SB-4.5 SL-282-SA5B-SB-4.0-5.0 SL-282-SA5B-SB-7.5 SL-282-SA5B-SB-7.0-8.0
Surface	283	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	"nonnative rock fragments/gravel"	12/8/2010	Primary	SL-283-SA5B-SS-0.0-0.5
Subsurface	283	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	10	"concrete debris" noted @ 1.3 to 5.75; at 8.5 and 9.3 ft	1/18/2011	VOCs/Dioxane Primary Primary	SL-283-SA5B-SB-4.5 SL-283-SA5B-SB-4.0-5.0 SL-283-SA5B-SB-9.0-10.0
Drainage	284	Lower central area of group 8	Channel that drains into 17th street drainage area (south of berm)	0.5	None indicated	12/16/2010	Primary	SL-284-SA5B-SS-0.0-0.5
Drainage	285	Lower area of group 8 at 20th Street and G Street	Channel that drains south into subarea 5C	0.5	None indicated	12/16/2010	Primary	SL-285-SA5B-SS-0.0-0.5
Drainage	286	Lower area of group 8 at 20th Street and G Street	Channel that drains south into subarea 5C	0.5	"10% pea gravel (asphalt, fill gravel, sandstone)"	12/16/2010	Primary	SL-286-SA5B-SS-0.0-0.5
Surface	287	Immediately east of Building 4025	Area south of location of a ground scar shown in the aerial photo analysis	0.5	"15% asphalt/sandstone cobbles"	12/10/2010	Primary	SL-287-SA5B-SS-0.0-0.5
Subsurface	287	Immediately east of Building 4025	Area south of location of a ground scar shown in the aerial photo analysis	10	"5% gravel (concrete pieces, asphalt)" from 0 to 2.5 ft	1/19/2011	VOCs/Dioxane Primary Primary	SL-287-SA5B-SB-4.5 SL-287-SA5B-SB-4.0-5.0 SL-287-SA5B-SB-9.0-10.0
Surface	288	Within footprint of Building 4025 on the south side	Improve general coverage of round 1 sampling	0.5	None indicated	12/10/2010	Primary	SL-288-SA5B-SS-0.0-0.5MS
Drainage	289	Storm channel along 17th street and south of PZ-121	Potential surface migration through storm water runoff	0.5	"15% gravel (sandstone, gravel fill rock)"	2/11/2011	Primary	SL-289-SA5B-SS-0.0-0.5
Drainage	290	Storm channel along 17th street and southwest of PZ-121	Potential surface migration through storm water runoff	0.5	"5% granite course gravel"	12/10/2010	Primary	SL-290-SA5B-SS-0.0-0.5
Surface	291	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"30% gravel (subangular, 1-2 inches)"	12/9/2010	Primary	SL-291-SA5B-SS-0.0-0.5
Surface	292	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"20% nonnative gravel"	12/9/2010	Primary	SL-292-SA5B-SS-0.0-0.5
Surface	293	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"30% coarse fill gravel"	12/10/2010	Primary	SL-293-SA5B-SS-0.0-0.5
Surface	294	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	0.5	5% rock fragments (weathered SS and pea gravel)	12/8/2010	Primary	SL-294-SA5B-SS-0.0-0.5
Subsurface	294	Inside Building 4012 footprint in area of critical cell (room 110)	Past facility operation history in HSA Tech Memo; location of SNAP critical cell and assembly	10	"concrete debris" at ~3 ft	1/20/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-294-SA5B-SB-4.5MS SL-294-SA5B-SB-4.0-5.0MS SL-294-SA5B-SB-9.5 SL-294-SA5B-SB-9.0-10.0
Surface	295	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	"nonnative rock fragments/gravel"	12/8/2010	Primary	SL-295-SA5B-SS-0.0-0.5
Subsurface	295	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	10	None indicated	1/18/2011	VOCs/Dioxane Primary Primary	SL-295-SA5B-SB-4.5 SL-295-SA5B-SB-4.0-5.0 SL-295-SA5B-SB-9.0-10.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	296	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	0.5	"nonnative rock fragments/gravel"	12/8/2010	Primary	SL-296-SA5B-SS-0.0-0.5
Subsurface	296	Within footprint of Building 4013	Location of potential gamma anomaly and geophysical anomaly	10	"concrete debris at ~1 and from 2.3 to 3.3 ft. "red concrete" from 3.3 to 3.9 ft	1/18/2011	VOCs/Dioxane Primary Primary	SL-296-SA5B-SB-4.5 SL-296-SA5B-SB-4.0-5.0 SL-296-SA5B-SB-9.0-10.0
Surface	297	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	0.5	"30% pea gravel (asphalt fill) & "piece of sandbag debris"	12/8/2010	Primary	SL-297-SA5B-SS-0.0-0.5
Subsurface	297	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	8	"odor and staining from 4 ft to 6.25 ft"	12/15/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-297-SA5B-SB-4.5 SL-297-SA5B-SB-4.0-5.0 SL-297-SA5B-SB-7.5 SL-297-SA5B-SB-7.0-8.0
Surface	298	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	0.5	25% rock fragments (pea gravel and asphalt)	1/5/2011	Primary	SL-298-SA5B-SS-0.0-0.5
Subsurface	298	Area north of Building 4013	Geophysical survey indicates potential underground anomalies	10	"staining; wood scrap & odor" at 4.5 ft "stained" from 4.5 ft to 8 ft	12/15/2010	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-298-SA5B-SB-4.5 SL-298-SA5B-SB-4.0-5.0 SL-298-SA5B-SB-9.5 SL-298-SA5B-SB-9.0-10.0
Surface	299	Area east of concrete pad	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/10/2010	Primary	SL-299-SA5B-SS-0.0-0.5
Subsurface	299	Area east of concrete pad	Geophysical survey indicates potential underground anomalies	2.0	None indicated	No sample collected Refusal at 2 ft bgs 1/6/11	NA	NA
Surface	300	Area east of concrete pad	Geophysical survey indicates potential underground anomalies	0.5	None indicated	12/10/2010	Primary	SL-300-SA5B-SS-0.0-0.5
Surface	301	Area east of Building 4816 footprint	Improve general coverage of round 1 sampling	0.5	None indicated	12/13/2010	Primary	SL-301-SA5B-SS-0.0-0.5
Subsurface	301	Area east of Building 4816 footprint	Improve general coverage of round 1 sampling	8.5	None indicated	1/13/2011	VOCs/Dioxane Primary Primary	SL-301-SA5B-SB-4.5 SL-301-SA5B-SB-4.0-5.0 SL-301-SA5B-SB-7.5-8.5
Drainage	302	Culvert along 17th street between transformer yard and 17th street	Potential surface migration through storm water runoff	0.5	"20% gravel (fill pea gravel and asphalt pieces)"	12/15/2010	Primary	SL-302-SA5B-SS-0.0-0.5
Drainage	303	Culvert along 17th street between transformer yard and 17th street	Potential surface migration through storm water runoff	0.5	None indicated	12/15/2010	Primary	SL-303-SA5B-SS-0.0-0.5
Surface	304	Channel that drains into 17th street drainage area (west of berm)	Potential surface migration through storm water runoff	0.5	None indicated	12/16/2010	Primary	SL-304-SA5B-SS-0.0-0.5
Subsurface	304	Channel that drains into 17th street drainage area (west of berm)	Potential surface migration through storm water runoff	4	None indicated	3/9/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-304-SA5B-SB-3.5 SL-304-SA5B-SB-3.0-4.0
Surface	306	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	0.5	"10% gravel (0.5-2 inch)"	12/9/2010	Primary	SL-306-SA5B-SS-0.0-0.5
Surface	307	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	0.5	"common gravel non-native rock fragments"	12/8/2010	Primary	SL-307-SA5B-SS-0.0-0.5
Subsurface	307	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	15	None indicated	1/21/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-307-SA5B-SB-4.5 SL-307-SA5B-SB-4.0-5.0 SL-307-SA5B-SB-9.5 SL-307-SA5B-SB-9.0-10.0 SL-307-SA5B-SB-14.5 SL-307-SA5B-SB-14.0-15.0
Surface	308	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	0.5	"nonnative rock fragments"	12/8/2010	Primary	SL-308-SA5B-SS-0.0-0.5
Subsurface	308	Southwest of Building 4012 footprint (outside of room 104)	Past facility operation history in HSA Tech Memo; location of rad. liq. waste tank aka "survey tank" (Dwg 303-012-A1)	15	None indicated	1/21/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-308-SA5B-SB-4.5 SL-308-SA5B-SB-4.0-5.0 SL-308-SA5B-SB-9.5 SL-308-SA5B-SB-9.0-10.0 SL-308-SA5B-SB-14.5 SL-308-SA5B-SB-14.0-15.0
Surface	309	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"35% gravel (sandstone and fill pea gravel)"	12/14/2010	Primary	SL-309-SA5B-SS-0.0-0.5
Surface	310	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"35% gravel (fill pea gravel and sandstone rock fragments)"	12/14/2010	Primary	SL-310-SA5B-SS-0.0-0.5
Surface	311	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"35% gravel (fill pea gravel and sandstone rock fragments)"	12/14/2010	Primary	SL-311-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	312	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"35% gravel (fill pea gravel and sandstone rock fragments)"	12/14/2010	Primary	SL-312-SA5B-SS-0.0-0.5
Subsurface	313	East of Building 4010 and along septic tank discharge line	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"concrete debris" at 4.75 ft and from 5.0 to 5.75 ft "pea gravel (granitic)" and "concrete debris" from 3.5 to 3.75 ft "trace red concrete debris" at 6.0 ft "concrete debris" from 6.9 to 9.2 ft. and from 9.6 to 10 ft "red concrete debris" at 10 ft	2/8/2011	VOCs/Dioxanes/GRO Primary & Secondary VOCs/Dioxanes/GRO Primary & Secondary	SL-313-SA5B-SB-4.5 SL-313-SA5B-SB-4.0-5.0 SL-313-SA5B-SB-9.5 SL-313-SA5B-SB-9.0-10.0
Surface	314	East of Building 4010 and along septic tank discharge line	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	0.5	"5% large 2"-5" rock fragments"	2/9/2011	Primary & Secondary	SL-314-SA5B-SS-0.0-0.5
Subsurface	314	East of Building 4010 and along septic tank discharge line	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	6.5	"concrete debris & trace gravel" from surface to 1.3 ft "building material & concrete debris" from 1.3 to 2.2 ft "red concrete debris and gray concrete debris throughout" from 2.2 to 4.6 ft "trace red concrete debris" at 6.0 ft	2/8/2011	VOCs/Dioxanes/GRO Primary & Secondary	SL-314-SA5B-SB-4.5 SL-314-SA5B-SB-4.0-5.0
Surface	315	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	0.5	"15% gravel (sandstone, gravel fill rock)"	2/8/2011	Primary & Secondary	SL-315-SA5B-SS-0.0-0.5
Subsurface	315	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	4	"trace asphalt & concrete debris" from 3 inches to 3.0 ft "trace gravel" from 3 to 4 ft	2/10/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-315-SA5B -SB-3.5 SL-315-SA5B-SB-3.0-4.0
Surface	316	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	0.5	"30% gravel (fill rock, sandstone, concrete)"	2/8/2011	Primary/Secondary	SL-316-SA5B-SS-0.0-0.5
Subsurface	316	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of abandoned septic tank discharge line	5.5	"concrete debris" from 0.5 to 4.0 ft "concentration of asphalt & concrete debris" at 3.0 ft "wood chunks" at 5.1 ft	2/9/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-316-SA5B-SB-5.0 SL-316-SA5B-SB-4.5-5.5
Surface	319	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"30% gravel (sandstone, fill gravel, concrete, asphalt)"	2/9/2011	Primary	SL-319-SA5B-SS-0.0-0.5
Subsurface	319	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	5	"pea gravel (granitic & quartzite)" at surface. "asphalt & concrete debris throughout" from 1" to 3.0 ft	2/10/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-319-SA5B-SB-4.5 SL-319-SA5B-SB-4.0-5.0
Surface	321	Southeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	0.5	"15% gravel (fill rock, brick, asphalt, concrete)"	2/10/2011	Primary	SL-321-SA5B-SS-0.0-0.5
Subsurface	321	Southeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	4	"asphalt debris" from 1.1 to 2.5 ft No other indication of fill except the note: "found copper wiring with black outer insulation in cores used for DUPs (found while breaking up soil-unknown depth)"	2/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-321-SA5B-SB-3.5 SL-321-SA5B-SB-3.0-4.0
Surface	322	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	0.5	"15% gravel (fill rock, sandstone)"	2/10/2011	Primary	SL-322-SA5B-SS-0.0-0.5
Subsurface	322	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history in HSA Tech Memo; location of NaK storage tanks T1, T4, and T5 (Dwg 303-010-E18)	4	"trace gravel-subangular" from 0 to 1 ft	2/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-322-SA5B-SB-3.5 SL-322-SA5B -SB-3.0-4.0
Surface	323	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% gravel (fill rock, asphalt)"	2/9/2011	Primary	SL-323-SA5B-SS-0.0-0.5
Subsurface	323	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	~13	"pea gravel" to 1 ft "asphalt debris" from 1 to 10 ft and at 3.1 ft "trace asphalt debris" 6.0 ft to 7.2 ft "asphalt & concrete debris" from 7 to 7.5 ft "concrete debris" at 8.1 ft "concrete" from 10.5 to 11.5 ft	2/15/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-323-SA5B-SB-4.5 SL-323-SA5B-SB-4.0-5.0 SL-323-SA5B-SB-11.5 SL-323-SA5B-SB-11.0-12.0
Surface	324	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% gravel (fill rock, sandstone, asphalt, concrete)"	2/9/2011	Primary	SL-324-SA5B-SS-0.0-0.5
Subsurface	324	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	9	"trace pea gravel" from 4 inches to 2.5 ft "asphalt debris & trace pea gravel" from 2.5 to 5.0 ft and at 5.2 ft	2/14/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-324-SA5B-SB-4.5 SL-324-SA5B-SB-4.0-5.0 SL-324-SA5B-SB-8.5 SL-324-SA5B-SB-8.0-9.0
Surface	326	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"15% gravel (fill rock, asphalt, concrete, brick)"	2/9/2011	Primary	SL-326-SA5B-SS-0.0-0.5

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	326	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	19.5	"pea gravel (granitic & quartzite)" at surface "concrete debris" from 8.7 to 11.5 ft "trace concrete debris" from 15.5 to 17.7 ft	2/10/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-326-SA5B-SB-9.5 SL-326-SA5B-SB-9.0-10.0 SL-326-SA5B-SB-14.5 SL-326-SA5B-SB-14.0-15.0 SL-326-SA5B-SB-19.0 SL-326-SA5B-SB-18.5-19.5
Surface	327	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	0.5	"30% gravel (asphalt, sandstone, concrete, siltstone)"	2/8/2011	Primary	SL-327-SA5B-SS-0.0-0.5
Subsurface	327	Inside Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Past facility operation history described in HSA Tech Memo; location of reactor pit; elevated Co-60 soil concentration.	5	"concrete debris" from 8" to 1.3 ft "building material debris, plastic, asphalt debris " from 1.5 to 1.6 ft "trace asphalt debris" from 2.6 to 3.9 ft "concrete debris & piece of plastic" at 4.75 ft	2/15/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-327-SA5B-SB-4.5 SL-327-SA5B-SB-4.0-5.0
Surface	328	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process knowledge and past facility operation history described in HSA Tech Memo	0.5	"30% gravel (sandstone, fill and concrete)"	2/8/2011	Primary	SL-328-SA5B-SS-0.0-0.5
Subsurface	328	Northwest of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process knowledge and past facility operation history described in HSA Tech Memo	5	"concrete debris" from surface to 4.6 ft	2/9/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-328-SA5B-SB-4.0 SL-328-SA5B-SB-3.5-4.5
Surface	329	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"15% gravel (sandstone, gravel fill rock)"	2/10/2011	Primary/Secondary	SL-329-SA5B-SS-0.0-0.5
Subsurface	329	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	5	None indicated	2/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-329-SA5B-SB-4.5MS SL-329-SA5B-SB-4.0-5.0MS
Surface	330	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"20% rock fragments (sandstone, concrete, asphalt)"	2/10/2011	Primary/Secondary	SL-330-SA5B-SS-0.0-0.5
Subsurface	330	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	3	None indicated	2/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-330-SA5B-SB-4.5 SL-330-SA5B-SB-4.0-5.0
Surface	331	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	0.5	"15% gravel (gravel fill, sandstone)"	2/10/2011	Primary/Secondary	SL-331-SA5B-SS-0.0-0.5
Subsurface	331	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of pipewell sump (Dwg 303-010-S3)	4	"asphalt debris surrounding core" from 2.0 to 3.1 ft	2/17/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-331-SA5B-SB-3.5 SL-331-SA5B-SB-3.0-4.0
Surface	332	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"5% small gravel (asphalt, fill rock)"	2/10/2011	Primary	SL-332-SA5B-SS-0.0-0.5
Subsurface	332	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	7	"asphalt debris" at 1.0 ft "trace concrete debris" from 1.8 to 2.4 ft "asphalt" from 2.4' to 2.6' bgs and from 3.75 to 5 ft "asphalt debris on outside of core" from 5.6 to 6.1 ft	2/16/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-332-SA5B-SB-4.5 SL-332-SA5B-SB-4.0-5.0
Surface	333	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	None indicated	2/10/2011	Primary	SL-333-SA5B-SS-0.0-0.5MS
Subsurface	333	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	5	"asphalt" from surface to 3" bgs and 2.1 to 2.2 ft "trace asphalt throughout" from 3' inches to 10 ft and 2.2 to 2.5 ft	2/16/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-333-SA5B-SB-4.5 SL-333-SA5B-SB-4.0-5.0
Surface	334	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"5% gravel (large fill rock, asphalt)"	2/10/2011	Primary	SL-334-SA5B-SS-0.0-0.5
Subsurface	334	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	1.0	"trace asphalt" from 0 to 1 ft	No sample collected Refusal at 1 ft bgs 2/16/11	NA	NA
Surface	335	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	0.5	"trace rock fragments (asphalt, fill rock)"	2/10/2011	Primary	SL-335-SA5B-SS-0.0-0.5
Subsurface	335	East of Building 4010	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	3	"asphalt debris on outside of core" from 1.75 to 2.2 ft	2/16/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-335-SA5B-SB-2.5 SL-335-SA5B-SB-2.0-3.0
Subsurface	336	East of Building 4010	Location of gas hold-up tank (Dwg 303-010-M6)	5	None indicated	2/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-336-SA5B-SB-4.5 SL-336-SA5B-SB-4.0-5.0
Subsurface	337	East of Building 4010	Location of gas hold-up tank (Dwg 303-010-M6)	~4	None indicated	2/17/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-337-SA5B-SB-3.5 SL-337-SA5B-SB-3.0-4.0

Table 2-1
Samples Collected from Subarea 5B

Sample Type	EPA Location ID	EPA Location Description	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	338	Northeast of Building 4010 footprint (SNAP 2 Experimental Reactor Building)	Process and past facility operation history described in HSA Tech Memo; location of gas hold-up tank (Dwg 303-010-M6)	~8	"fill: silty sand" & "trace asphalt" from 3 inches to 2.3 ft "fill: sandy silt with gravel" from 2.3 to 3.5 ft "concrete (85%) with silt (15%)" from 3.5 to 4.5 ft no recovery from 4.5 to 5 ft "concrete with silt" from 5 to 5.3 ft "fill: sandy silt with trace pea-sized gravel" from 5.3 to 6 ft "asphalt debris" at 6 ft "fill: well graded sand" & "trace concrete debris" from 6 ft to 7.75 ft	9/13/2011	GRO Primary & Secondary	SL-338-SA5B-SB-7.5 SL-338-SA5B-SB-7.0-8.0
Subsurface	339	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"fill: silty sand" to 2.5 ft "fill: poorly graded sand with silt" from 2.5 to 3.2 ft "fill: clayey sand" from 3.2 to 6.5 ft "fill: silty clay" from 6.5 to 8 ft "concrete debris 2" thick" at 8 ft "fill: clayey sand" from 8.1 to 10 ft	9/14/2011	GRO Primary & Secondary	SL-339-SA5B-SB-9.5 SL-339-SA5B-SB-9.0-10.0
Subsurface	340	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"fill: silty sand w/ clay" to 3.1 ft "concrete debris" at 1.5 ft & 2.4 ft "fill: clayey sand with silt & some concrete debris" from 3.1to 6.7 ft "fill: silty clay" from 6.8 to 7.7 ft "fill: sandy clay" & "trace concrete" from 7.7 to 10ft	9/14/2011	GRO Primary & Secondary	SL-340-SA5B-SB-9.5 SL-340-SA5B-SB-9.0-10.0
Subsurface	341	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"fill: silty sand with gravel (fill rock), trace concrete and asphalt to 3.1 ft "trace pea gravel at 2.5 ft "medium gravel at 2.9 ft "fill: clayey sand with gravel" from 3.1 to 7 ft trace concrete debris @ 3.7 & 6 ft "fill: sandy clay with silt & gravel" from 7 ft to 10 ft	9/13/2011	GRO Primary & Secondary GRO Primary & Secondary	SL-341-SA5B-SB-4.5 SL-341-SA5B-SB-4.0-5.0 SL-341-SA5B-SB-9.5 SL-341-SA5B-SB-9.0-10.0
Subsurface	342	Southeast of Building 4012 footprint (SNAP Critical Test Facility)	Past facility operation history in HSA Tech Memo; location of former Building 4010 septic tank and leach field	10	"asphalt debris" at 5 ft ~ 2" thick "fill: silty sand with gravel and asphalt" to 2.7 ft "fill: clayey sand with gravel" from 2.7 to 6.8 ft "red crushed concrete" at 4 ft "asphalt debris 2 inches thick" at 4.7 ft "fill: sandy clay with silt" from 6.8 to 10 ft "concrete debris" at 8 ft "asphalt debris" at 9.1 ft	9/13/2011	GRO Primary & Secondary GRO Primary & Secondary	SL-342-SA5B-SB-4.5 SL-342-SA5B-SB-4.0-5.0 SL-342-SA5B-SB-9.5 SL-342-SA5B-SB-9.0-10.0

Notes:

AST - abovegound storage tank
bgs - below ground surface
D&D - decontamination and decommissioning
HSA - Historical Site Assessment
IM - impoundment
MTMM - medium toned mounded material
NA - not applicable
OS - open storage
SNAP - Systems for Nuclear Auxiliary Program
SS - site-specific
SSFL - Santa Susana Field Laboratory
WDA - waste disposal area

Table 2-2. Sample Locations in Subarea 5B Associated with Building 4010 Area

Original Location ID	Samples Proposed for Collection	Sample Collected	Date Collected	New Location ID	Samples Collected	Date Collected
1	Surface & Subsurface	Surface	12/9/2010	328	Subsurface only	2/9/2011
2	Surface & Subsurface	Surface	12/9/2010	333	Subsurface only	2/16/2011
3	Surface & Subsurface	Surface	12/9/2010	331	Subsurface only	2/17/2011
4	Surface & Subsurface	Surface	12/9/2010	322	Subsurface only	2/17/2011
5	Surface & Subsurface	Surface	12/9/2010	323	Subsurface only	2/15/2011
6	Surface & Subsurface	Surface Subsurface	12/9/2010 (surface) 12/21/2010 (subsurface)	320	Location excluded from chemical sampling	
7	Surface & Subsurface	Surface	12/9/2010	325	Location excluded from chemical sampling	
8	Surface & Subsurface	Surface	12/10/2010	324	Subsurface only	2/14/2011
9	Surface & Subsurface	Surface	12/10/2010	318	Location excluded from chemical sampling	
10	Surface & Subsurface	Surface	12/9/2010	317	Location excluded from chemical sampling	
11	Surface & Subsurface	Surface	12/9/2010	315	Subsurface only	2/10/2011
12	Surface & Subsurface	Surface	12/9/2010	327	Subsurface only	2/15/2011
13	Surface & Subsurface	Surface	12/9/2010	321	Subsurface only	2/17/2011
19	Subsurface	Subsurface	1/19/2011	313	Subsurface only	2/8/2011
20	Surface & Subsurface	Surface	12/9/2010	314	Subsurface only	2/8/2011
231	Surface & Subsurface	Surface	12/9/2010	334	Refusal	--
291	Surface & Subsurface	Surface	12/9/2010	326	Subsurface only	2/10/2011
292	Surface & Subsurface	Surface	12/9/2010	319	Subsurface only	2/10/2011
306	Surface & Subsurface	Surface	12/9/2010	316	Subsurface only	2/9/2001
309	Surface & Subsurface	Surface	12/14/2010	335	Subsurface only	2/16/2011
310	Surface & Subsurface	Surface	12/14/2010	332	Subsurface only	2/16/2011
311	Surface & Subsurface	Surface	12/14/2010	330	Subsurface only	2/15/2011
312	Surface & Subsurface	Surface	12/14/2010	329	Subsurface only	2/15/2011

Several subsurface locations were not accessible by the Geoprobe rig and these borings were advanced using a hand auger. Each location was augered to the target depth of 5 feet bgs. Each foot of soil augered was retrieved to the surface, placed in plastic bags, and screened using the Micro R, pancake, and PID. All borings were

sampled by CDM for chemical analyses at approximately 4 to 5 feet bgs, or in some cases, at a shallower depth (see Table 2-1). The EnCore® Samplers were filled first from the soil placed in the plastic bag; the jars were then filled using a decontaminated stainless steel trowel. This process was repeated at those locations where a deeper sample (i.e., target depth of 9 to 10 feet bgs) could also be collected. Because sampling using a hand auger was not addressed in the FSAP Addendum for Subarea 5B, this sampling method reflects a variance on the FSAP (see Section 2.7.1).

After all samples were collected from each boring and hand auger hole, the soil cuttings were used to backfill the hole and the hole topped off with bentonite chips. At locations in asphalt, asphalt patch material was applied on top of the bentonite.

2.3 Sample Handling

All soil samples collected were transferred by the HGL field sampler to CDM's Field Team Leader (FTL). The FTL ensured that the sample labels were legible and completed correctly. Any discrepancies were discussed with the field samplers and corrections to the sample labels were made as needed. All sample labels were covered with clear tape, the sleeves and jars placed back into their plastic baggie, and refrigerated.

All sampling information was placed onto one or more chain of custody (COC) forms. Each sampler reviewed the COC and any discrepancies were corrected by the FTL. Each completed COC was signed by the samplers and the FTL as the individual responsible for release of the samples to the courier. All samples were packed into coolers in accordance with Section 6.4 of the *Work Plan/Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory* (CDM 2010).

2.4 Field Quality Control Procedures

Quality control (QC) samples collected in the field included field duplicates, matrix spike (MS)/matrix spike duplicate (MSD) samples, equipment rinsate blanks, and field blanks. Trip blanks filled with laboratory analyte-free water were sent to the site from the laboratory and submitted for analysis with any samples to be analyzed for VOCs/1,4-dioxane, and/or TPH-GRO.

2.4.1 Field Duplicates and MS/MSD Samples

Both field duplicates and MS/MSD samples were to be collected at a frequency of one per 20 "parent" soil samples collected, thus both the duplicate and MS/MSD samples were collected from the same location. Each duplicate sample was submitted to the laboratory as separate (and blind) from the parent sample. The MS/MSD samples are additional volume of the parent samples collected in triple volume for the DPT subsurface samples; a double volume of soil was sufficient for the surface and hand-augered MS/MSD samples.

Eleven duplicate/MS/MSD samples were collected in association with the surface samples and analyzed for the primary analytes only. For the subsurface samples, 10 duplicate samples/MS/MSD samples were collected for the primary analyses and VOCs/1,4 dioxane. Five of these 10 duplicate/MS/MSD samples were also analyzed for the secondary analytes including TPH-GRO.

2.4.2 Equipment Rinsate Blank Samples

Equipment rinsate blank samples were to be prepared and submitted for chemical analysis at a minimum frequency of 1 per 20 parent soil samples collected for each sampling technique and whenever there were changes in the sample collection procedures, sampling decontamination procedures, or sampling equipment.

Nine equipment blank rinsate samples were collected in association with the surface sampling and analyzed for the primary analytes only. Fifteen equipment rinsate blank samples were collected in association with the subsurface sampling. Twelve of these blanks were analyzed for the primary analytes; 5 of these 12 equipment rinsate blanks were also analyzed for VOCs/1,4-dioxane and 2 these 5 blanks were also analyzed for the secondary analytes. Three other equipment rinsate blanks were analyzed for the secondary analytes only.

2.4.3 Field Blank Samples

Field blanks were collected once for each lot number of American Society for Testing and Materials (ASTM) water that HGL uses for decontamination. One field blank sample was collected in conjunction with soil sampling in Subarea 5B.

2.4.4 Decontamination of Sampling Equipment

All drilling equipment was cleaned before and after completing each boring by HGL and its drilling subcontractor. This included the sampling device and drill rods. The external surfaces of the equipment were washed with potable water and Alconox, or equivalent laboratory-grade detergent. Equipment was scrubbed until all visible dirt, grime, grease, oil, loose paint, rust flakes, etc. was removed. The equipment was then rinsed with potable water.

Hand sampling equipment used to collect the surface and drainage samples, including shovels, hand trowels, and mixing bowls, were decontaminated as follows:

- Washed with a solution of potable water and Liquinox, or equivalent laboratory-grade detergent;
- Rinsed thoroughly with potable water;
- Given a final rinse with ASTM Type II water.

If the sampling device was not used immediately after being decontaminated, it was wrapped in oil-free aluminum foil, or placed in a closed plastic, stainless steel, glass, or Teflon container.

2.5 Analytical Laboratory Methods and Procedures

2.5.1 Analytical Methods

The analytical methods for the co-located soil sampling were divided into two "suites." The primary suite includes chemical analyses to be performed on all samples:

- Metals using EPA Methods 6010B/6020, 7471A (mercury), and 7199 (chromium VI)
- Soil pH using EPA Method 9045C (pH was originally a secondary analyte under the original WP/FSAP. All Subarea 5B samples that were analyzed for secondary analytes included pH analysis)
- Fluoride using EPA Method 300.0
- SVOCs using EPA Method 8270C and PAHs using Method 8270C selective ion monitoring (SIM)
- PCBs and PCTs using EPA Method 8082
- Dioxins and furans using EPA Method 1613B
- Perchlorate using EPA Method 314.0 (and EPA Method 6850 for verification of non-detects at a rate of 10 percent of the samples submitted)

Also included as primary analytes for all surface soil samples only are:

- Pesticides using EPA Method 8081A
- Herbicides using EPA Method 8151

Locations selected for sampling for the secondary suite of analyses were based on several factors including locations with a process history of the specific chemical usage, sample sites with elevated instrument readings, soil fill, waste, or visually contaminated materials. The secondary list of analyses includes:

- Nitrates using EPA Method 300.0
- Formaldehyde using EPA Method 8315A
- TPH-GRO and TPH-EFH using EPA Method 8015B
- NDMA using EPA Method 1625C
- Energetics using EPA Method 8330A
- Cyanide using EPA Method 9012B
- Alcohols/triphenyls/glycols using EPA Method 8015B.

All shallow (i.e., target depth of 4 to 5 feet bgs) subsurface soil samples and any deeper subsurface soil samples at locations where both the primary and secondary suites were to be sampled, were also analyzed for:

- EPA Method 8260B for VOCs and
- EPA Method 8260B SIM for 1,4-dioxane

These analyses were also to be performed on deeper target depth samples at locations originally proposed for primary analyses only, but that exhibited elevated instrument readings, soil fill, waste, or visually contaminated materials.

2.5.2 Analytical Method Modifications

The analytical laboratory used for the Subarea 5B co-located soil sampling effort was Lancaster Laboratories, Inc. (LLI) of Lancaster, Pennsylvania. LLI was selected (out of five laboratories that submitted proposals) based on their proposed method detection limits. Selection of LLI as the co-located soil analytical laboratory was discussed with the community on October 10, 2010.

The analytical methods identified for the co-located soil sampling were selected to be consistent with the methods used for the RFI. These analytical methods are presented in the Quality Assurance Project Plan (QAPP), Santa Susanna Field Laboratory RFI, Surficial Media Operable Unit (MEC^X 2009) (RFI QAPP) and are listed in Table 2-3. For the Subarea 5B sampling, CDM also evaluated the RFI QAPP detection limits relative to risk-based soil criteria. There were several instances where risk-based soil values were lower than the RFI QAPP limits. To determine whether the analytical method detection limit could be lowered, method modifications were discussed with DTSC and LLI chemists at the time of their implementation. The ability of the laboratory to achieve project reporting limits (RLs) and QC criteria using these method modifications remains under evaluation by the project chemists. Table 2-3 also identifies methods that have been modified in an effort to lower respective detection and RLs.

Table 2-3 Analytical Methods and Method Modifications for Soil Chemistry

Parameter Group	Analytical Method	Method Modified?
VOCs	EPA 8260B	No
1,4-Dioxane	EPA 8260B SIM	No
Primary Analytes		
Select SVOCs	EPA 8270C SIM	No
SVOCs	EPA 8270C	No
Metals (including Mercury)	EPA 6010B/6020/7471A	No
Chromium VI	EPA 7199	No
Fluoride	EPA 300.0	No
Perchlorate[1]	EPA 6850	No
Perchlorate	EPA 314.0	No
PCBs/PCTs	EPA 8082	Yes
Pesticides	EPA 8081A	Yes
Herbicides	EPA 8151	Yes
Dioxins/Furans	EPA 1613B	No

Table 2-3 Analytical Methods and Method Modifications for Soil Chemistry

Parameter Group	Analytical Method	Method Modified?
Secondary Analytes		
Alcohols	EPA 8015B	Yes
Terphenyls	EPA 8015B	Yes
Glycols	EPA 8015B	Yes
TPH (GRO and EFH)	EPA 8015B	Yes
Formaldehyde	EPA 8315A	Yes
n-Nitrosodimethylamine[2]	EPA 1625C	No
Energetics	EPA 8330A	Yes
Nitrate	EPA 300.0	No
Cyanide	EPA 9012B	No
pH	EPA 9045C	No

[1] Perchlorate by Method EPA 6850 was analyzed on 10 percent of samples analyzed by Method EPA 314.0
[2] n-Nitrosodimethylamine was analyzed by both Methods 8270C and 8270C SIM

The method modifications primarily involved increasing the prescribed sample volume (soil mass extracted) and concentrating the resulting extract to a smaller final volume, as follows:

- Method 8082 (PCBs and PCTs) – 60 grams of sample prepared and concentrated 5-fold to a final volume of 2 milliliters (mL)
- Method 8081A (Pesticides) – 60 grams of sample prepared and taken to a final volume of 4 mL (due to extract cleanup techniques)
- Method 8151 (Herbicides) – 60 grams of sample prepared and taken to a final volume of 2 mL
- Method 8330A (Energetics) – 5 grams of sample prepared in 10 mL of solvent
- Method 8315A (Formaldehyde) – 20 grams of sample used to prepare the leachate
- Method 8015B (TPH-Extractable Fuel Hydrocarbons) – 60 grams of sample prepared and taken to a final volume of 1 mL
- Method 8015B (Alcohols) – 10 grams of sample prepared and taken to a final volume of 5 mL
- Method 8015B (Glycols) – 10 grams of sample prepared and taken to a final volume of 5 mL
- Method 8015B (Terphenyls) – 60 grams of sample prepared and the extract concentrated to a final volume of 5 ml instead of 10 mL

For samples analyzed for glycols, an additional method modification was used. The normal method prescribes water extraction of the soils followed by concentration and then analysis by direct injection of the extract. The extraction procedure was altered by using acetone as the extraction solvent followed by concentration and then direct

injection into the gas chromatograph. This modification was developed as a response to observed continuing calibration exceedances that could not be corrected using the standard procedure. These exceedances were due to the analytical column experiencing rapid degradation as a result of injecting water.

2.6 Data Review Processes

Data produced by LLI were subject to multiple review steps to coincide with the start of distinct tasks. These steps were performed in a timely manner to ensure appropriate feedback and correction of errors. These steps included:

- Cross-reference check of sample COC documents against the laboratory acknowledgement of sample receipt form. The laboratory acknowledgement of sample receipt is typically transmitted to the data manager via e-mail 2 to 3 days after sample receipt and login and includes a summary of the requested analyses to be performed per sample. Sample log-in errors are identified and corrected at this step.

- Tracking of sample collection, receipt, and laboratory sample delivery group (SDG) numbers on a sample tracking spreadsheet. This spreadsheet also includes field QC sample information, sample location coordinates, and required laboratory deliverables including reports, electronic data deliverable, raw data, and the status of validation.

Upon receipt of the laboratory report (delivered via e-mail), a preliminary review of the data is performed. This review consists of:

- Reconciliation of the reported analyses against the analyses that were requested on the COCs.

- Review of the laboratory case narratives. The case narrative identifies and explains quality issues encountered during the analysis of the samples. Quality issues may include missed holding times, poor spike recoveries in matrix or batch-specific QC samples, instrument calibration exceedences, and blank contamination. The laboratory normally consults with the CDM project chemists on these issues and receives instruction on how to proceed before reporting the sample results.

- Review of the laboratory-specific QC data. These data are provided by the laboratory in summary form. Any unanticipated deviations from the project or method-specific criteria are reconciled with the laboratory at this stage.

2.7 Deviations from the WP/FSAP

2.7.1 Field Sampling

As mentioned in Section 2.2, sampling using hand augers was not addressed in the Master WP/FSAP or FSAP Addendum for Subarea 5B. The planned approach for subsurface sample collection was to obtain soil material from the soil core from within the acetate sleeve produced by the DPT rig. Samples for VOC and semivolatile analyses were to be collected directly from the core with minimal disturbance of the core to reduce the loss of volatile and semivolatile compounds. The process of hand augering of soil and placement of the soil material into a baggie has the potential for loss of volatile and semivolatile compounds from the sample. Review of the data is ongoing to ascertain whether volatile and semivolatile results should be qualified based on the variance of sampling procedure.

2.7.2 Analytical

As noted in Section 2.5.2, some analytical methods have been modified for this project. All modifications were discussed with DTSC representatives to allow for their usage. The review of the analytical methods, the modifications, and the results indicates that the results addressed the objectives for the project for all analyses except for herbicides. A review of the herbicide results indicates that the method modifications did not achieve the lower reporting limit for some of the analytes. Data are currently under further review at it is likely that reporting limits may be elevated for some analytes.

N

Legend

- All_Locations
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5B Sample Locations North

0 25 50 100 150 200 Feet

Santa Susana Field Laboratory
Ventura County, California
Figure 2-1

CDM Smith

Z:\gis\Public\Santa_Susana\MXD\SSFL_5B_Sampling_Locations_20120103_North.mxd 1/3/2012

N

Legend

- All_Locations
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5B Sample Locations South

0 25 50 100 150 200 Feet

Santa Susana Field Laboratory
Ventura County, California
Figure 2-2

CDM Smith

Z:\gis\Public\Santa_Susana\MXD\SSFL_5B_Sampling_Locations_09292011_South.mxd 1/3/2012

Section 3
Area IV Subarea 5B Soil Sampling Results

Because this TM only provides a presentation of the analytical results, data in this section are presented in a summary fashion. Table 3-1 provides a summary of the Subarea 5B surface and drainage soil data. The table shows the chemicals analyzed for, the frequency at which they were detected, the minimum and maximum detected concentrations, the range of observed detection limits and RLs, and the location where the maximum concentration of each analyte was observed. When screening criteria are developed to assess where contamination exists above the applicable criteria, the Subarea 5B data will be combined with RFI data to develop a better understanding of the extent of surface soil contamination at Subarea 5B.

Table 3-2 provides the same information for subsurface soil data. The table also indicates at what depth the maximum concentration of each analyte was observed. Table 3-3 provides a summary of the Subarea 5B data for the combined surface and subsurface datasets.

Appendix A provides tables for all validated data by analytical method and sample location. Appendix B provides the summary analytical data reports as received from LLI. Appendix C presents the data usability and assessment report (DUAR) along with all validation reports. Appendix D is the master database of all sample results including the data validation "flags" (qualifiers).

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Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Inorganic	Nitrate	14797-55-8	10 / 17	0.98 J	24.0	0.83 - 1	1.6 - 1.9	mg/kg	SL-331-SA5B	0 - 0.5
Inorganic	Fluoride	16984-48-8	194 / 214	0.86 J	7.1 J	0.82 - 1.1	1 - 1.4	mg/kg	SL-139-SA5B	0 - 0.5
Inorganic	Cyanide	57-12-5	0 / 17	-	-	0.18 - 0.22	0.51 - 0.62	mg/kg		
Inorganic	Aluminum	7429-90-5	214 / 214	2770	27400	5.03 - 6.83	20 - 27.2	mg/kg	SL-103-SA5B	0 - 0.5
Inorganic	Iron	7439-89-6	214 / 214	4530	67300 J	4.71 - 28.7	20 - 122	mg/kg	SL-255-SA5B	0 - 0.5
Inorganic	Lead	7439-92-1	214 / 214	1.71 J	101 J	0.0104 - 0.0563	0.2 - 1.08	mg/kg	SL-178-SA5B	0 - 0.5
Inorganic	Lithium	7439-93-2	214 / 214	3.2	44.6	0.22 - 0.3	2 - 2.7	mg/kg	SL-162-SA5B	0 - 0.5
Inorganic	Magnesium	7439-95-4	214 / 214	800 J	8970	2.54 - 3.45	10 - 13.6	mg/kg	SL-103-SA5B	0 - 0.5
Inorganic	Manganese	7439-96-5	214 / 214	85.8	547	0.078 - 0.106	0.5 - 0.679	mg/kg	SL-101-SA5B	0 - 0.5
Inorganic	Mercury	7439-97-6	163 / 214	0.0033 J	23.6	0.0028 - 0.165	0.0969 - 5.74	mg/kg	SL-212-SA5B	0 - 0.5
Inorganic	Molybdenum	7439-98-7	214 / 214	0.199	15.9	0.05 - 0.0695	0.0999 - 0.139	mg/kg	SL-102-SA5B	0 - 0.5
Inorganic	Nickel	7440-02-0	214 / 214	4.86 J	48.8	0.0999 - 0.139	0.4 - 0.556	mg/kg	SL-219-SA5B	0 - 0.5
Inorganic	Potassium	7440-09-7	214 / 214	452	6160	18 - 24.4	50 - 67.9	mg/kg	SL-092-SA5B	0 - 0.5
Inorganic	Silver	7440-22-4	212 / 214	0.0144 J	63.8 J	0.012 - 0.0167	0.0999 - 0.139	mg/kg	SL-161-SA5B	0 - 0.5
Inorganic	Sodium	7440-23-5	214 / 214	49.7 J	1810	37.3 - 50.6	100 - 136	mg/kg	SL-323-SA5B	0 - 0.5
Inorganic	Strontium	7440-24-6	214 / 214	12.9	270 J	0.062 - 0.0842	0.5 - 0.679	mg/kg	SL-008-SA5B	0 - 0.5
Inorganic	Thallium	7440-28-0	214 / 214	0.0604 J	0.538	0.03 - 0.0417	0.0999 - 0.139	mg/kg	SL-103-SA5B	0 - 0.5
Inorganic	Tin	7440-31-5	7 / 214	1.61 J	2.50 J	1 - 1.36	10 - 13.6	mg/kg	SL-101-SA5B	0 - 0.5
Inorganic	Titanium	7440-32-6	214 / 214	172 J	1690	0.378 - 2.08	0.995 - 5.48	mg/kg	SL-103-SA5B	0 - 0.5
Inorganic	Antimony	7440-36-0	117 / 214	0.0659 J	2.07 J	0.06 - 0.0834	0.2 - 0.278	mg/kg	SL-306-SA5B	0 - 0.5
Inorganic	Arsenic	7440-38-2	214 / 214	1.38 J	25.3 J	0.06 - 0.0881	0.4 - 0.556	mg/kg	SL-264-SA5B	0 - 0.5
Inorganic	Beryllium	7440-41-7	214 / 214	0.156	1.03 J	0.016 - 0.0223	0.0999 - 0.139	mg/kg	SL-178-SA5B SL-129-SA5B	0 - 0.5 0 0.5
Inorganic	Barium	7440-39-3	214 / 214	20.6 J	413 J	0.108 - 0.306	0.4 - 1.13	mg/kg	SL-314-SA5B	0 - 0.5
Inorganic	Boron	7440-42-8	205 / 214	1.33 J	16.9	0.89 - 1.21	5 - 6.79	mg/kg	SL-217-SA5B	0 - 0.5
Inorganic	Cadmium	7440-43-9	212 / 214	0.0683 J	4.35	0.036 - 0.0501	0.0999 - 0.139	mg/kg	SL-156-SA5B	0 - 0.5
Inorganic	Chromium	7440-47-3	214 / 214	7.34 J	63.3 J	0.12 - 0.167	0.4 - 0.556	mg/kg	SL-138-SA5B	0 - 0.5
Inorganic	Cobalt	7440-48-4	214 / 214	2.34 J	33.3 J	0.02 - 0.0278	0.0999 - 0.139	mg/kg	SL-198-SA5B	0 - 0.5
Inorganic	Copper	7440-50-8	214 / 214	3.3 J	352 J	0.066 - 0.179	0.4 - 1.08	mg/kg	SL-285-SA5B	0 - 0.5
Inorganic	Vanadium	7440-62-2	214 / 214	15.3 J	93.5	0.022 - 0.0306	0.0999 - 0.139	mg/kg	SL-091-SA5B	0 - 0.5
Inorganic	Zinc	7440-66-6	214 / 214	11.8	929	0.56 - 7.38	3 - 39.6	mg/kg	SL-225-SA5B	0 - 0.5
Inorganic	Zirconium	7440-67-7	182 / 214	0.899 J	6.16	0.84 - 1.14	5 - 6.79	mg/kg	SL-085-SA5B	0 - 0.5
Inorganic	Calcium	7440-70-2	214 / 214	1920	79500 J	6.13 - 37.7	20 - 123	mg/kg	SL-299-SA5B	0 - 0.5
Inorganic	Phosphorus	7723-14-0	214 / 214	242 J	1270	0.56 - 0.76	10 - 13.6	mg/kg	SL-335-SA5B	0 - 0.5
Inorganic	Selenium	7782-49-2	211 / 214	0.0577 J	7.48	0.04 - 0.0556	0.4 - 0.556	mg/kg	SL-335-SA5B	0 - 0.5
Inorganic	Chromium VI	18540-29-9	141 / 214	0.23 J	3.4	0.21 - 0.28	1 - 1.4	mg/kg	SL-161-SA5B	0 - 0.5
Inorganic	Perchlorate	14797-73-0	4 / 214	11.6 J	21.3 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-009-SA5B	0 - 0.5
Inorganic	Perchlorate	14797-73-0	0 / 31	-	-	2.1 - 2.9	5 - 7	ug/kg		
Misc. Organics	Ethanol	64-17-5	0 / 17	-	-	100 - 120	520 - 620	ug/kg		
Misc. Organics	Methanol	67-56-1	2 / 17	190 J	520 J	100 - 120	520 - 620	ug/kg	SL-114-SA5B	0 - 0.5
Misc. Organics	2-Propanol	67-63-0	1 / 17	140 J	140 J	100 - 120	520 - 620	ug/kg	SL-114-SA5B	0 - 0.5
Misc. Organics	Ethylene Glycol	107-21-1	0 / 16	-	-	5.2 - 17	13 - 17	mg/kg		
Misc. Organics	Diethylene Glycol	111-46-6	0 / 16	-	-	5.2 - 12	13 - 16	mg/kg		
Misc. Organics	Propylene glycol	57-55-6	0 / 16	-	-	5.2 - 6.2	13 - 16	mg/kg		
Misc. Organics	o-Terphenyl	84-15-1	0 / 17	-	-	1.6 - 1.9	3.6 - 4.4	mg/kg		
Misc. Organics	m-Terphenyl	92-06-8	0 / 17	-	-	1.6 - 1.9	3.6 - 4.4	mg/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Misc. Organics	p-Terphenyl	92-94-4	0 / 17	-	-	1.6 - 1.9	3.6 - 4.4	mg/kg		
Misc. Organics	Formaldehyde	50-00-0	3 / 17	690 J	3600 J	630 - 750	1600 - 1900	ug/kg	SL-022-SA5B	0 - 0.5
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	RDX	121-82-4	0 / 17	-	-	52 - 78	130 - 190	ug/kg		
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 17	-	-	63 - 94	130 - 190	ug/kg		
Misc. Organics	HMX	2691-41-0	0 / 17	-	-	100 - 190	310 - 470	ug/kg		
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	Tetryl	479-45-8	0 / 17	-	-	64 - 95	130 - 190	ug/kg		
Misc. Organics	Nitroglycerin	55-63-0	0 / 17	-	-	830 - 1200	2500 - 3700	ug/kg		
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 17	-	-	83 - 120	250 - 370	ug/kg		
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	0 / 17	-	-	83 - 120	250 - 370	ug/kg		
Misc. Organics	PETN	78-11-5	0 / 17	-	-	830 - 1200	2500 - 3700	ug/kg		
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 17	-	-	83 - 120	130 - 190	ug/kg		
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 17	-	-	100 - 160	130 - 190	ug/kg		
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 17	-	-	83 - 120	130 - 190	ug/kg		
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	Nitrobenzene	98-95-3	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
Misc. Organics	m-Dinitrobenzene	99-65-0	0 / 17	-	-	42 - 62	130 - 190	ug/kg		
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	132 / 214	0.0142 J	5.27	0.008 - 0.506	1.03 - 1.4	ng/kg	SL-262-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	185 / 214	0.0338 J	186	0.0114 - 0.824	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	OCDD	3268-87-9	213 / 214	5.15 J	13000 J	0.0274 - 1.47	10.3 - 14	ng/kg	SL-008-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	208 / 214	1.86 J	10900 J	0.0262 - 1.2	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	193 / 214	1.04 J	4090	0.0195 - 0.588	10.3 - 14	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	164 / 214	0.0494 J	85.8	0.0138 - 0.763	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	141 / 214	0.0228 J	34.7	0.0118 - 1.06	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	123 / 214	0.0280 J	31.2	0.00998 - 0.448	1.03 - 1.4	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	139 / 214	0.0935 J	98.9	0.0102 - 0.702	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	116 / 214	0.111 J	274	0.00668 - 0.979	5.14 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	137 / 214	0.0523 J	35.0	0.00637 - 0.981	5.14 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	147 / 214	0.0953 J	86.7	0.00894 - 0.877	5.14 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	193 / 214	0.0782 J	472	0.0137 - 0.77	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	133 / 214	0.0982 J	78.8	0.00689 - 1	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	171 / 214	0.346 J	1280	0.00894 - 0.5	5.14 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	136 / 214	0.0848 J	189	0.0116 - 1.02	5.14 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	116 / 214	0.0995 J	44.1	0.00802 - 1.23	5.14 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	155 / 214	0.36 J	5300	0.34 - 360	1.7 - 1800	ug/kg	SL-162-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1254	11097-69-1	147 / 214	0.40 J	2900	0.34 - 360	1.7 - 1800	ug/kg	SL-176-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1268	11100-14-4	0 / 214	-	-	0.34 - 360	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 214	-	-	0.34 - 540	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	122 / 214	1.1 J	650 J	1 - 1100	3.4 - 3600	ug/kg	SL-138-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 214	-	-	0.34 - 560	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	0 / 214	-	-	1 - 1100	3.4 - 3600	ug/kg		
PCBs and Dioxins	Aroclor 1248	12672-29-6	29 / 214	0.73 J	18000	0.34 - 360	1.7 - 1800	ug/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 214	-	-	0.34 - 360	1.7 - 1800	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 214	-	-	0.34 - 360	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 214	-	-	0.34 - 540	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 214	-	-	1 - 1100	3.4 - 3600	ug/kg		
Pesticides	Dichlorprop	120-36-5	10 / 214	0.97 J	47 J	0.82 - 17	1.7 - 36	ug/kg	SL-124-SA5B	0 - 0.5
Pesticides	Dicamba	1918-00-9	27 / 214	0.42 J	3.1	0.41 - 8.6	1.2 - 26	ug/kg	SL-117-SA5B	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 214	-	-	4.5 - 94	9.2 - 190	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	3 / 214	0.88 J	1.2 J	0.32 - 17	2.5 - 51	ug/kg	SL-208-SA5B	0 - 0.5
Pesticides	MCPP	93-65-2	49 / 214	81 J	810	77 - 1800	180 - 5400	ug/kg	SL-228-SA5B	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	11 / 214	0.11 J	0.74 J	0.077 - 1.6	0.17 - 3.6	ug/kg	SL-219-SA5B	0 - 0.5
Pesticides	2,4,5-T	93-76-5	20 / 214	0.088 J	1.8	0.084 - 1.8	0.17 - 3.6	ug/kg	SL-086-SA5B	0 - 0.5
Pesticides	MCPA	94-74-6	83 / 214	87 J	3200 J	78 - 1600	260 - 5400	ug/kg	SL-128-SA5B	0 - 0.5
Pesticides	2,4-D	94-75-7	5 / 214	1.4 J	3.7 J	1.2 - 26	3.7 - 77	ug/kg	SL-203-SA5B	0 - 0.5
Pesticides	2,4 DB	94-82-6	73 / 214	0.70 J	24 J	0.64 - 60	1.7 - 60	ug/kg	SL-219-SA5B	0 - 0.5
Pesticides	Toxaphene	8001-35-2	0 / 214	-	-	2.3 - 480	6.8 - 1400	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	8 / 214	0.040 J	0.27 J	0.035 - 780	0.17 - 780	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	3 / 214	0.20 J	1.8 J	0.068 - 14	0.35 - 74	ug/kg	SL-129-SA5B	0 - 0.5
Pesticides	Mirex	2385-85-5	9 / 214	0.092 J	9.8 J	0.068 - 24	0.35 - 74	ug/kg	SL-004-SA5B	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 214	0.084 J	0.084 J	0.068 - 14	0.17 - 36	ug/kg	SL-196-SA5B	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	12 / 214	0.043 J	0.46 J	0.035 - 7.4	0.17 - 36	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Beta-BHC	319-85-7	31 / 214	0.065 J	2.1	0.062 - 13	0.17 - 36	ug/kg	SL-178-SA5B	0 - 0.5
Pesticides	Delta-BHC	319-86-8	19 / 214	0.042 J	0.43 J	0.037 - 7.8	0.17 - 36	ug/kg	SL-187-SA5B	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	1 / 214	0.19 J	0.19 J	0.068 - 14	0.35 - 74	ug/kg	SL-205-SA5B	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	33 / 214	0.097 J	340	0.068 - 230	0.35 - 230	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	4 / 214	0.099 J	0.34 J	0.068 - 14	0.35 - 74	ug/kg	SL-324-SA5B SL-331-SA5B	0 - 0.5 0 0.5
Pesticides	Chlordane	57-74-9	6 / 214	1.2 J	660	0.82 - 170	3.5 - 740	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Gamma-BHC (Lindane)	58-89-9	8 / 214	0.036 J	0.87 J	0.035 - 12	0.17 - 36	ug/kg	SL-135-SA5B	0 - 0.5
Pesticides	Dieldrin	60-57-1	6 / 214	0.086 J	4.3	0.068 - 99	0.35 - 99	ug/kg	SL-254-SA5B	0 - 0.5
Pesticides	Endrin	72-20-8	2 / 214	0.10 J	0.53	0.068 - 14	0.35 - 74	ug/kg	SL-091-SA5B	0 - 0.5
Pesticides	Methoxychlor	72-43-5	2 / 214	0.96 J	1.8	0.35 - 74	1.7 - 360	ug/kg	SL-324-SA5B	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	5 / 214	0.086 J	6.2	0.068 - 44	0.35 - 74	ug/kg	SL-135-SA5B	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	16 / 214	0.088 J	350	0.068 - 500	0.35 - 500	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	5 / 214	0.10 J	2.2 J	0.068 - 25	0.35 - 74	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Heptachlor	76-44-8	6 / 214	0.13 J	0.61	0.062 - 98	0.17 - 98	ug/kg	SL-330-SA5B	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 214	-	-	0.045 - 9.5	0.17 - 36	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	7 / 17	21.3 J	369	18.2 - 104	36.4 - 208	ng/kg	SL-117-SA5B	0 - 0.5
Semivolatiles	N-Nitrosodimethylamine	62-75-9	2 / 214	2.7	11	0.69 - 43	1.7 - 110	ug/kg	SL-332-SA5B	0 - 0.5
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 214	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 214	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 214	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Phenol	108-95-2	1 / 214	20 J	20 J	17 - 900	170 - 9000	ug/kg	SL-135-SA5B	0 - 0.5
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	70 / 105	19 J	76000	17 - 1900	340 - 37000	ug/kg	SL-213-SA5B	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	71 / 109	6.7 J	10000	6.2 - 650	19 - 2000	ug/kg	SL-032-SA5B	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	3 / 34	66 J	14000	17 - 900	170 - 9000	ug/kg	SL-213-SA5B	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	30 / 180	J	270	6.2 - 42	19 - 130	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Hexachlorobenzene	118-74-1	5 / 214	25 J	500	17 - 900	170 - 9000	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Anthracene	120-12-7	6 / 6	21 J	140 J	17 - 21	170 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Anthracene	120-12-7	82 / 208	0.40 J	380	0.34 - 22	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Pyrene	129-00-0	38 / 38	18 J	1600	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Pyrene	129-00-0	142 / 176	0.73 J	9300	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	3 / 32	19 J	61 J	17 - 900	170 - 9000	ug/kg	SL-330-SA5B	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	6 / 182	7.7 J	520	6.2 - 63	19 - 190	ug/kg	SL-323-SA5B	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	6 / 214	26 J	240	17 - 900	170 - 9000	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	26 / 26	18 J	5600	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	133 / 188	0.75 J	53000	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	19 / 19	20 J	5100	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	101 / 195	0.78 J	49000	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	25 / 25	17 J	3300	17 - 90	170 - 900	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	163 / 189	0.80 J	20000	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	31 / 31	18 J	1200	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	141 / 183	0.82 J	6800	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	16 / 16	19 J	1000	17 - 23	170 - 230	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	122 / 198	0.73 J	4900	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Acenaphthylene	208-96-8	1 / 1	41 J	41 J	21 - 21	210 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Acenaphthylene	208-96-8	33 / 213	0.38 J	160	0.34 - 22	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Chrysene	218-01-9	25 / 25	18 J	1900 J	17 - 220	170 - 2200	ug/kg	SL-214-SA5B	0 - 0.5
Semivolatiles	Chrysene	218-01-9	172 / 189	0.41 J	3700	0.34 - 120	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	27 / 27	18 J	2500	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	140 / 187	0.72 J	17000	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 214	-	-	340 - 36000	1000 - 110000	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	5 / 5	19 J	510	18 - 23	180 - 230	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	72 / 209	0.73 J	1600	0.69 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	20 / 20	20 J	880	17 - 90	170 - 900	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	133 / 194	0.75 J	1500	0.69 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	1 / 214	490 J	490 J	170 - 9000	510 - 27000	ug/kg	SL-135-SA5B	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Isophorone	78-59-1	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	19 / 214	0.76 J	260	0.69 - 43	1.7 - 110	ug/kg	SL-203-SA5B	0 - 0.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 33	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	3 / 181	7.4 J	11 J	6.2 - 35	19 - 110	ug/kg	SL-117-SA5B	0 - 0.5
Semivolatiles	Di-n-Butylphthalate	84-74-2	5 / 38	22 J	210	17 - 900	170 - 9000	ug/kg	SL-089-SA5B	0 - 0.5
Semivolatiles	Di-n-Butylphthalate	84-74-2	54 / 176	6.4 J	59 J	6.2 - 35	19 - 110	ug/kg	SL-285-SA5B	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	20 / 20	21 J	720	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	126 / 194	0.72 J	2900	0.69 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	6 / 35	21 J	99000	17 - 1800	170 - 18000	ug/kg	SL-089-SA5B	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	27 / 179	6.4 J	130 J	6.2 - 63	19 - 190	ug/kg	SL-323-SA5B	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Fluorene	86-73-7	22 / 214	0.80 J	190	0.69 - 43	1.7 - 110	ug/kg	SL-156-SA5B SL-203-SA5B	0 - 0.5 0 0.5
Semivolatiles	Carbazole	86-74-8	4 / 214	25 J	60 J	17 - 900	170 - 9000	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Pentachlorophenol	87-86-5	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	2 / 2	71 J	240	19 - 21	190 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	1-Methylnaphthalene	90-12-0	45 / 212	0.78 J	550	0.69 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Naphthalene	91-20-3	1 / 1	190 J	190 J	21 - 21	210 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Naphthalene	91-20-3	75 / 213	0.72 J	690	0.69 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2-Methylnaphthalene	91-57-6	2 / 2	67 J	290	19 - 21	190 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	2-Methylnaphthalene	91-57-6	55 / 212	0.74 J	700	0.69 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 214	-	-	100 - 5400	340 - 18000	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 214	-	-	1200 - 63000	3400 - 180000	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 214	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 214	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 214	-	-	17 - 900	170 - 9000	ug/kg		
Volatiles	GRO (C5-C12)	GROC5C12	0 / 11	-	-	0.2 - 2.6	0.9 - 13	mg/kg		
Volatiles	EFH (C15-C20)	PHCC15C20	9 / 12	0.61 J	8.3 J	0.42 - 8.5	1.3 - 25	mg/kg	SL-022-SA5B	0 - 0.5
Volatiles	EFH (C21-C30)	PHCC21C30	12 / 12	2.6	62	0.42 - 8.5	1.3 - 25	mg/kg	SL-330-SA5B	0 - 0.5
Volatiles	EFH (C30-C40)	PHCC30C40	12 / 12	9.9	250	0.42 - 8.5	1.3 - 25	mg/kg	SL-315-SA5B	0 - 0.5
Volatiles	EFH (C8-C11)	PHCC8C11	0 / 12	-	-	0.42 - 8.5	1.3 - 25	mg/kg		
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 11	-	-	0.15 - 0.22	3.8 - 5.5	ug/kg		
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 11	-	-	0.17 - 0.25	3.8 - 5.5	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 11	-	-	0.11 - 0.17	3.8 - 5.5	ug/kg		
Volatiles	Hexachlorobutadiene	87-68-3	0 / 11	-	-	0.13 - 0.19	3.8 - 5.5	ug/kg		
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 11	-	-	0.09 - 0.12	3.8 - 5.5	ug/kg		
Volatiles	Isopropyltoluene	99-87-6	0 / 11	-	-	0.1 - 0.15	3.8 - 5.5	ug/kg		
Volatiles	Ethylbenzene	100-41-4	0 / 11	-	-	0.06 - 0.08	3.8 - 5.5	ug/kg		
Volatiles	Styrene	100-42-5	0 / 11	-	-	0.1 - 0.14	3.8 - 5.5	ug/kg		
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 11	-	-	0.15 - 0.22	3.8 - 5.5	ug/kg		
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	N-Propylbenzene	103-65-1	0 / 11	-	-	0.07 - 0.1	3.8 - 5.5	ug/kg		
Volatiles	N-Butylbenzene	104-51-8	0 / 11	-	-	0.11 - 0.17	3.8 - 5.5	ug/kg		
Volatiles	4-Chlorotoluene	106-43-4	0 / 11	-	-	0.13 - 0.19	3.8 - 5.5	ug/kg		
Volatiles	1,2-Dibromoethane	106-93-4	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	1,2-Dichloroethane	107-06-2	0 / 11	-	-	0.14 - 0.21	3.8 - 5.5	ug/kg		
Volatiles	4-Methyl-2-Pentanone	108-10-1	0 / 11	-	-	0.37 - 0.54	7.6 - 11	ug/kg		
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 11	-	-	0.1 - 0.14	3.8 - 5.5	ug/kg		
Volatiles	Bromobenzene	108-86-1	0 / 11	-	-	0.12 - 0.18	3.8 - 5.5	ug/kg		
Volatiles	Toluene	108-88-3	0 / 11	-	-	0.08 - 0.11	3.8 - 5.5	ug/kg		
Volatiles	Chlorobenzene	108-90-7	0 / 11	-	-	0.1 - 0.15	3.8 - 5.5	ug/kg		
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 11	-	-	0.29 - 0.41	3.8 - 5.5	ug/kg		
Volatiles	1,4-Dioxane	123-91-1	0 / 11	-	-	4.5 - 6.6	13 - 20	ug/kg		
Volatiles	Dibromochloromethane	124-48-1	0 / 11	-	-	0.19 - 0.28	3.8 - 5.5	ug/kg		
Volatiles	Tetrachloroethene	127-18-4	0 / 11	-	-	0.19 - 0.28	3.8 - 5.5	ug/kg		
Volatiles	sec-Butylbenzene	135-98-8	0 / 11	-	-	0.06 - 0.08	3.8 - 5.5	ug/kg		
Volatiles	1,3-Dichloropropane	142-28-9	0 / 11	-	-	0.08 - 0.11	3.8 - 5.5	ug/kg		
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 11	-	-	0.18 - 0.26	3.8 - 5.5	ug/kg		
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 11	-	-	0.11 - 0.17	3.8 - 5.5	ug/kg		
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 11	-	-	0.2 - 0.29	3.8 - 5.5	ug/kg		
Volatiles	m,p-Xylene	179601-23-1	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	Carbon tetrachloride	56-23-5	0 / 11	-	-	0.13 - 0.19	3.8 - 5.5	ug/kg		
Volatiles	1,1-Dichloropropene	563-58-6	0 / 11	-	-	0.12 - 0.18	3.8 - 5.5	ug/kg		
Volatiles	2-Hexanone	591-78-6	0 / 11	-	-	1.5 - 2.2	7.6 - 11	ug/kg		
Volatiles	2,2-Dichloropropane	594-20-7	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 11	-	-	0.1 - 0.15	3.8 - 5.5	ug/kg		
Volatiles	Acetone	67-64-1	1 / 11	11	11	6.4 - 9.2	7.6 - 11	ug/kg	SL-020-SA5B	0 - 0.5
Volatiles	Chloroform	67-66-3	0 / 11	-	-	0.11 - 0.17	3.8 - 5.5	ug/kg		
Volatiles	Benzene	71-43-2	0 / 11	-	-	0.1 - 0.14	3.8 - 5.5	ug/kg		
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 11	-	-	0.19 - 0.28	3.8 - 5.5	ug/kg		
Volatiles	Bromomethane	74-83-9	0 / 11	-	-	0.24 - 0.35	3.8 - 5.5	ug/kg		
Volatiles	Chloromethane	74-87-3	0 / 11	-	-	0.31 - 0.46	3.8 - 5.5	ug/kg		
Volatiles	Dibromomethane	74-95-3	0 / 11	-	-	0.23 - 0.33	3.8 - 5.5	ug/kg		
Volatiles	Bromochloromethane	74-97-5	0 / 11	-	-	0.31 - 0.46	3.8 - 5.5	ug/kg		
Volatiles	Chloroethane	75-00-3	0 / 11	-	-	0.12 - 0.18	3.8 - 5.5	ug/kg		
Volatiles	Vinyl Chloride	75-01-4	0 / 11	-	-	0.19 - 0.28	3.8 - 5.5	ug/kg		
Volatiles	Methylene chloride	75-09-2	0 / 11	-	-	0.23 - 0.33	3.8 - 5.5	ug/kg		
Volatiles	Bromoform	75-25-2	0 / 11	-	-	0.38 - 0.55	3.8 - 5.5	ug/kg		
Volatiles	Bromodichloromethane	75-27-4	0 / 11	-	-	0.08 - 0.11	3.8 - 5.5	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Detection Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Volatiles	1,1-Dichloroethane	75-34-3	0 / 11	-	-	0.1 - 0.14	3.8 - 5.5	ug/kg		
Volatiles	1,1-Dichloroethene	75-35-4	0 / 11	-	-	0.37 - 0.54	3.8 - 5.5	ug/kg		
Volatiles	Trichlorofluoromethane	75-69-4	0 / 11	-	-	0.28 - 0.4	3.8 - 5.5	ug/kg		
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 11	-	-	0.11 - 0.17	3.8 - 5.5	ug/kg		
Volatiles	Freon 113a	75-88-7	0 / 11	-	-	0.48 - 0.69	4.8 - 6.9	ug/kg		
Volatiles	Freon 113	76-13-1	0 / 11	-	-	0.1 - 0.15	3.8 - 5.5	ug/kg		
Volatiles	1,2-Dichloropropane	78-87-5	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	2-Butanone	78-93-3	0 / 11	-	-	1.2 - 1.7	7.6 - 11	ug/kg		
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 11	-	-	0.26 - 0.37	3.8 - 5.5	ug/kg		
Volatiles	Trichloroethene	79-01-6	0 / 11	-	-	0.14 - 0.21	3.8 - 5.5	ug/kg		
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 11	-	-	0.22 - 0.32	3.8 - 5.5	ug/kg		
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 11	-	-	0.48 - 0.69	4.8 - 6.9	ug/kg		
Volatiles	1,2,3-Trichlorobenzene	87-61-6	0 / 11	-	-	0.13 - 0.19	3.8 - 5.5	ug/kg		
Volatiles	o-Xylene	95-47-6	0 / 11	-	-	0.16 - 0.23	3.8 - 5.5	ug/kg		
Volatiles	2-Chlorotoluene	95-49-8	0 / 11	-	-	0.13 - 0.19	3.8 - 5.5	ug/kg		
Volatiles	1,2,4-Trimethylbenzene	95-63-6	0 / 11	-	-	0.38 - 0.55	3.8 - 5.5	ug/kg		
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 11	-	-	0.67 - 0.97	3.8 - 5.5	ug/kg		
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 11	-	-	0.31 - 0.46	3.8 - 5.5	ug/kg		
Volatiles	tert-Butylbenzene	98-06-6	0 / 11	-	-	0.15 - 0.22	3.8 - 5.5	ug/kg		
Volatiles	Isopropylbenzene	98-82-8	0 / 11	-	-	0.06 - 0.08	3.8 - 5.5	ug/kg		

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Inorganic	Nitrate	14797-55-8	140 / 145	0.95 J	40.4	0.82 - 1.8	1.5 - 3.3	mg/kg	SL-104-SA5B	4 - 5
Inorganic	Fluoride	16984-48-8	276 / 285	0.95 J	37.1	0.82 - 1.8	1 - 2.3	mg/kg	SL-262-SA5B	4 - 5
Inorganic	Cyanide	57-12-5	0 / 145	-	-	0.18 - 0.22	0.51 - 0.61	mg/kg		
Inorganic	Aluminum	7429-90-5	285 / 285	3240	38500	5.01 - 31.7	19.9 - 126	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Iron	7439-89-6	285 / 285	5070	61000	4.69 - 29.7	19.9 - 126	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Lead	7439-92-1	285 / 285	1.12	549 J	0.0105 - 0.112	0.201 - 2.16	mg/kg	SL-323-SA5B	11 - 12
Inorganic	Lithium	7439-93-2	285 / 285	2.8	67.2	0.22 - 1.3	2 - 11.6	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Magnesium	7439-95-4	285 / 285	973	14000	2.53 - 14.7	9.95 - 57.8	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Manganese	7439-96-5	285 / 285	92.5 J	1490	0.0776 - 0.425	0.498 - 2.73	mg/kg	SL-308-SA5B	9 - 10
Inorganic	Mercury	7439-97-6	145 / 285	0.0032 J	0.883 J	0.0028 - 0.0156	0.0964 - 0.543	mg/kg	SL-030-SA5B	9 - 10
Inorganic	Molybdenum	7439-98-7	284 / 285	0.127	2.58 J	0.0503 - 0.0649	0.101 - 0.13	mg/kg	SL-032-SA5B	4 - 5
Inorganic	Nickel	7440-02-0	285 / 285	3.28	40.5	0.101 - 0.13	0.403 - 0.519	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Potassium	7440-09-7	285 / 285	542	6040 J	17.9 - 113	49.8 - 315	mg/kg	SL-297-SA5B	7 - 8
Inorganic	Silver	7440-22-4	258 / 285	0.0132 J	21.5	0.0121 - 0.0156	0.101 - 0.13	mg/kg	SL-273-SA5B	2 - 3
Inorganic	Sodium	7440-23-5	285 / 285	59.8 J	2820	37.1 - 47	99.5 - 126	mg/kg	SL-323-SA5B	4 - 5
Inorganic	Strontium	7440-24-6	285 / 285	8.87	104 J	0.0617 - 0.0782	0.498 - 0.63	mg/kg	SL-053-SA5B	1.8 - 2.8
Inorganic	Thallium	7440-28-0	285 / 285	0.0449 J	0.576	0.0302 - 0.039	0.101 - 0.13	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Tin	7440-31-5	19 / 285	1.77 J	15.8	0.995 - 1.26	9.95 - 12.6	mg/kg	SL-324-SA5B	8 - 9
Inorganic	Titanium	7440-32-6	285 / 285	245	2170	0.378 - 2.4	0.995 - 6.3	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Antimony	7440-36-0	148 / 285	0.0680 J	11.8 J	0.0604 - 0.0779	0.201 - 0.26	mg/kg	SL-323-SA5B	11 - 12
Inorganic	Arsenic	7440-38-2	285 / 285	1.51	70.5 J	0.062 - 0.104	0.403 - 0.519	mg/kg	SL-032-SA5B	4 - 5
Inorganic	Beryllium	7440-41-7	285 / 285	0.116 J	1.84	0.0161 - 0.0208	0.101 - 0.13	mg/kg	SL-304-SA5B	3 - 4
Inorganic	Barium	7440-39-3	285 / 285	22.5 J	399	0.109 - 0.351	0.403 - 1.3	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Boron	7440-42-8	165 / 285	0.999 J	16.4	0.886 - 5.61	4.98 - 31.5	mg/kg	SL-145-SA5B	4 - 5
Inorganic	Cadmium	7440-43-9	239 / 285	0.0432 J	1.12	0.0372 - 0.0519	0.101 - 0.13	mg/kg	SL-037-SA5B	3.5 - 4.5
Inorganic	Chromium	7440-47-3	285 / 285	5.33 J	62.1	0.121 - 0.156	0.403 - 0.519	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Cobalt	7440-48-4	285 / 285	1.95	20.7	0.0201 - 0.026	0.101 - 0.13	mg/kg	SL-254-SA5B	3.5 - 4.5
Inorganic	Copper	7440-50-8	285 / 285	2.68 J	37	0.0657 - 0.0857	0.398 - 0.519	mg/kg	SL-122-SA5B	2 - 3
Inorganic	Vanadium	7440-62-2	285 / 285	11.8 J	93.3 J	0.0221 - 0.0589	0.101 - 0.268	mg/kg	SL-326-SA5B	9 - 10
Inorganic	Zinc	7440-66-6	285 / 285	14.6	381	0.564 - 1.54	3.02 - 8.26	mg/kg	SL-016-SA5B	9 - 10
Inorganic	Zirconium	7440-67-7	137 / 285	0.924 J	7.49	0.836 - 1.06	4.98 - 6.3	mg/kg	SL-280-SA5B	9 - 10
Inorganic	Calcium	7440-70-2	285 / 285	1320	33700 J	6.1 - 7.73	19.9 - 25.2	mg/kg	SL-060-SA5B	4 - 5
Inorganic	Phosphorus	7723-14-0	285 / 285	67.9	2020	0.557 - 3.53	9.95 - 63	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Selenium	7782-49-2	268 / 285	0.0439 J	2.61	0.0403 - 0.0519	0.403 - 0.519	mg/kg	SL-021-SA5B	4 - 5
Inorganic	Chromium VI	18540-29-9	190 / 285	0.22 J	3.0	0.21 - 0.26	1 - 1.3	mg/kg	SL-273-SA5B	2 - 3
Inorganic	Perchlorate	14797-73-0	3 / 285	13.4 J	26.3 J	9.2 - 11.7	30.8 - 39	ug/kg	SL-070-SA5B	2.5 - 3.5
Inorganic	Perchlorate	14797-73-0	0 / 31	-	-	2.2 - 2.5	5.3 - 5.9	ug/kg		
Misc. Organics	Ethanol	64-17-5	0 / 145	-	-	100 - 120	510 - 610	ug/kg		
Misc. Organics	Methanol	67-56-1	52 / 145	120 J	1300	100 - 120	510 - 610	ug/kg	SL-308-SA5B	14 - 15

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Misc. Organics	2-Propanol	67-63-0	0 / 145	-	-	100 - 120	510 - 610	ug/kg		
Misc. Organics	Ethylene Glycol	107-21-1	0 / 145	-	-	5.1 - 14	13 - 15	mg/kg		
Misc. Organics	Diethylene Glycol	111-46-6	0 / 145	-	-	5.1 - 22	13 - 22	mg/kg		
Misc. Organics	Propylene glycol	57-55-6	0 / 145	-	-	5.1 - 8.9	13 - 15	mg/kg		
Misc. Organics	o-Terphenyl	84-15-1	0 / 145	-	-	1.5 - 1.8	3.6 - 4.3	mg/kg		
Misc. Organics	m-Terphenyl	92-06-8	0 / 145	-	-	1.5 - 1.8	3.6 - 4.3	mg/kg		
Misc. Organics	p-Terphenyl	92-94-4	0 / 145	-	-	1.5 - 1.8	3.6 - 4.3	mg/kg		
Misc. Organics	Formaldehyde	50-00-0	40 / 145	920 J	18000	620 - 6700	1500 - 17000	ug/kg	SL-308-SA5B	9 - 10
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	RDX	121-82-4	0 / 145	-	-	51 - 76	120 - 180	ug/kg		
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 145	-	-	62 - 91	120 - 180	ug/kg		
Misc. Organics	HMX	2691-41-0	0 / 145	-	-	100 - 150	310 - 450	ug/kg		
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	Tetryl	479-45-8	0 / 145	-	-	63 - 93	120 - 180	ug/kg		
Misc. Organics	Nitroglycerin	55-63-0	1 / 145	1200 J	1200 J	820 - 1200	2500 - 3600	ug/kg	SL-156-SA5B	4 - 5
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 145	-	-	82 - 120	250 - 360	ug/kg		
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	0 / 145	-	-	82 - 120	250 - 360	ug/kg		
Misc. Organics	PETN	78-11-5	0 / 145	-	-	820 - 1200	2500 - 3600	ug/kg		
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 145	-	-	82 - 120	120 - 180	ug/kg		
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 145	-	-	100 - 150	120 - 180	ug/kg		
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 145	-	-	82 - 120	120 - 180	ug/kg		
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	Nitrobenzene	98-95-3	0 / 145	-	-	41 - 60	120 - 180	ug/kg		
Misc. Organics	m-Dinitrobenzene	99-65-0	3 / 145	94 J	1100 J	41 - 580	120 - 580	ug/kg	182-SA5B SL-204-S	4 4 - 5 5
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	43 / 285	0.00833 J	1.97	0.00569 - 0.245	1.03 - 1.3	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	172 / 285	0.0186 J	35.6	0.00686 - 0.223	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	OCDD	3268-87-9	160 / 285	1.54 J	72500 J	0.0101 - 0.531	10.3 - 13	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	120 / 285	1.03 J	2540 J	0.00837 - 0.408	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	OCDF	39001-02-0	83 / 285	1.07 J	795	0.0101 - 0.23	10.3 - 13	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	72 / 285	0.0175 J	14.2	0.00675 - 0.223	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	75 / 285	0.0140 J	6.39	0.0066 - 0.223	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	84 / 285	0.00627 J	3.93	0.00483 - 0.233	1.03 - 1.3	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	55 / 285	0.0175 J	21.8	0.00748 - 0.151	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	27 / 285	0.0329 J	4.19 J	0.00273 - 0.116	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	58 / 285	0.0143 J	7.16	0.00288 - 0.116	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	38 / 285	0.0813 J	9.15	0.00435 - 0.132	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	158 / 285	0.0192 J	90.8	0.00708 - 0.24	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	30 / 285	0.0611 J	14.2	0.0048 - 0.147	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	78 / 285	0.213 J	172	0.00575 - 0.105	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	35 / 285	0.134 J	11.8	0.00525 - 0.155	5.13 - 6.49	ng/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	37 / 285	0.0805 J	2.96 J	0.00506 - 0.166	5.13 - 6.49	ng/kg	SL-021-SA5B	4 - 5
PCBs and Dioxins	Aroclor 1260	11096-82-5	56 / 285	0.43 J	58	0.35 - 18	1.7 - 93	ug/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	Aroclor 1254	11097-69-1	78 / 285	0.40 J	60 J	0.34 - 18	1.7 - 93	ug/kg	SL-323-SA5B	11 - 12
PCBs and Dioxins	Aroclor 1268	11100-14-4	0 / 285	-	-	0.34 - 18	1.7 - 93	ug/kg		
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 285	-	-	0.34 - 27	1.7 - 93	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	29 / 285	1.2 J	39	1 - 55	3.4 - 180	ug/kg	SL-273-SA5B	2 - 3
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 285	-	-	0.34 - 28	1.7 - 93	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	0 / 285	-	-	1 - 55	3.4 - 180	ug/kg		
PCBs and Dioxins	Aroclor 1248	12672-29-6	18 / 285	0.54 J	170	0.34 - 18	1.7 - 93	ug/kg	SL-088-SA5B	3 - 4
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 285	-	-	0.34 - 18	1.7 - 93	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 285	-	-	0.34 - 18	1.7 - 93	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	2 / 285	7.5 J	45 J	0.34 - 27	1.7 - 93	ug/kg	SL-087-SA5B	3 - 4
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 285	-	-	1 - 55	3.4 - 180	ug/kg		
Pesticides	Dichlorprop	120-36-5	0 / 6	-	-	0.85 - 0.96	1.8 - 2	ug/kg		
Pesticides	Dicamba	1918-00-9	0 / 6	-	-	0.43 - 0.48	1.3 - 1.4	ug/kg		
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 6	-	-	4.7 - 5.3	9.6 - 11	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	0 / 6	-	-	0.85 - 0.96	2.6 - 2.9	ug/kg		
Pesticides	MCPP	93-65-2	5 / 6	180 J	650	80 - 90	270 - 300	ug/kg	SL-298-SA5B	9 - 10
Pesticides	2,4,5-TP	93-72-1	0 / 6	-	-	0.082 - 0.19	0.19 - 0.2	ug/kg		
Pesticides	2,4,5-T	93-76-5	3 / 6	0.20	0.55	0.087 - 0.098	0.18 - 0.2	ug/kg	SL-298-SA5B	4 - 5
Pesticides	MCPA	94-74-6	4 / 6	220 J	1400	81 - 150	270 - 300	ug/kg	SL-298-SA5B	9 - 10
Pesticides	2,4-D	94-75-7	2 / 6	2.6 J	2.6 J	1.3 - 1.4	3.8 - 4.3	ug/kg	298-SA5B SL-298-S	4 9 - 5 10
Pesticides	2,4 DB	94-82-6	4 / 6	1.4 J	3.8	0.66 - 2.5	1.8 - 2.5	ug/kg	SL-298-SA5B	9 - 10
Pesticides	Toxaphene	8001-35-2	0 / 6	-	-	2.3 - 2.6	7 - 7.9	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	0 / 6	-	-	0.036 - 0.041	0.18 - 0.2	ug/kg		
Pesticides	Endosulfan Sulfate	1031-07-8	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	Mirex	2385-85-5	1 / 6	0.097 J	0.097 J	0.07 - 0.079	0.36 - 0.41	ug/kg	SL-298-SA5B	9 - 10
Pesticides	Aldrin	309-00-2	0 / 6	-	-	0.07 - 0.079	0.18 - 0.2	ug/kg		
Pesticides	Alpha-BHC	319-84-6	0 / 6	-	-	0.036 - 0.041	0.18 - 0.2	ug/kg		
Pesticides	Beta-BHC	319-85-7	0 / 6	-	-	0.064 - 0.072	0.18 - 0.2	ug/kg		
Pesticides	Delta-BHC	319-86-8	0 / 6	-	-	0.038 - 0.043	0.18 - 0.2	ug/kg		
Pesticides	Endosulfan II	33213-65-9	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	4,4'-DDT	50-29-3	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	Endrin Ketone	53494-70-5	1 / 6	0.11 J	0.11 J	0.07 - 0.079	0.36 - 0.41	ug/kg	SL-027-SA5B	8 - 9
Pesticides	Chlordane	57-74-9	0 / 6	-	-	0.85 - 0.96	3.6 - 4.1	ug/kg		
Pesticides	Gamma-BHC (Lindane)	58-89-9	0 / 6	-	-	0.036 - 0.041	0.18 - 0.2	ug/kg		

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Pesticides	Dieldrin	60-57-1	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	Endrin	72-20-8	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	Methoxychlor	72-43-5	0 / 6	-	-	0.36 - 0.41	1.8 - 2	ug/kg		
Pesticides	4,4'-DDD	72-54-8	1 / 6	0.19 J	0.19 J	0.07 - 0.079	0.36 - 0.41	ug/kg	SL-297-SA5B	4 - 5
Pesticides	4,4'-DDE	72-55-9	4 / 6	0.16 J	0.28 J	0.07 - 0.079	0.36 - 0.41	ug/kg	SL-027-SA5B	4 - 5
Pesticides	Endrin Aldehyde	7421-93-4	0 / 6	-	-	0.07 - 0.079	0.36 - 0.41	ug/kg		
Pesticides	Heptachlor	76-44-8	0 / 6	-	-	0.064 - 0.072	0.18 - 0.2	ug/kg		
Pesticides	Endosulfan I	959-98-8	0 / 6	-	-	0.047 - 0.053	0.18 - 0.2	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	83 / 145	19.3 J	8850	17.1 - 905	34.2 - 1810	ng/kg	SL-006-SA5B	5 - 6
Semivolatiles	N-Nitrosodimethylamine	62-75-9	1 / 285	1.3 J	1.3 J	0.68 - 7.2	1.7 - 18	ug/kg	SL-159-SA5B	4 - 5
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 285	-	-	68 - 87	170 - 220	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 285	-	-	68 - 87	170 - 220	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 285	-	-	68 - 87	170 - 220	ug/kg		
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 285	-	-	34 - 43	170 - 220	ug/kg		
Semivolatiles	Phenol	108-95-2	1 / 285	19 J	19 J	17 - 38	170 - 220	ug/kg	SL-016-SA5B	9 - 10
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	30 / 57	19 J	130 J	17 - 22	350 - 430	ug/kg	SL-314-SA5B	4 - 5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	77 / 230	6.5 J	190	6.2 - 32	18 - 96	ug/kg	SL-029-SA5B	9 - 10
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	2 / 8	26 J	180 J	18 - 19	180 - 190	ug/kg	SL-081-SA5B	6 - 7
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	9 / 277	6.5 J	38 J	6.2 - 32	18 - 96	ug/kg	SL-319-SA5B	4 - 5
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Anthracene	120-12-7	1 / 1	19 J	19 J	18 - 18	180 - 180	ug/kg	SL-296-SA5B	9 - 10
Semivolatiles	Anthracene	120-12-7	41 / 284	0.36 J	24	0.34 - 3.6	1.7 - 18	ug/kg	SL-021-SA5B	4 - 5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Pyrene	129-00-0	6 / 6	21 J	320	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Pyrene	129-00-0	72 / 279	0.78 J	93	0.68 - 7.2	1.7 - 18	ug/kg	SL-021-SA5B	4 - 5
Semivolatiles	Dimethylphthalate	131-11-3	1 / 2	35 J	35 J	18 - 18	180 - 180	ug/kg	SL-189-SA5B	3 - 4

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	Dimethylphthalate	131-11-3	4 / 282	14 J	53	6.2 - 7.8	18 - 23	ug/kg	SL-036-SA5B	4 - 5
Semivolatiles	Dibenzofuran	132-64-9	1 / 285	64 J	64 J	17 - 38	170 - 220	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	2 / 2	23 J	280	18 - 18	180 - 180	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	61 / 283	0.73 J	97	0.68 - 7.2	1.7 - 18	ug/kg	SL-044-SA5B	7 - 8
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	2 / 2	19 J	320	18 - 18	180 - 180	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	30 / 283	0.78 J	100	0.68 - 7.2	1.7 - 18	ug/kg	SL-044-SA5B	7 - 8
Semivolatiles	Benzo(b)fluoranthene	205-99-2	3 / 3	34 J	610	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	111 / 282	0.74 J	97	0.68 - 7.2	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	Fluoranthene	206-44-0	4 / 4	21 J	220	18 - 19	180 - 190	ug/kg	SL-296-SA5B	9 - 10
Semivolatiles	Fluoranthene	206-44-0	68 / 281	0.76 J	150	0.68 - 7.2	1.7 - 18	ug/kg	SL-021-SA5B	4 - 5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	3 / 3	19 J	340	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	51 / 282	0.74 J	42	0.68 - 7.2	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	Acenaphthylene	208-96-8	10 / 285	0.40 J	8.5	0.34 - 3.6	1.7 - 18	ug/kg	SL-021-SA5B	4 - 5
Semivolatiles	Chrysene	218-01-9	5 / 5	19 J	660	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Chrysene	218-01-9	109 / 280	0.39 J	60	0.34 - 3.6	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	4 / 4	20 J	590	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Benzo(a)pyrene	50-32-8	65 / 281	0.74 J	75	0.68 - 7.2	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 285	-	-	350 - 870	1000 - 2600	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	1 / 1	90 J	90 J	18 - 18	180 - 180	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	20 / 284	0.79 J	7.6	0.68 - 7.2	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	Benzo(a)anthracene	56-55-3	4 / 4	18 J	360	18 - 19	180 - 190	ug/kg	SL-164-SA5B	4 - 5
Semivolatiles	Benzo(a)anthracene	56-55-3	54 / 281	0.74 J	64	0.68 - 7.2	1.7 - 18	ug/kg	SL-332-SA5B	4 - 5
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	Hexachloroethane	67-72-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 285	-	-	34 - 43	170 - 220	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	Isophorone	78-59-1	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	1 / 1	82 J	82 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Acenaphthene	83-32-9	10 / 284	0.75 J	7.1	0.68 - 7.2	1.7 - 18	ug/kg	SL-033-SA5B	9 - 10
Semivolatiles	Diethylphthalate	84-66-2	0 / 1	-	- U	18 - 18	180 - 180	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	5 / 283	15 J	22	6.2 - 7.8	18 - 23	ug/kg	SL-014-SA5B	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	1 / 6	26 J	26 J	18 - 19	180 - 190	ug/kg	SL-044-SA5B	7 - 8
Semivolatiles	Di-n-Butylphthalate	84-74-2	26 / 278	6.7 J	30	6.2 - 7.8	18 - 23	ug/kg	SL-313-SA5B	4 - 5
Semivolatiles	Phenanthrene	85-01-8	5 / 5	24 J	77 J	18 - 19	180 - 190	ug/kg	SL-021-SA5B	9 - 10

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	Phenanthrene	85-01-8	60 / 280	0.79 J	24	0.68 - 7.2	1.7 - 18	ug/kg	SL-021-SA5B	4 - 5
Semivolatiles	Butylbenzylphthalate	85-68-7	0 / 1	-	- U	18 - 18	180 - 180	ug/kg		
Semivolatiles	Butylbenzylphthalate	85-68-7	7 / 283	6.7 J	110	6.2 - 7.8	18 - 23	ug/kg	SL-316-SA5B	4.5 - 5.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	Fluorene	86-73-7	1 / 1	68 J	68 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Fluorene	86-73-7	16 / 284	0.77 J	4.3	0.68 - 7.2	1.7 - 18	ug/kg	SL-029-SA5B	9 - 10
Semivolatiles	Carbazole	86-74-8	1 / 285	97 J	97 J	17 - 38	170 - 220	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Pentachlorophenol	87-86-5	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 285	-	-	34 - 43	170 - 220	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	1 / 1	23 J	23 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	1-Methylnaphthalene	90-12-0	9 / 284	1.1 J	7.2	0.68 - 7.2	1.7 - 18	ug/kg	SL-041-SA5B	8 - 9
Semivolatiles	Naphthalene	91-20-3	44 / 285	0.74 J	3.4	0.68 - 7.2	1.7 - 18	ug/kg	SL-278-SA5B	2 - 3
Semivolatiles	2-Methylnaphthalene	91-57-6	1 / 1	22 J	22 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	2-Methylnaphthalene	91-57-6	18 / 284	0.75 J	11	0.68 - 7.2	1.7 - 18	ug/kg	SL-041-SA5B	8 - 9
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 285	-	-	100 - 130	340 - 430	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 285	-	-	1200 - 1500	3400 - 4300	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 285	-	-	34 - 77	170 - 220	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 285	-	-	170 - 220	510 - 650	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 285	-	-	17 - 38	170 - 220	ug/kg		
Volatiles	GRO (C5-C12)	GROC5C12	2 / 145	0.2 J	0.5 J	0.2 - 0.3	0.9 - 1.4	mg/kg	SL-041-SA5B	8 - 9
Volatiles	EFH (C15-C20)	PHCC15C20	41 / 145	0.50 J	14 J	0.41 - 22	1.2 - 66	mg/kg	SL-041-SA5B	8 - 9
Volatiles	EFH (C21-C30)	PHCC21C30	108 / 145	0.46 J	420	0.41 - 22	1.2 - 66	mg/kg	SL-332-SA5B	4 - 5
Volatiles	EFH (C30-C40)	PHCC30C40	114 / 145	0.47 J	1100	0.41 - 22	1.2 - 66	mg/kg	SL-332-SA5B	4 - 5
Volatiles	EFH (C8-C11)	PHCC8C11	2 / 145	0.58 J	0.71 J	0.41 - 22	1.2 - 66	mg/kg	SL-336-SA5B	4 - 5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 256	-	-	0.13 - 0.21	3.3 - 5.3	ug/kg		
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 256	-	-	0.15 - 0.24	3.3 - 5.3	ug/kg		
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 256	-	-	0.1 - 0.16	3.3 - 5.3	ug/kg		
Volatiles	Hexachlorobutadiene	87-68-3	0 / 256	-	-	0.12 - 0.18	3.3 - 5.3	ug/kg		
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 256	-	-	0.08 - 0.12	3.3 - 5.3	ug/kg		
Volatiles	Isopropyltoluene	99-87-6	1 / 256	0.18 J	0.18 J	0.09 - 0.14	3.3 - 5.3	ug/kg	SL-033-SA5B	9 - 10
Volatiles	Ethylbenzene	100-41-4	30 / 256	0.07 J	0.46 J	0.05 - 0.08	3.3 - 5.3	ug/kg	SL-276-SA5B	4 - 5
Volatiles	Styrene	100-42-5	1 / 256	5.7	5.7	0.08 - 0.13	3.3 - 5.3	ug/kg	SL-313-SA5B	4 - 5
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 256	-	-	0.13 - 0.21	3.3 - 5.3	ug/kg		

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 256	-	-	0.14 - 0.22	3.3 - 5.3	ug/kg		
Volatiles	N-Propylbenzene	103-65-1	1 / 256	0.09 J	0.09 J	0.06 - 0.09	3.3 - 5.3	ug/kg	SL-033-SA5B	9 - 10
Volatiles	N-Butylbenzene	104-51-8	0 / 256	-	-	0.1 - 0.16	3.3 - 5.3	ug/kg		
Volatiles	4-Chlorotoluene	106-43-4	0 / 256	-	-	0.12 - 0.18	3.3 - 5.3	ug/kg		
Volatiles	1,2-Dibromoethane	106-93-4	1 / 256	0.42 J	0.42 J	0.14 - 0.22	3.3 - 5.3	ug/kg	SL-033-SA5B	9 - 10
Volatiles	1,2-Dichloroethane	107-06-2	2 / 256	0.19 J	0.37 J	0.13 - 0.2	3.3 - 5.3	ug/kg	SL-106-SA5B	4 - 5
Volatiles	4-Methyl-2-Pentanone	108-10-1	2 / 256	9.2	10	0.33 - 0.51	6.7 - 11	ug/kg	SL-337-SA5B	3 - 4
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 256	-	-	0.08 - 0.13	3.3 - 5.3	ug/kg		
Volatiles	Bromobenzene	108-86-1	0 / 256	-	-	0.11 - 0.17	3.3 - 5.3	ug/kg		
Volatiles	Toluene	108-88-3	0 / 256	-	-	0.07 - 0.11	3.3 - 5.3	ug/kg		
Volatiles	Chlorobenzene	108-90-7	0 / 256	-	-	0.09 - 0.14	3.3 - 5.3	ug/kg		
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 256	-	-	0.25 - 0.39	3.3 - 5.3	ug/kg		
Volatiles	1,4-Dioxane	123-91-1	2 / 256	5.2 J	9.0 J	4.2 - 7.2	13 - 22	ug/kg	SL-308-SA5B	14 - 15
Volatiles	Dibromochloromethane	124-48-1	0 / 256	-	-	0.17 - 0.26	3.3 - 5.3	ug/kg		
Volatiles	Tetrachloroethene	127-18-4	0 / 256	-	-	0.17 - 0.26	3.3 - 5.3	ug/kg		
Volatiles	sec-Butylbenzene	135-98-8	1 / 256	0.08 J	0.08 J	0.05 - 0.08	3.3 - 5.3	ug/kg	SL-033-SA5B	9 - 10
Volatiles	1,3-Dichloropropane	142-28-9	0 / 256	-	-	0.07 - 0.11	3.3 - 5.3	ug/kg		
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 256	-	-	0.16 - 0.25	3.3 - 5.3	ug/kg		
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 256	-	-	0.1 - 0.16	3.3 - 5.3	ug/kg		
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 256	-	-	0.18 - 0.28	3.3 - 5.3	ug/kg		
Volatiles	m,p-Xylene	179601-23-1	30 / 256	0.22 J	1.7 J	0.14 - 0.22	3.3 - 5.3	ug/kg	SL-276-SA5B	4 - 5
Volatiles	Carbon tetrachloride	56-23-5	0 / 256	-	-	0.12 - 0.18	3.3 - 5.3	ug/kg		
Volatiles	1,1-Dichloropropene	563-58-6	0 / 256	-	-	0.11 - 0.17	3.3 - 5.3	ug/kg		
Volatiles	2-Hexanone	591-78-6	0 / 256	-	-	1.3 - 2.1	6.7 - 11	ug/kg		
Volatiles	2,2-Dichloropropane	594-20-7	0 / 256	-	-	0.14 - 0.22	3.3 - 5.3	ug/kg		
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 256	-	-	0.09 - 0.14	3.3 - 5.3	ug/kg		
Volatiles	Acetone	67-64-1	47 / 256	7.4 J	150	5.6 - 8.8	6.7 - 11	ug/kg	SL-041-SA5B	8 - 9
Volatiles	Chloroform	67-66-3	1 / 256	0.14 J	0.14 J	0.1 - 0.16	3.3 - 5.3	ug/kg	SL-337-SA5B	3 - 4
Volatiles	Benzene	71-43-2	7 / 256	0.10 J	0.20 J	0.08 - 0.13	3.3 - 5.3	ug/kg	SL-313-SA5B	4 - 5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 256	-	-	0.17 - 0.26	3.3 - 5.3	ug/kg		
Volatiles	Bromomethane	74-83-9	0 / 256	-	-	0.21 - 0.33	3.3 - 5.3	ug/kg		
Volatiles	Chloromethane	74-87-3	0 / 256	-	-	0.28 - 0.43	3.3 - 5.3	ug/kg		
Volatiles	Dibromomethane	74-95-3	0 / 256	-	-	0.2 - 0.32	3.3 - 5.3	ug/kg		
Volatiles	Bromochloromethane	74-97-5	0 / 256	-	-	0.28 - 0.43	3.3 - 5.3	ug/kg		
Volatiles	Chloroethane	75-00-3	0 / 256	-	-	0.11 - 0.17	3.3 - 5.3	ug/kg		
Volatiles	Vinyl Chloride	75-01-4	0 / 256	-	-	0.17 - 0.26	3.3 - 5.3	ug/kg		
Volatiles	Methylene chloride	75-09-2	26 / 256	0.29 J	9.4	0.2 - 0.32	3.3 - 5.3	ug/kg	SL-337-SA5B	3 - 4
Volatiles	Bromoform	75-25-2	0 / 256	-	-	0.33 - 0.53	3.3 - 5.3	ug/kg		
Volatiles	Bromodichloromethane	75-27-4	0 / 256	-	-	0.07 - 0.11	3.3 - 5.3	ug/kg		

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
Subarea 5B

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Volatiles	1,1-Dichloroethane	75-34-3	0 / 256	-	-	0.08 - 0.13	3.3 - 5.3	ug/kg		
Volatiles	1,1-Dichloroethene	75-35-4	0 / 256	-	-	0.33 - 0.51	3.3 - 5.3	ug/kg		
Volatiles	Trichlorofluoromethane	75-69-4	0 / 256	-	-	0.24 - 0.38	3.3 - 5.3	ug/kg		
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 256	-	-	0.1 - 0.16	3.3 - 5.3	ug/kg		
Volatiles	Freon 113a	75-88-7	0 / 256	-	-	0.42 - 0.66	4.2 - 6.6	ug/kg		
Volatiles	Freon 113	76-13-1	0 / 256	-	-	0.09 - 0.14	3.3 - 5.3	ug/kg		
Volatiles	1,2-Dichloropropane	78-87-5	0 / 256	-	-	0.14 - 0.22	3.3 - 5.3	ug/kg		
Volatiles	2-Butanone	78-93-3	30 / 256	1.4 J	28	1 - 1.6	6.7 - 11	ug/kg	SL-041-SA5B	8 - 9
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 256	-	-	0.23 - 0.35	3.3 - 5.3	ug/kg		
Volatiles	Trichloroethene	79-01-6	0 / 256	-	-	0.13 - 0.2	3.3 - 5.3	ug/kg		
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 256	-	-	0.19 - 0.3	3.3 - 5.3	ug/kg		
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 256	-	-	0.42 - 0.66	4.2 - 6.6	ug/kg		
Volatiles	1,2,3-Trichlorobenzene	87-61-6	0 / 256	-	-	0.12 - 0.18	3.3 - 5.3	ug/kg		
Volatiles	o-Xylene	95-47-6	2 / 256	0.19 J	0.20 J	0.14 - 0.22	3.3 - 5.3	ug/kg	SL-033-SA5B	9 - 10
Volatiles	2-Chlorotoluene	95-49-8	0 / 256	-	-	0.12 - 0.18	3.3 - 5.3	ug/kg		
Volatiles	1,2,4-Trimethylbenzene	95-63-6	0 / 256	-	-	0.33 - 0.53	3.3 - 5.3	ug/kg		
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 256	-	-	0.59 - 0.92	3.3 - 5.3	ug/kg		
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 256	-	-	0.28 - 0.43	3.3 - 5.3	ug/kg		
Volatiles	tert-Butylbenzene	98-06-6	0 / 256	-	-	0.13 - 0.21	3.3 - 5.3	ug/kg		
Volatiles	Isopropylbenzene	98-82-8	2 / 256	0.08 J	0.09 J	0.05 - 0.08	3.3 - 5.3	ug/kg	SL-316-SA5B	4.5 - 5.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B19

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Inorganic	Nitrate	14797-55-8	150 / 162	0.95 J	40.4	0.82 - 1.8	1.5 - 3.3	mg/kg	SL-104-SA5B	4 - 5
Inorganic	Fluoride	16984-48-8	470 / 499	0.86 J	37.1	0.82 - 1.8	1 - 2.3	mg/kg	SL-262-SA5B	4 - 5
Inorganic	Cyanide	57-12-5	0 / 162	-	-	0.18 - 0.22	0.51 - 0.62	mg/kg		
Inorganic	Aluminum	7429-90-5	499 / 499	2770	38500	5.01 - 31.7	19.9 - 126	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Iron	7439-89-6	499 / 499	4530	67300 J	4.69 - 29.7	19.9 - 126	mg/kg	SL-255-SA5B	0 - 0.5
Inorganic	Lead	7439-92-1	499 / 499	1.12	549 J	0.0104 - 0.112	0.2 - 2.16	mg/kg	SL-323-SA5B	11 - 12
Inorganic	Lithium	7439-93-2	499 / 499	2.8	67.2	0.22 - 1.3	2 - 11.6	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Magnesium	7439-95-4	499 / 499	800 J	14000	2.53 - 14.7	9.95 - 57.8	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Manganese	7439-96-5	499 / 499	85.8	1490	0.0776 - 0.425	0.498 - 2.73	mg/kg	SL-308-SA5B	9 - 10
Inorganic	Mercury	7439-97-6	308 / 499	0.0032 J	23.6	0.0028 - 0.165	0.0964 - 5.74	mg/kg	SL-212-SA5B	0 - 0.5
Inorganic	Molybdenum	7439-98-7	498 / 499	0.127	15.9	0.05 - 0.0695	0.0999 - 0.139	mg/kg	SL-102-SA5B	0 - 0.5
Inorganic	Nickel	7440-02-0	499 / 499	3.28	48.8	0.0999 - 0.139	0.4 - 0.556	mg/kg	SL-219-SA5B	0 - 0.5
Inorganic	Potassium	7440-09-7	499 / 499	452	6160	17.9 - 113	49.8 - 315	mg/kg	SL-092-SA5B	0 - 0.5
Inorganic	Silver	7440-22-4	470 / 499	0.0132 J	63.8 J	0.012 - 0.0167	0.0999 - 0.139	mg/kg	SL-161-SA5B	0 - 0.5
Inorganic	Sodium	7440-23-5	499 / 499	49.7 J	2820	37.1 - 50.6	99.5 - 136	mg/kg	SL-323-SA5B	4 - 5
Inorganic	Strontium	7440-24-6	499 / 499	8.87	270 J	0.0617 - 0.0842	0.498 - 0.679	mg/kg	SL-008-SA5B	0 - 0.5
Inorganic	Thallium	7440-28-0	499 / 499	0.0449 J	0.576	0.03 - 0.0417	0.0999 - 0.139	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Tin	7440-31-5	26 / 499	1.61 J	15.8	0.995 - 1.36	9.95 - 13.6	mg/kg	SL-324-SA5B	8 - 9
Inorganic	Titanium	7440-32-6	499 / 499	172 J	2170	0.378 - 2.4	0.995 - 6.3	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Antimony	7440-36-0	265 / 499	0.0659 J	11.8 J	0.06 - 0.0834	0.2 - 0.278	mg/kg	SL-323-SA5B	11 - 12
Inorganic	Arsenic	7440-38-2	499 / 499	1.38 J	70.5 J	0.06 - 0.104	0.4 - 0.556	mg/kg	SL-032-SA5B	4 - 5
Inorganic	Beryllium	7440-41-7	499 / 499	0.116 J	1.84	0.016 - 0.0223	0.0999 - 0.139	mg/kg	SL-304-SA5B	3 - 4
Inorganic	Barium	7440-39-3	499 / 499	20.6 J	413 J	0.108 - 0.351	0.4 - 1.3	mg/kg	SL-314-SA5B	0 - 0.5
Inorganic	Boron	7440-42-8	370 / 499	0.999 J	16.9	0.886 - 5.61	4.98 - 31.5	mg/kg	SL-217-SA5B	0 - 0.5
Inorganic	Cadmium	7440-43-9	451 / 499	0.0432 J	4.35	0.036 - 0.0519	0.0999 - 0.139	mg/kg	SL-156-SA5B	0 - 0.5
Inorganic	Chromium	7440-47-3	499 / 499	5.33 J	63.3 J	0.12 - 0.167	0.4 - 0.556	mg/kg	SL-138-SA5B	0 - 0.5
Inorganic	Cobalt	7440-48-4	499 / 499	1.95	33.3 J	0.02 - 0.0278	0.0999 - 0.139	mg/kg	SL-198-SA5B	0 - 0.5
Inorganic	Copper	7440-50-8	499 / 499	2.68 J	352 J	0.0657 - 0.179	0.398 - 1.08	mg/kg	SL-285-SA5B	0 - 0.5
Inorganic	Vanadium	7440-62-2	499 / 499	11.8 J	93.5	0.022 - 0.0589	0.0999 - 0.268	mg/kg	SL-091-SA5B	0 - 0.5
Inorganic	Zinc	7440-66-6	499 / 499	11.8	929	0.56 - 7.38	3 - 39.6	mg/kg	SL-225-SA5B	0 - 0.5
Inorganic	Zirconium	7440-67-7	319 / 499	0.899 J	7.49	0.836 - 1.14	4.98 - 6.79	mg/kg	SL-280-SA5B	9 - 10
Inorganic	Calcium	7440-70-2	499 / 499	1320	79500 J	6.1 - 37.7	19.9 - 123	mg/kg	SL-299-SA5B	0 - 0.5
Inorganic	Phosphorus	7723-14-0	499 / 499	67.9	2020	0.557 - 3.53	9.95 - 63	mg/kg	SL-121-SA5B	9 - 10
Inorganic	Selenium	7782-49-2	479 / 499	0.0439 J	7.48	0.04 - 0.0556	0.4 - 0.556	mg/kg	SL-335-SA5B	0 - 0.5
Inorganic	Chromium VI	18540-29-9	331 / 499	0.22 J	3.4	0.21 - 0.28	1 - 1.4	mg/kg	SL-161-SA5B	0 - 0.5
Inorganic	Perchlorate	14797-73-0	7 / 499	11.6 J	26.3 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-070-SA5B	2.5 - 3.5
Inorganic	Perchlorate	14797-73-0	0 / 62	-	-	2.1 - 2.9	5 - 7	ug/kg		
Misc. Organics	Ethanol	64-17-5	0 / 162	-	-	100 - 120	510 - 620	ug/kg		
Misc. Organics	Methanol	67-56-1	54 / 162	120 J	1300	100 - 120	510 - 620	ug/kg	SL-308-SA5B	14 - 15
Misc. Organics	2-Propanol	67-63-0	1 / 162	140 J	140 J	100 - 120	510 - 620	ug/kg	SL-114-SA5B	0 - 0.5
Misc. Organics	Ethylene Glycol	107-21-1	0 / 161	-	-	5.1 - 17	13 - 17	mg/kg		
Misc. Organics	Diethylene Glycol	111-46-6	0 / 161	-	-	5.1 - 22	13 - 22	mg/kg		
Misc. Organics	Propylene glycol	57-55-6	0 / 161	-	-	5.1 - 8.9	13 - 16	mg/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B20

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Misc. Organics	o-Terphenyl	84-15-1	0 / 162	-	-	1.5 - 1.9	3.6 - 4.4	mg/kg		
Misc. Organics	m-Terphenyl	92-06-8	0 / 162	-	-	1.5 - 1.9	3.6 - 4.4	mg/kg		
Misc. Organics	p-Terphenyl	92-94-4	0 / 162	-	-	1.5 - 1.9	3.6 - 4.4	mg/kg		
Misc. Organics	Formaldehyde	50-00-0	43 / 162	690 J	18000	620 - 6700	1500 - 17000	ug/kg	SL-308-SA5B	9 - 10
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	RDX	121-82-4	0 / 162	-	-	51 - 78	120 - 190	ug/kg		
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 162	-	-	62 - 94	120 - 190	ug/kg		
Misc. Organics	HMX	2691-41-0	0 / 162	-	-	100 - 190	310 - 470	ug/kg		
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	Tetryl	479-45-8	0 / 162	-	-	63 - 95	120 - 190	ug/kg		
Misc. Organics	Nitroglycerin	55-63-0	1 / 162	1200 J	1200 J	820 - 1200	2500 - 3700	ug/kg	SL-156-SA5B	4 - 5
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 162	-	-	82 - 120	250 - 370	ug/kg		
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	0 / 162	-	-	82 - 120	250 - 370	ug/kg		
Misc. Organics	PETN	78-11-5	0 / 162	-	-	820 - 1200	2500 - 3700	ug/kg		
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 162	-	-	82 - 120	120 - 190	ug/kg		
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 162	-	-	100 - 160	120 - 190	ug/kg		
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 162	-	-	82 - 120	120 - 190	ug/kg		
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	Nitrobenzene	98-95-3	0 / 162	-	-	41 - 62	120 - 190	ug/kg		
Misc. Organics	m-Dinitrobenzene	99-65-0	3 / 162	94 J	1100 J	41 - 580	120 - 580	ug/kg	SL-182-SA5B SL-204-SA5B	4 - 5 4 5
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	175 / 499	0.00833 J	5.27	0.00569 - 0.506	1.03 - 1.4	ng/kg	SL-262-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	357 / 499	0.0186 J	186	0.00686 - 0.824	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	OCDD	3268-87-9	373 / 499	1.54 J	130000 J	0.0101 - 1.47	10.3 - 14	ng/kg	SL-008-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	328 / 499	1.03 J	10900 J	0.00837 - 1.2	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	276 / 499	1.04 J	4090	0.0101 - 0.588	10.3 - 14	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	236 / 499	0.0175 J	85.8	0.00675 - 0.763	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	216 / 499	0.0140 J	34.7	0.0066 - 1.06	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	207 / 499	0.00627 J	31.2	0.00483 - 0.448	1.03 - 1.4	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	194 / 499	0.0175 J	98.9	0.00748 - 0.702	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	143 / 499	0.0329 J	274	0.00273 - 0.979	5.13 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	195 / 499	0.0143 J	35.0	0.00288 - 0.981	5.13 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	185 / 499	0.0813 J	86.7	0.00435 - 0.877	5.13 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	351 / 499	0.0192 J	472	0.00708 - 0.77	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	163 / 499	0.0611 J	78.8	0.0048 - 1	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	249 / 499	0.213 J	1280	0.00575 - 0.5	5.13 - 6.99	ng/kg	SL-225-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	171 / 499	0.0848 J	189	0.00525 - 1.02	5.13 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	153 / 499	0.0805 J	44.1	0.00506 - 1.23	5.13 - 6.99	ng/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	211 / 499	0.36 J	5300	0.34 - 360	1.7 - 1800	ug/kg	SL-162-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1254	11097-69-1	225 / 499	0.40 J	2900	0.34 - 360	1.7 - 1800	ug/kg	SL-176-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1268	11100-14-4	0 / 499	-	-	0.34 - 360	1.7 - 1800	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B21

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 499	-	-	0.34 - 540	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	151 / 499	1.1 J	650 J	1 - 1100	3.4 - 3600	ug/kg	SL-138-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 499	-	-	0.34 - 560	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	0 / 499	-	-	1 - 1100	3.4 - 3600	ug/kg		
PCBs and Dioxins	Aroclor 1248	12672-29-6	47 / 499	0.54 J	18000	0.34 - 360	1.7 - 1800	ug/kg	SL-083-SA5B	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 499	-	-	0.34 - 360	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 499	-	-	0.34 - 360	1.7 - 1800	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	2 / 499	7.5 J	45 J	0.34 - 540	1.7 - 1800	ug/kg	SL-087-SA5B	3 - 4
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 499	-	-	1 - 1100	3.4 - 3600	ug/kg		
Pesticides	Dichlorprop	120-36-5	10 / 220	0.97 J	47 J	0.82 - 17	1.7 - 36	ug/kg	SL-124-SA5B	0 - 0.5
Pesticides	Dicamba	1918-00-9	27 / 220	0.42 J	3.1	0.41 - 8.6	1.2 - 26	ug/kg	SL-117-SA5B	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 220	-	-	4.5 - 94	9.2 - 190	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	3 / 220	0.88 J	1.2 J	0.32 - 17	2.5 - 51	ug/kg	SL-208-SA5B	0 - 0.5
Pesticides	MCPP	93-65-2	54 / 220	81 J	810	77 - 1800	180 - 5400	ug/kg	SL-228-SA5B	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	11 / 220	0.11 J	0.74 J	0.077 - 1.6	0.17 - 3.6	ug/kg	SL-219-SA5B	0 - 0.5
Pesticides	2,4,5-T	93-76-5	23 / 220	0.088 J	1.8	0.084 - 1.8	0.17 - 3.6	ug/kg	SL-086-SA5B	0 - 0.5
Pesticides	MCPA	94-74-6	87 / 220	87 J	3200 J	78 - 1600	260 - 5400	ug/kg	SL-128-SA5B	0 - 0.5
Pesticides	2,4-D	94-75-7	7 / 220	1.4 J	3.7 J	1.2 - 26	3.7 - 77	ug/kg	SL-203-SA5B	0 - 0.5
Pesticides	2,4 DB	94-82-6	77 / 220	0.70 J	24 J	0.64 - 60	1.7 - 60	ug/kg	SL-219-SA5B	0 - 0.5
Pesticides	Toxaphene	8001-35-2	0 / 220	-	-	2.3 - 480	6.8 - 1400	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	8 / 220	0.040 J	0.27 J	0.035 - 780	0.17 - 780	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	3 / 220	0.20 J	1.8 J	0.068 - 14	0.35 - 74	ug/kg	SL-129-SA5B	0 - 0.5
Pesticides	Mirex	2385-85-5	10 / 220	0.092 J	9.8 J	0.068 - 24	0.35 - 74	ug/kg	SL-004-SA5B	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 220	0.084 J	0.084 J	0.068 - 14	0.17 - 36	ug/kg	SL-196-SA5B	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	12 / 220	0.043 J	0.46 J	0.035 - 7.4	0.17 - 36	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Beta-BHC	319-85-7	31 / 220	0.065 J	2.1	0.062 - 13	0.17 - 36	ug/kg	SL-178-SA5B	0 - 0.5
Pesticides	Delta-BHC	319-86-8	19 / 220	0.042 J	0.43 J	0.037 - 7.8	0.17 - 36	ug/kg	SL-187-SA5B	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	1 / 220	0.19 J	0.19 J	0.068 - 14	0.35 - 74	ug/kg	SL-205-SA5B	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	33 / 220	0.097 J	340	0.068 - 230	0.35 - 230	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	5 / 220	0.099 J	0.34 J	0.068 - 14	0.35 - 74	ug/kg	SL-324-SA5B SL-331-SA5B	0 - 0.5 0 - 0.5
Pesticides	Chlordane	57-74-9	6 / 220	1.2 J	660	0.82 - 170	3.5 - 740	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Gamma-BHC (Lindane)	58-89-9	8 / 220	0.036 J	0.87 J	0.035 - 12	0.17 - 36	ug/kg	SL-135-SA5B	0 - 0.5
Pesticides	Dieldrin	60-57-1	6 / 220	0.086 J	4.3	0.068 - 99	0.35 - 99	ug/kg	SL-254-SA5B	0 - 0.5
Pesticides	Endrin	72-20-8	2 / 220	0.10 J	0.53	0.068 - 14	0.35 - 74	ug/kg	SL-091-SA5B	0 - 0.5
Pesticides	Methoxychlor	72-43-5	2 / 220	0.96 J	1.8	0.35 - 74	1.7 - 360	ug/kg	SL-324-SA5B	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	6 / 220	0.086 J	6.2	0.068 - 44	0.35 - 74	ug/kg	SL-135-SA5B	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	20 / 220	0.088 J	350	0.068 - 500	0.35 - 500	ug/kg	SL-133-SA5B	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	5 / 220	0.10 J	2.2 J	0.068 - 25	0.35 - 74	ug/kg	SL-123-SA5B	0 - 0.5
Pesticides	Heptachlor	76-44-8	6 / 220	0.13 J	0.61	0.062 - 98	0.17 - 98	ug/kg	SL-330-SA5B	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 220	-	-	0.045 - 9.5	0.17 - 36	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	90 / 162	19.3 J	8850	17.1 - 905	34.2 - 1810	ng/kg	SL-006-SA5B	5 - 6
Semivolatiles	N-Nitrosodimethylamine	62-75-9	3 / 499	1.3 J	11	0.68 - 43	1.7 - 110	ug/kg	SL-332-SA5B	0 - 0.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B22

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 499	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 499	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 499	-	-	67 - 3600	170 - 9000	ug/kg		
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Phenol	108-95-2	2 / 499	19 J	20 J	17 - 900	170 - 9000	ug/kg	SL-135-SA5B	0 - 0.5
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	100 / 162	19 J	76000	17 - 1900	340 - 37000	ug/kg	SL-213-SA5B	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	148 / 339	6.5 J	10000	6.2 - 650	18 - 2000	ug/kg	SL-032-SA5B	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	5 / 42	26 J	14000	17 - 900	170 - 9000	ug/kg	SL-213-SA5B	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	39 / 457	6.5 J	270	6.2 - 42	18 - 130	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Hexachlorobenzene	118-74-1	5 / 499	25 J	500	17 - 900	170 - 9000	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Anthracene	120-12-7	7 / 7	19 J	140 J	17 - 21	170 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Anthracene	120-12-7	123 / 492	0.36 J	380	0.34 - 22	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Pyrene	129-00-0	44 / 44	18 J	1600	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Pyrene	129-00-0	214 / 455	0.73 J	9300	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	4 / 34	19 J	61 J	17 - 900	170 - 9000	ug/kg	SL-330-SA5B	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	10 / 464	7.7 J	520	6.2 - 63	18 - 190	ug/kg	SL-323-SA5B	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	7 / 499	26 J	240	17 - 900	170 - 9000	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	28 / 28	18 J	5600	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	194 / 471	0.73 J	53000	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	21 / 21	19 J	5100	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	131 / 478	0.78 J	49000	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	28 / 28	17 J	3300	17 - 90	170 - 900	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	274 / 471	0.74 J	20000	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	35 / 35	18 J	1200	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	209 / 464	0.76 J	6800	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	19 / 19	19 J	1000	17 - 23	170 - 230	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	173 / 480	0.73 J	4900	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Acenaphthylene	208-96-8	1 / 1	41 J	41 J	21 - 21	210 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Acenaphthylene	208-96-8	43 / 498	0.38 J	160	0.34 - 22	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B23

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	Chrysene	218-01-9	30 / 30	18 J	1900 J	17 - 220	170 - 2200	ug/kg	SL-214-SA5B	0 - 0.5
Semivolatiles	Chrysene	218-01-9	281 / 469	0.39 J	3700	0.34 - 120	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	31 / 31	18 J	2500	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	205 / 468	0.72 J	17000	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 499	-	-	340 - 36000	1000 - 110000	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	6 / 6	19 J	510	18 - 23	180 - 230	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	92 / 493	0.73 J	1600	0.68 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	24 / 24	18 J	880	17 - 90	170 - 900	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	187 / 475	0.74 J	1500	0.68 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	1 / 499	490 J	490 J	170 - 9000	510 - 27000	ug/kg	SL-135-SA5B	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	Isophorone	78-59-1	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	1 / 1	82 J	82 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Acenaphthene	83-32-9	29 / 498	0.75 J	260	0.68 - 43	1.7 - 110	ug/kg	SL-203-SA5B	0 - 0.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 34	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	8 / 464	7.4 J	22	6.2 - 35	18 - 110	ug/kg	SL-014-SA5B	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	6 / 44	22 J	210	17 - 900	170 - 9000	ug/kg	SL-089-SA5B	0 - 0.5
Semivolatiles	Di-n-Butylphthalate	84-74-2	80 / 454	6.4 J	59 J	6.2 - 35	18 - 110	ug/kg	SL-285-SA5B	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	25 / 25	21 J	720	17 - 220	170 - 2200	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	186 / 474	0.72 J	2900	0.68 - 230	1.7 - 580	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	6 / 36	21 J	9900	17 - 1800	170 - 18000	ug/kg	SL-089-SA5B	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	34 / 462	6.4 J	130 J	6.2 - 63	18 - 190	ug/kg	SL-323-SA5B	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	Fluorene	86-73-7	1 / 1	68 J	68 J	19 - 19	190 - 190	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Fluorene	86-73-7	38 / 498	0.77 J	190	0.68 - 43	1.7 - 110	ug/kg	SL-156-SA5B SL-203-SA5B	0 - 0.5 0 - 0.5
Semivolatiles	Carbazole	86-74-8	5 / 499	25 J	97 J	17 - 900	170 - 9000	ug/kg	SL-021-SA5B	9 - 10
Semivolatiles	Pentachlorophenol	87-86-5	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	3 / 3	23 J	240	19 - 21	190 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	1-Methylnaphthalene	90-12-0	54 / 496	0.78 J	550	0.68 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	Naphthalene	91-20-3	1 / 1	190 J	190 J	21 - 21	210 - 210	ug/kg	SL-219-SA5B	0 - 0.5
Semivolatiles	Naphthalene	91-20-3	119 / 498	0.72 J	690	0.68 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2-Methylnaphthalene	91-57-6	3 / 3	22 J	290	19 - 21	190 - 210	ug/kg	SL-219-SA5B	0 - 0.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B24

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Semivolatiles	2-Methylnaphthalene	91-57-6	73 / 496	0.74 J	700	0.68 - 43	1.7 - 110	ug/kg	SL-217-SA5B	0 - 0.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 499	-	-	100 - 5400	340 - 18000	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 499	-	-	1200 - 63000	3400 - 180000	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 499	-	-	34 - 1800	170 - 9000	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 499	-	-	170 - 9000	510 - 27000	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 499	-	-	17 - 900	170 - 9000	ug/kg		
Volatiles	GRO (C5-C12)	GROC5C12	2 / 156	0.2 J	0.5 J	0.2 - 2.6	0.9 - 13	mg/kg	SL-041-SA5B	8 - 9
Volatiles	EFH (C15-C20)	PHCC15C20	50 / 157	0.50 J	14 J	0.41 - 22	1.2 - 66	mg/kg	SL-041-SA5B	8 - 9
Volatiles	EFH (C21-C30)	PHCC21C30	120 / 157	0.46 J	420	0.41 - 22	1.2 - 66	mg/kg	SL-332-SA5B	4 - 5
Volatiles	EFH (C30-C40)	PHCC30C40	126 / 157	0.47 J	1100	0.41 - 22	1.2 - 66	mg/kg	SL-332-SA5B	4 - 5
Volatiles	EFH (C8-C11)	PHCC8C11	2 / 157	0.58 J	0.71 J	0.41 - 22	1.2 - 66	mg/kg	SL-336-SA5B	4 - 5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 267	-	-	0.13 - 0.22	3.3 - 5.5	ug/kg		
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 267	-	-	0.15 - 0.25	3.3 - 5.5	ug/kg		
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 267	-	-	0.1 - 0.17	3.3 - 5.5	ug/kg		
Volatiles	Hexachlorobutadiene	87-68-3	0 / 267	-	-	0.12 - 0.19	3.3 - 5.5	ug/kg		
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 267	-	-	0.08 - 0.12	3.3 - 5.5	ug/kg		
Volatiles	Isopropyltoluene	99-87-6	1 / 267	0.18 J	0.18 J	0.09 - 0.15	3.3 - 5.5	ug/kg	SL-033-SA5B	9 - 10
Volatiles	Ethylbenzene	100-41-4	30 / 267	0.07 J	0.46 J	0.05 - 0.08	3.3 - 5.5	ug/kg	SL-276-SA5B	4 - 5
Volatiles	Styrene	100-42-5	1 / 267	5.7	5.7	0.08 - 0.14	3.3 - 5.5	ug/kg	SL-313-SA5B	4 - 5
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 267	-	-	0.13 - 0.22	3.3 - 5.5	ug/kg		
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 267	-	-	0.14 - 0.23	3.3 - 5.5	ug/kg		
Volatiles	N-Propylbenzene	103-65-1	1 / 267	0.09 J	0.09 J	0.06 - 0.1	3.3 - 5.5	ug/kg	SL-033-SA5B	9 - 10
Volatiles	N-Butylbenzene	104-51-8	0 / 267	-	-	0.1 - 0.17	3.3 - 5.5	ug/kg		
Volatiles	4-Chlorotoluene	106-43-4	0 / 267	-	-	0.12 - 0.19	3.3 - 5.5	ug/kg		
Volatiles	1,2-Dibromoethane	106-93-4	1 / 267	0.42 J	0.42 J	0.14 - 0.23	3.3 - 5.5	ug/kg	SL-033-SA5B	9 - 10
Volatiles	1,2-Dichloroethane	107-06-2	2 / 267	0.19 J	0.37 J	0.13 - 0.21	3.3 - 5.5	ug/kg	SL-106-SA5B	4 - 5
Volatiles	4-Methyl-2-Pentanone	108-10-1	2 / 267	9.2	10	0.33 - 0.54	6.7 - 11	ug/kg	SL-337-SA5B	3 - 4
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 267	-	-	0.08 - 0.14	3.3 - 5.5	ug/kg		
Volatiles	Bromobenzene	108-86-1	0 / 267	-	-	0.11 - 0.18	3.3 - 5.5	ug/kg		
Volatiles	Toluene	108-88-3	0 / 267	-	-	0.07 - 0.11	3.3 - 5.5	ug/kg		
Volatiles	Chlorobenzene	108-90-7	0 / 267	-	-	0.09 - 0.15	3.3 - 5.5	ug/kg		
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 267	-	-	0.25 - 0.41	3.3 - 5.5	ug/kg		
Volatiles	1,4-Dioxane	123-91-1	2 / 267	5.2 J	9.0 J	4.2 - 7.2	13 - 22	ug/kg	SL-308-SA5B	14 - 15
Volatiles	Dibromochloromethane	124-48-1	0 / 267	-	-	0.17 - 0.28	3.3 - 5.5	ug/kg		
Volatiles	Tetrachloroethene	127-18-4	0 / 267	-	-	0.17 - 0.28	3.3 - 5.5	ug/kg		
Volatiles	sec-Butylbenzene	135-98-8	1 / 267	0.08 J	0.08 J	0.05 - 0.08	3.3 - 5.5	ug/kg	SL-033-SA5B	9 - 10
Volatiles	1,3-Dichloropropane	142-28-9	0 / 267	-	-	0.07 - 0.11	3.3 - 5.5	ug/kg		
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 267	-	-	0.16 - 0.26	3.3 - 5.5	ug/kg		
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 267	-	-	0.1 - 0.17	3.3 - 5.5	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
Subarea 5B25

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration (ft)
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 267	-	-	0.18 - 0.29	3.3 - 5.5	ug/kg		
Volatiles	m,p-Xylene	179601-23-1	30 / 267	0.22 J	1.7 J	0.14 - 0.23	3.3 - 5.5	ug/kg	SL-276-SA5B	4 - 5
Volatiles	Carbon tetrachloride	56-23-5	0 / 267	-	-	0.12 - 0.19	3.3 - 5.5	ug/kg		
Volatiles	1,1-Dichloropropene	563-58-6	0 / 267	-	-	0.11 - 0.18	3.3 - 5.5	ug/kg		
Volatiles	2-Hexanone	591-78-6	0 / 267	-	-	1.3 - 2.2	6.7 - 11	ug/kg		
Volatiles	2,2-Dichloropropane	594-20-7	0 / 267	-	-	0.14 - 0.23	3.3 - 5.5	ug/kg		
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 267	-	-	0.09 - 0.15	3.3 - 5.5	ug/kg		
Volatiles	Acetone	67-64-1	48 / 267	7.4 J	150	5.6 - 9.2	6.7 - 11	ug/kg	SL-041-SA5B	8 - 9
Volatiles	Chloroform	67-66-3	1 / 267	0.14 J	0.14 J	0.1 - 0.17	3.3 - 5.5	ug/kg	SL-337-SA5B	3 - 4
Volatiles	Benzene	71-43-2	7 / 267	0.10 J	0.20 J	0.08 - 0.14	3.3 - 5.5	ug/kg	SL-313-SA5B	4 - 5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 267	-	-	0.17 - 0.28	3.3 - 5.5	ug/kg		
Volatiles	Bromomethane	74-83-9	0 / 267	-	-	0.21 - 0.35	3.3 - 5.5	ug/kg		
Volatiles	Chloromethane	74-87-3	0 / 267	-	-	0.28 - 0.46	3.3 - 5.5	ug/kg		
Volatiles	Dibromomethane	74-95-3	0 / 267	-	-	0.2 - 0.33	3.3 - 5.5	ug/kg		
Volatiles	Bromochloromethane	74-97-5	0 / 267	-	-	0.28 - 0.46	3.3 - 5.5	ug/kg		
Volatiles	Chloroethane	75-00-3	0 / 267	-	-	0.11 - 0.18	3.3 - 5.5	ug/kg		
Volatiles	Vinyl Chloride	75-01-4	0 / 267	-	-	0.17 - 0.28	3.3 - 5.5	ug/kg		
Volatiles	Methylene chloride	75-09-2	26 / 267	0.29 J	9.4	0.2 - 0.33	3.3 - 5.5	ug/kg	SL-337-SA5B	3 - 4
Volatiles	Bromoform	75-25-2	0 / 267	-	-	0.33 - 0.55	3.3 - 5.5	ug/kg		
Volatiles	Bromodichloromethane	75-27-4	0 / 267	-	-	0.07 - 0.11	3.3 - 5.5	ug/kg		
Volatiles	1,1-Dichloroethane	75-34-3	0 / 267	-	-	0.08 - 0.14	3.3 - 5.5	ug/kg		
Volatiles	1,1-Dichloroethene	75-35-4	0 / 267	-	-	0.33 - 0.54	3.3 - 5.5	ug/kg		
Volatiles	Trichlorofluoromethane	75-69-4	0 / 267	-	-	0.24 - 0.4	3.3 - 5.5	ug/kg		
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 267	-	-	0.1 - 0.17	3.3 - 5.5	ug/kg		
Volatiles	Freon 113a	75-88-7	0 / 267	-	-	0.42 - 0.69	4.2 - 6.9	ug/kg		
Volatiles	Freon 113	76-13-1	0 / 267	-	-	0.09 - 0.15	3.3 - 5.5	ug/kg		
Volatiles	1,2-Dichloropropane	78-87-5	0 / 267	-	-	0.14 - 0.23	3.3 - 5.5	ug/kg		
Volatiles	2-Butanone	78-93-3	30 / 267	1.4 J	28	1 - 1.7	6.7 - 11	ug/kg	SL-041-SA5B	8 - 9
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 267	-	-	0.23 - 0.37	3.3 - 5.5	ug/kg		
Volatiles	Trichloroethene	79-01-6	0 / 267	-	-	0.13 - 0.21	3.3 - 5.5	ug/kg		
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 267	-	-	0.19 - 0.32	3.3 - 5.5	ug/kg		
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 267	-	-	0.42 - 0.69	4.2 - 6.9	ug/kg		
Volatiles	1,2,3-Trichlorobenzene	87-61-6	0 / 267	-	-	0.12 - 0.19	3.3 - 5.5	ug/kg		
Volatiles	o-Xylene	95-47-6	2 / 267	0.19 J	0.20 J	0.14 - 0.23	3.3 - 5.5	ug/kg	SL-033-SA5B	9 - 10
Volatiles	2-Chlorotoluene	95-49-8	0 / 267	-	-	0.12 - 0.19	3.3 - 5.5	ug/kg		
Volatiles	1,2,4-Trimethylbenzene	95-63-6	0 / 267	-	-	0.33 - 0.55	3.3 - 5.5	ug/kg		
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 267	-	-	0.59 - 0.97	3.3 - 5.5	ug/kg		
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 267	-	-	0.28 - 0.46	3.3 - 5.5	ug/kg		
Volatiles	tert-Butylbenzene	98-06-6	0 / 267	-	-	0.13 - 0.22	3.3 - 5.5	ug/kg		
Volatiles	Isopropylbenzene	98-82-8	2 / 267	0.08 J	0.09 J	0.05 - 0.08	3.3 - 5.5	ug/kg	SL-316-SA5B	4.5 - 5.5

Section 4
Data Usability Assessment

The purposes of the DUAR provided in Appendix C and summarized here are to: 1) describe the data validation processes performed on the data sets, and 2) determine whether the sample results meet the data quality objectives (DQOs) outlined in the *Draft Work Plan/Field Sampling and Analysis Plan Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California* (CDM 2010).

4.1 Usability Summary

For the Subarea 5B data usability assessment, 93 data sets were reviewed. A data set consists of 20 or fewer samples grouped together by analytical method for analyses depending on the time and date the samples were received by the laboratory. A data set is called a SDG. The analyses performed are discussed in Section 2.5.1.

Samples were collected and analyzed in accordance with the WP/FSAP (CDM 2010). No deviations from what was prescribed during the field investigation were encountered during this sampling event as stated in Section 2.7.

The data generated for the Subarea 5B samples together with the added data validation qualifiers are usable as reported, with the exception of 384 individual analyte results (0.38 percent of all analytes) that were rejected (15 individual metal results, one TPH result, 124 pesticide results, 186 herbicide results, and 48 SVOC results). These rejected data do not impact project objectives and goals for the co-located sampling program. Re-sampling of the locations with rejected data will be evaluated as part of the data gap analysis for the next phase of soil sampling. Specific details are provided in the validation reports in Appendix C and in Section 4.9.

4.2 Data Validation Procedures

Data were validated by the independent data validation firm Laboratory Data Consultants, Inc. All data validation was conducted in accordance with *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 2004), *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 2008), and *EPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (EPA 2005).

The data validation strategy was to validate 10 percent of the data according to EPA Level IV protocols (all QC parameters and raw data) and the remaining 90 percent according to EPA Level III protocols (all QC parameters except calibrations and raw data).

Table 4-1 shows all SDGs that include Subarea 5B samples and which SDGs were validated as Level III or Level IV. Some SDGs contain samples from other subareas[1] but all samples in a SDG were validated together.

Table 4-1. Sample Delivery Groups and Validation Levels for Subarea 5B

Sample Delivery Group	Level of Validation Performed	CDM Review
DE031	Level III	
DE032	Level III	
DE033	Level III	
DE034	Level III	
DE035	Level III	YES
DE036	Level III	
DE037	Level III	
DE038	Level III	
DE039	Level III	
DE040	Level III	
DE041	Level III	
DE042	Level III	
DE043	Level III	
DE044	Level III	YES
DE045	Level III	
DE047	Level III	
DE048	Level III	
DE049	Level IV	
DE051	Level III	
DE052	Level III	
DE053	Level III	
DE054	Level III	
DE055	Level III	
DE056	Level III	YES
DE057	Level III	
DE058	Level III	
DE059	Level IV	
DE060	Level III	
DE061	Level III	
DE062	Level III	
DE063	Level III	
DE064	Level III	
DE065	Level III	
DE066	Level IV	YES
DE067	Level III	
DE068	Level III	
DE069	Level III	
DE070	Level III	
DE071	Level III	
DE072	Level III	
DE073	Level III	
DE074	Level III	
DE075	Level III	
DE076	Level III	YES
DE077	Level III	
DE078	Level III	

[1] During sampling in Subarea 5B, EPA transitioned sampling into other subareas. Thus some sample delivery groups may contain results for samples from multiple Subareas.

Table 4-1. Sample Delivery Groups and Validation Levels for Subarea 5B

Sample Delivery Group	Level of Validation Performed	CDM Review
DE079	Level IV	
DE080	Level III	
DE081	Level III	
DE082	Level III	
DE083	Level III	
DE084	Level III	
DE085	Level III	
DE101	Level IV	YES
DE102	Level III	
DX015	Level III	
DX016	Level III	
DX017	Level III	
DX018	Level III	
DX019	Level III	YES
DX020	Level III	
DX021	Level III	
DX022	Level III	
DX023	Level III	
DX024	Level III	
DX025	Level IV	YES
DX026	Level III	
DX027	Level III	
DX028	Level III	
DX029	Level III	
DX030	Level III	
DX031	Level III	
DX032	Level IV	
DX034	Level III	
DX035	Level III	
DX036	Level III	
DX037	Level III	YES
DX038	Level III	
DX039	Level III	
DX040	Level III	
DX041	Level III	
DX042	Level III	
DX043	Level III	
DX044	Level III	
DX045	Level IV	YES
DX046	Level III	
DX047	Level III	
DX048	Level III	
DX049	Level III	
DX050	Level III	
DX051	Level III	
DX052	Level III	
DX061	Level III	
DX062	Level III	

In order to evaluate the quality of the laboratory and the validation firm, CDM chemists reviewed 10 percent of the Subarea 5B sample SDGs. The purpose of the review was to identify any QC issues with the laboratory not identified by the validation firm or any discrepancies in validation procedures by the validation firm.

No additional qualifiers were applied to the data based on CDM's review. The results of this review are provided in Section 4.8.

4.3 Quality Assurance Objectives

Quality assurance (QA) objectives for measurement data are expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). The QA objectives provide a mechanism for ongoing QC and evaluating and measuring data quality throughout the project.

A review of the collected data is necessary to determine if data measurement objectives established in the WP/FSAP (CDM 2010) have been met. The following data measurement objectives were considered:

- Specification and adherence to analytical method and reporting detection limit requirements
- Identification of the appropriate laboratory analytical QC requirements and verification of whether these QC requirements were met
- Verification that measurement performance criteria (representativeness and completeness) for the data have been met
- Verification that field procedures were followed, deviations were documented, and determination of impact on data quality as a result of these deviations

The data validation review of the QA objectives determines if the collected data are of sufficient quality (except for the rejected results) to support their intended use.

4.4 Summary of Field and Laboratory QA Activities

CDM completed sampling activities in Subarea 5B in accordance with the approved WP/FSAP (CDM 2010) and Addendum to the WP/FSAP (CDM 2011). A total of 422 soil samples were collected and analyzed from 28 drainage locations, 182 surface locations, and 212 soil boring locations. Table 2-2 provides a summary of the samples collected and the laboratory analyses requested.

An index of samples associated with each SDG is presented at the beginning of Appendix C. The WP/FSAP (CDM 2010) defined the procedures to be followed and the data quality requirements for the field sampling.

4.5 Field Quality QA/QC

The field QC samples were collected at a frequency of 1 per 20 samples (5 percent) for MS/MSDs and field duplicates. Eleven duplicate samples and MS/MSD samples were collected in association with the surface samples and analyzed for primary analytes only. For the subsurface samples, 10 duplicate samples and MS/MSD samples were collected for the primary analyses, and 5 of these duplicate and

MS/MSD samples were also analyzed for the secondary analytes. MS/MSD and field duplicate samples met the frequency requirements detailed in the WP/FSAP (CDM 2010).

As discussed in Section 2.4.2, nine equipment blank rinsate samples were collected in association with the surface sampling and analyzed for primary analytes. Fifteen equipment rinsate blank samples were collected in association with the subsurface sampling and analyzed for the primary analytes. Five of these equipment rinsate blanks were also analyzed for the secondary analytes. The equipment rinsate blank results are presented in Appendix C and a summary of the detected results is presented in Table 4-2.

Table 4-2. Analytes Detected in Equipment Blanks for Subarea 5B Samples - Detected Results Only

EB01-SA5B-120910 6162892 12/09/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
2,3,7,8-TCDD	pg/L	0.478	J
Diethylphthalate	µg/L	0.090	J
NAPHTHALENE	µg/L	0.032	J
EB02-SA5B-121410 6164944 12/14/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	0.16	J
Diethylphthalate	µg/L	0.12	J
Di-n-butylphthalate	µg/L	0.15	J
Di-n-octylphthalate	µg/L	0.083	J
IRON	mg/L	0.0533	J
LEAD	mg/L	0.000075	J
MOLYBDENUM	mg/L	0.00032	J
NAPHTHALENE	µg/L	0.027	J
EB03-SA5B-121510 6166201 12/15/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
4,4'-DDE	µg/L	0.016	J
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	0.15	J
Diethylphthalate	µg/L	0.13	J
Di-n-butylphthalate	µg/L	0.33	J
Di-n-octylphthalate	µg/L	0.079	J
LEAD	mg/L	0.00012	J
NAPHTHALENE	µg/L	0.036	J

Table 4-2. Analytes Detected in Equipment Blanks for Subarea 5B Samples - Detected Results Only

EB04-SA5B-121610 6167515 12/16/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.11	J
NAPHTHALENE	µg/L	0.030	J
EB05-SA5B-121710 6169017 12/17/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.11	J
NAPHTHALENE	µg/L	0.029	J
EB06-SA5B-122010 6172056 12/20/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
1-METHYLNAPHTHALENE	µg/L	0.014	J
2-METHYLNAPHTHALENE	µg/L	0.019	J
Diethylphthalate	µg/L	0.056	J
Di-n-octylphthalate	µg/L	0.12	J
MANGANESE	mg/L	0.00097	J
NAPHTHALENE	µg/L	0.042	J
PERCHLORATE	µg/L	1.3	J
EB07-SA5B-122110 6172104 12/21/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.11	J
Di-n-octylphthalate	µg/L	0.12	J
NAPHTHALENE	µg/L	0.027	J
EB08-SA5B-122210 6173161 12/22/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.098	J
Di-n-butylphthalate	µg/L	0.40	J
IRON	mg/L	0.0640	J
NAPHTHALENE	µg/L	0.034	J
EB15-SA5B-121310 6163875 12/13/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
ACETONE	µg/L	7	J
LEAD	mg/L	0.000099	J
NAPHTHALENE	µg/L	0.033	J
PHENANTHRENE	µg/L	0.018	J
1,2,3,4,6,7,8-HPCDD	pg/L	1.77	
1,2,3,4,6,7,8-HPCDF	pg/L	3.04	
1,2,3,4,7,8,9-HPCDF	pg/L	0.663	
1,2,3,4,7,8-HxCDD	pg/L	0.514	
1,2,3,4,7,8-HXCDF	pg/L	1.09	
1,2,3,6,7,8-HXCDD	pg/L	1.01	

Table 4-2. Analytes Detected in Equipment Blanks for Subarea 5B Samples - Detected Results Only

1,2,3,6,7,8-HXCDF	pg/L	0.846	
1,2,3,7,8,9-HXCDD	pg/L	0.622	
1,2,3,7,8,9-HXCDF	pg/L	0.654	
1,2,3,7,8-PECDD	pg/L	2.02	
1,2,3,7,8-PECDF	pg/L	0.591	
2,3,4,6,7,8-HXCDF	pg/L	1.13	
2,3,4,7,8-PECDF	pg/L	0.623	
OCDD	pg/L	7.38	
OCDF	pg/L	1.71	J
EB15-SA5B-121510 6166202 12/15/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
4,4'-DDE	µg/L	0.0099	J
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	0.19	J
Diethylphthalate	µg/L	0.12	J
Di-n-butylphthalate	µg/L	0.18	J
Di-n-octylphthalate	µg/L	0.088	J
NAPHTHALENE	µg/L	0.030	J
EB16-SA5B-121610 6167516 12/16/2010 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
HMX	µg/L	0.90	J
RDX	µg/L	2.2	
EB18-SA5B-010611 6179366 01/06/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.21	J
Di-n-butylphthalate	µg/L	0.63	J
NAPHTHALENE	µg/L	0.030	J
EB19-SA5B-010711 6180109 01/07/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
FORMALDEHYDE	µg/L	17	J
EB20-SA5B-011311 6183558 01/13/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.15	J
Di-n-butylphthalate	µg/L	0.62	J
1,2,3,7,8,9-HXCDD	pg/L	0.189	J
EB21-SA5B-011311 6183559 01/13/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.15	J
Di-n-butylphthalate	µg/L	0.57	J
1,2,3,7,8,9-HXCDD	pg/L	0.360	J

Table 4-2. Analytes Detected in Equipment Blanks for Subarea 5B Samples - Detected Results Only

EB22-SA5B-011411 6184375 01/14/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
RDX	µg/L	1.5	
EB23-SA5B-012011 6189219 01/20/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
LEAD	mg/L	0.000054	J
1,2,3,7,8,9-HXCDD	pg/L	0.299	J
EB24-SA5B-012011 6189222 01/20/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
LEAD	mg/L	0.000072	J
EB26-SA5B-012611 6192765 01/26/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
ACETONE	µg/L	410	
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	0.12	J
Diethylphthalate	µg/L	0.15	J
NAPHTHALENE	µg/L	0.020	J
EB27-SA5B-012711 6193672 01/27/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.21	J
METHYLENE CHLORIDE	µg/L	4	J
NAPHTHALENE	µg/L	0.025	J
PHENANTHRENE	µg/L	0.013	J
EB28-SA5B-020311 6198510 02/03/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
ACETONE	µg/L	9	J
Diethylphthalate	µg/L	0.16	J
Di-n-butylphthalate	µg/L	0.39	J
METHYLENE CHLORIDE	µg/L	2	J
NAPHTHALENE	µg/L	0.014	J
EB29-SA5B-020311 6198511 02/03/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.16	J
Di-n-butylphthalate	µg/L	0.51	J
METHYLENE CHLORIDE	µg/L	4	J
NAPHTHALENE	µg/L	0.024	J
1,2,3,4,7,8-HxCDD	pg/L	0.308	J

Table 4-2. Analytes Detected in Equipment Blanks for Subarea 5B Samples - Detected Results Only

EB30-SA5B-021511 6206981 02/15/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.19	J
NAPHTHALENE	µg/L	0.019	J
TOLUENE	µg/L	0.9	J
EB31-SA5B-021011 6203542 02/10/2011 Equipment Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
Diethylphthalate	µg/L	0.14	J
NAPHTHALENE	µg/L	0.019	J
1,2,3,4,6,7,8-HPCDF	pg/L	3.44	J
1,2,3,4,7,8-HxCDD	pg/L	1.25	J
1,2,3,4,7,8-HXCDF	pg/L	2.61	J
1,2,3,6,7,8-HXCDD	pg/L	3.93	J
1,2,3,6,7,8-HXCDF	pg/L	3.73	J
1,2,3,7,8,9-HXCDD	pg/L	2.52	J
1,2,3,7,8,9-HXCDF	pg/L	2.72	J
1,2,3,7,8-PECDD	pg/L	3.53	J
2,3,4,6,7,8-HXCDF	pg/L	1.83	J
2,3,4,7,8-PECDF	pg/L	3.35	J
2,3,7,8-TCDD	pg/L	5.83	
2,3,7,8-TCDF	pg/L	0.956	J

One field blank sample was collected in conjunction with soil sampling in Subarea 5B. The results for this sample are presented in Appendix C and a summary of the detected results is presented in Table 4-3.

Table 4-3. Analytes Detected in Field Blank Results for Subarea 5B - Detected Results Only

FB06-SA5B-122210 6173162 12/22/2010 Field Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
1-METHYLNAPHTHALENE	µg/L	0.017	J
2-METHYLNAPHTHALENE	µg/L	0.022	J
CHLOROFORM	µg/L	1	J
Di-n-butylphthalate	µg/L	0.069	J
NAPHTHALENE	µg/L	0.29	

Forty-two trip blank samples were submitted with the Subarea 5B samples. The results for these samples are presented in Appendix C and a summary of the detected results is presented in Table 4-4. Temperature blanks were included with each shipment of samples. No qualification of sample results based on trip blanks and temperature blanks was required as all criteria were met.

Table 4-4. Analytes Detected in Trip Blanks for Subarea 5B - Detected Results Only

TB-011711 6185294 01/17/2011 Trip Blank			
Analyte	**Units**	**Concentration**	**Final Qualifier**
GASOLINE RANGE ORGANICS (C5-C12)	µg/L	80	

Data qualifications based on blank detections are discussed in Section 4.7.3 and in the Appendix C validation reports. The number of field QC samples collected satisfies the minimum requirements for the Subarea 5B sampling event. Field QA/QC objectives were attained through the use of appropriate sampling techniques and collection of the required QC samples at the required frequencies.

4.6 Laboratory Quality QA/QC

Analytical QA/QC was assessed by laboratory QC checks, method blanks, sample custody tracking, sample preservation, adherence to holding times, laboratory control samples (LCSs), MSs, calibration recoveries, surrogates, tuning criteria, second column confirmations, internal standards, serial dilutions, laboratory duplicates, and interference check standards. The majority of the laboratory QC sample criteria met project requirements as indicated in the data validation reports in Appendix C with the appropriate qualifiers applied. Three hundred and eighty-four individual analyte results (0.38 percent of all the analytes) were rejected as discussed below and in Appendix C.

4.7 Data Quality Indicators

This section summarizes the validation performed. Individual SDG validation reports with specific sample detail are provided in Appendix C.

Achievement of the DQOs was determined in part by the use of data quality indicators (DQIs) described in the DUAR in Appendix C. These DQIs for measurement data are expressed in terms of PARCCS. The DQIs provide a mechanism for ongoing control to evaluate and measure data quality throughout the project. These criteria are defined in the sections below.

4.7.1 Precision

Precision is the measurement of the ability to obtain the same value on re-analysis of a sample. The closer the results of the measurements are, the greater the precision. Precision has nothing to do with accuracy or true values in the sample. Instead it is focused upon the random errors inherent in the analysis that stem from the measurement process and are compounded by the sample vagaries. Precision is measured by analyzing two portions of the sample (sample and duplicate) and then comparing the results. This comparison is expressed in terms of relative percent difference (RPD). RPD is calculated as the difference between the two measurements divided by the average of the two measurements.

$$RPD = \left|(A-B)/\frac{A+B}{2}\right| \times 100$$

The problem with this formula is that it depends on the average of the two measurements and the magnitude of the calculated RPD is intimately linked to the magnitude of the results. When sample results are close to the RL, the RPD is greater but does not necessarily indicate that the precision is out of control limits, just that the sample concentrations are low.

RPD as a measure of precision works very well in those cases where the same level of analyte is present in all samples; however, it does not work well as a quantitative tool when varying levels are present. Analysis of sample duplicates is valuable as a quantitative measure of precision but is not useful as a quantitative measure in environmental sample analyses. Another option that is used for evaluating the differences between sample results that are close to the RL is by evaluating the absolute difference between the results. In this situation the difference between the sample results is compared to the RL (two times the RL for soils) and if the difference is greater the sample results are qualified as estimated.

Because of these problems, precision is normally calculated on spike samples, either on an MS and MSD or on a LCS and laboratory control sample duplicate (LCSD). In this case, a known concentration of analyte has been created in each sample and long- and short-term evaluations of RPD can be made that are applicable to the reality of the measurement. The drawback is that the precision measurement is only applicable to the particular spike level used.

For the Subarea 5B data set, precision was evaluated by reviewing RPD results for QC parameters consisting of MS/MSDs, LCS/LCSDs, laboratory duplicates, and field duplicates.

Laboratory RPD control limits are presented in the WP/FSAP (CDM 2010) or are laboratory specific. For laboratory duplicates, if one or both of the sample results are less than two times the RL, a control limit of the RL absolute value is used for comparison.

The field duplicate RPD criterion is 50 percent. Field duplicates for this project were validated following the criteria where if one result is non-detect and the other result is above the RL, the RPD result is reported at 200 percent and the field duplicate sample and parent sample results are qualified as estimated "J" or "UJ." If the field duplicate RPD is above the 50 percent criteria (and both sample results are above the RL), the field duplicate and parent sample results for that analyte are qualified as estimated "J."

Qualifiers were applied to applicable sample analyte results during the validation process based on laboratory and field RPD results. Details of the validation and the

number of analytes qualified are provided in the DUAR and laboratory validation reports in Appendix C.

The following individual analyte results were qualified as estimated "J/UJ" based on precision criteria:

- Some of the dioxins, fluoride, metals, mercury, TPH, pesticides, herbicides, VOCs, SVOCs, and SVOC SIM results due to laboratory precision criteria.
- Some of the dioxins, pesticide, PCBs, herbicides, and SVOC SIM analyte results due to the RPD results between the two columns being outside of criteria.

Six antimony results were rejected "R" based on laboratory precision criteria.

Field duplicate precision criteria required the qualification of some dioxin, NDMA, fluoride, metals, hexavalent chromium, mercury, alcohols, terphenyls, glycols, TPH, pesticides, PCBs, herbicides, VOCs, SVOCs, SVOC SIM, formaldehyde, and energetics results. The associated results were qualified as estimated "J/UJ" due to field duplicate precision criteria. No results were rejected based on field duplicate precision criteria. All field duplicate RPD results are presented in Appendix C.

There is no discernable pattern or reason for the exceedances identified. No field sampling issues were identified from the RPD results that are outside of criteria and the exceedances are reasonable for this type of sampling activity. Sample results that have been qualified as estimated "J/UJ" due to precision criteria are usable for project decisions. Results that have been rejected are not usable.

4.7.2 Accuracy

Accuracy is a concept from quantitative analysis that attempts to address the question of how close the analytical result is to the true value of the analyte in the sample. Accuracy is determined through a spike procedure, where a known amount of the target analyte is added to a portion of the sample, then the sample and the spiked sample are analyzed. The quantitative measure of accuracy is percent recovery (%R) calculated as follows:

$$\textbf{Percent Recovery} = \left(\frac{\textbf{Total Analyte Found} - \textbf{Analyte Originally Present}}{\textbf{Analyte Added}}\right) \times 100$$

Each measurement performed on a sample is subject to random and systematic error. Accuracy is related to the systematic error. Attempts to assess systematic error are always complicated by the inherent random error of the measurement.

A single detection of accuracy on a sample is not significant statistically, although it is commonly viewed as such. Statistics is the science of prediction of reality based on a limited number of observations. The more limited the number of observations, the worse the prediction is going to be. The following QC samples are used to help assess laboratory accuracy:

Matrix Spikes: Matrix spikes are a known amount of a target analyte added to a sample. Analysis of the sample that has been spiked and comparison with the results from the unspiked sample (background) gives information about the ability of the test procedure to generate a correct result from the sample.

Post Digestion Spikes: Post digestion spikes are performed after the sample has been prepared and are ready for analysis. These are also termed "analytical spikes." The technique is used in conjunction with a MS to provide data that can separate interferences produced as part of the sample preparation from interferences that are innate qualities of the sample.

Laboratory Control Samples: LCSs consist of a portion of analyte-free water or solid phase sample that is spiked with target analytes at a known concentration.

Surrogates: Surrogate recovery is a QC measure limited to use in organics analysis. Surrogates are compounds added to every sample at the beginning of the sample preparation to monitor the success of the sample preparation on an individual sample basis. Individual compounds used as surrogates are selected based on their ability to mimic the behavior of specific target analytes held to be particularly sensitive to the sample preparation manipulations.

Interference Check Samples: Interference check sample analysis is a QC measure unique to metals analysis using inductively coupled plasma atomic emission spectrometry. When excited, each element emits light of set wavelengths. The wavelengths of light emitted from a sample can be measured to provide a qualitative and a quantitative evaluation of the elemental composition of the sample.

Calibrations and Internal Standards: Calibration/internal standards determine the establishment of a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. Calibration is the technique that allows for the quantitative analysis on the sample. A necessary prerequisite is that a confident identification of the target analyte has already been established.

Serial Dilution: Serial dilutions are performed on at least one sample from every batch of analyses for metals to determine if physical or chemical interferences exist in the analyte determinations.

For the Subarea 5B soil data set, accuracy was evaluated by reviewing the %R values of initial and continuing calibration (percent difference or percent drift [%D] for organic analyses), internal standards, surrogate spikes (organic analyses only), MS/MSD, LCS/LCSD, inductively coupled plasma (ICP) interferences, and by performing serial dilution checks during metals analyses, in conjunction with method blank, calibration blank, equipment rinsate blank, and trip blank results. These QC

results assist in identifying the type and magnitude of effects that contributed to the system error introduced via field and/or laboratory procedures.

Analytical accuracy for the entire data collection activity is difficult to assess because several sources of error exist. Errors can be introduced by any of the following:

- Sampling procedure
- Field contamination
- Sample preservation and handling
- Sample matrix
- Sample preparation
- Analytical techniques

Accuracy is maintained to the extent possible by adhering to the EPA method and approved field and analytical standard operating procedures.

Qualifiers were applied to applicable sample analyte results during the validation process based on laboratory accuracy results. Details of the validation and the number of analytes qualified are discussed in detail in the DUAR and laboratory validation reports in Appendix C.

The following analyte results were qualified as estimated "J/UJ" based on accuracy criteria:

- Some of the various dioxins, NDMA, fluoride, perchlorate, metals, alcohols, terphenyls, glycols, TPH, pesticides, PCBs, herbicides, VOCs, SVOCs, SVOC SIM, formaldehyde, and energetics results due to matrix spike accuracy criteria.

- Some of the TPH, pesticides, PCBs, herbicides, VOCs, SVOCs, and SVOC SIM results due to LCS accuracy criteria.

- Some of the dioxin, NDMA, alcohols, terphenyls, glycols, TPH, pesticides, PCBs, herbicides, VOCs, SVOCs, SVOC SIM, and energetics results due to surrogate criteria.

- Some of the TPH, pesticides, PCBs, herbicides, VOCs, SVOCs, and energetics results due to calibration criteria.

- Some of the dioxin analyte results due to internal standard recovery results.

- Some of the metal analyte results due to serial dilution criteria.

The following individual analyte results were rejected "R" based on accuracy criteria:

- Fifteen antimony results based on matrix spike accuracy and laboratory precision criteria.

- One TPH-EFH results (C8-C11) result based on matrix spike accuracy criteria.

- One hundred and twenty-four pesticide results based on matrix spike accuracy criteria, surrogate recoveries, and LCS accuracy criteria.
- One hundred and eighty-six individual herbicide analyte results based on LCS accuracy criteria, calibration criteria, and matrix spike accuracy criteria.
- Fifty-eight individual SVOC analyte results based on matrix spike accuracy criteria and surrogate recovery accuracy criteria.

Sample preservation, handling, and holding times are additional measures of accuracy of the data. Holding times are defined as the amount of time that elapses between the collection of the sample from the source in the field and the beginning of the analysis procedure. Preservation is defined as techniques used to maintain the target analytes at concentrations representative of those in the source sampled, until the sample is analyzed in the laboratory. Published holding times are viewed as valid as long as the associated preservation and container requirements have been met. All holding times, sample preservation, and handling criteria were met.

Sample results qualified as estimated "J/UJ" due to accuracy criteria are usable for project decisions. Results that have been rejected are not usable.

4.7.3 Blank Contamination

Blanks are used to determine the level of laboratory and field contamination introduced into the samples, independent of the level of target analytes found in the sample source. Sources of sample contamination can include the containers and equipment used to collect the sample, preservatives added to the sample, other samples in transport coolers and laboratory sample storage refrigerators, standards and solutions used to calibrate instruments, glassware and reagents used to process samples, and the analytical instrument sample introduction equipment. Each area of analysis has its own particular suite of common laboratory contaminants. Active measures must be performed to continually determine the ambient contamination level and steps taken to discover the source of the contamination to eliminate or minimize the levels. Random spot contamination can also occur from analytes that are not common laboratory problems but that can arise as a problem for a specific project or over a short period of time. Field blanks, equipment blanks, trip blanks, and laboratory method blanks are analyzed to identify possible sources of contamination. The DUAR and laboratory validation reports in Appendix C discuss the results that were qualified based on field and laboratory blank contamination.

Some dioxins results, NDMA results, one perchlorate result, metal results, hexavalent chromium results, mercury results, TPH results, herbicide results, VOC results, SVOC results, SVOC SIM results, and one energetics result, were qualified as non-detect due to blank contamination criteria. Tables 4-2, 4-3, and 4-4 provide a summary of chemicals observed in equipment, field, and trip blank samples.

One trip blank sample contained TPH-GRO (C5-C12) at a concentration of 80 µg/L. All associated sample results were non-detect so no qualification of the data was required. Because the TPH-GRO analysis encompasses a range of volatile compounds commonly found in gasoline, the source of the contamination is difficult to isolate. Common laboratory contaminants like methylene chloride and acetone can contribute to the observed TPH-GRO levels detected in this trip blank. Because all associated samples were not detected for TPH-GRO, no sample qualification is necessary.

4.7.4 Representativeness, Comparability, and Sensitivity

Representativeness, comparability, and sensitivity are achieved by using EPA-approved sampling procedures and analytical methodologies. By following the procedures described in the WP/FSAP for this sampling event and future sampling events, sample analysis should yield results representative of environmental conditions at the time of sampling. Similarly, reasonable comparability of analytical results for this and future sampling events can be achieved if approved EPA analytical methods and standardized reporting units are employed.

4.7.4.1 Representativeness

Representativeness is a qualitative term that expresses the degree to which the sample data accurately and precisely represent the environmental conditions corresponding to the location and depth interval of sample collection. Requirements and procedures for sample collection are designed to maximize sample representativeness.

Representativeness also can be monitored by reviewing field documentation and/or performing field audits. For this report, a detailed review was performed on the COC forms, laboratory sample confirmation logs, and data validation packages. Laboratory QA/QC requirements are included in the WP/FSAP (CDM 2010) and laboratory statements of work (SOWs) to ensure that the laboratory analytical results were representative of true field conditions.

Field sampling accuracy was attained through strict adherence to the approved WP/FSAP and by using approved standard operating procedures for field data collection. Based on this, the data should represent as near as possible the actual field conditions at the time of sampling.

Representativeness has been achieved by the performed field work and laboratory analyses. The analytical data generated, that have not been rejected, are viewed to be a representative characterization of the project area.

4.7.4.2 Comparability

Comparability is a qualitative term that expresses the confidence with which a data set can be compared with another. Strict adherence to standard sample collection procedures, analytical detection limits, and analytical methods assures that data from like samples and sample conditions are comparable. This comparability is independent of laboratory personnel, data reviewers, or sampling personnel. Comparability criteria are met for the project if, based on data review, the sample

collection and analytical procedures are determined to have been followed, or defined to show that variations did not affect the values reported.

To ensure comparability of data generated for the site, standard sample collection procedures and DTSC-approved analytical methods were utilized by CDM. The sample analyses were performed by LLI. Utilizing such approved procedures and methods enables the current data to be comparable with previous and future data sets generated using similar methods.

4.7.4.3 Sensitivity

Sensitivity is related to the ability to compare analytical results with project-specific levels of interest, such as risk-based screening levels or action levels. Analytical detection limits for the various sample analytes should be below the level of interest to allow an effective comparison.

Detection Limits

The method detection limit (MDL) attempts to answer the question, "What is the lowest level of analyte in a sample that will result in a signal different than zero"? The study is based upon repetitive analysis of an interference-free sample spiked with a known amount of the target analyte. The MDL is a measure of the ability of the test procedure to generate a positive response for the target analyte in the absence of any other interferences from the sample.

The RL is generally defined as the lowest concentration at which an analyte can be detected in a sample and its concentration reported with a reasonable degree of accuracy and precision. For samples that do not pose a particular matrix problem, the RL is typically about three to five times higher than the MDL.

Laboratory results are reported according to rules that provide established certainty of detection and RLs. The result for an analyte is flagged with a "U" if that analyte was not detected, or qualified with a "J" flag if blank or other QC results fall outside the appropriate tolerance limits.

If an analyte is present at a concentration between the MDL and the RL, the analytical result is flagged with a "J," indicating an estimated quantity. Qualifying the result as an estimated concentration reflects increased uncertainty in the reported value.

The data validation process also determines the most valid analyte result to use for samples that are re-analyzed or diluted. These validated results are entered into the project database and used for decision-making.

Qualifiers were applied to applicable sample analyte results during the validation process based on sample results being reported as detected and below the RL /MDL. Details of the validation and the number of analytes qualified are discussed in detail in the DUAR and laboratory validation reports in Appendix C.

In summary, for all methods analyzed, results for some of the analytes were qualified as estimated due to RL criteria.

In general, for the data validated in this report, detection limits for the sample results were low enough to compare to the action levels stated in the WP/FSAP (CDM 2010). The detection limits for this project are lower than "normal" environmental data analyses. Analytical laboratory methods were modified in order to achieve the lowest practicable RLs. Current laboratory instrumentation technology cannot achieve all of these low RLs, and thus some of the RLs were above project criteria. These results are still considered usable for project decisions.

4.8 Review of Selected Validation Reports

CDM performed a review of the validation reports identified in Table 4-1. This review involved comparing the validation report results against the laboratory data packages as well as the validation guidance documents. All validation report results were verified against the laboratory data packages and validation documents were followed as required.

4.9 Data Completeness

Completeness of the data is defined as the percentage of samples planned for collection as listed in the WP/FSAP versus the actual number of samples collected during the field program (see equation A).

Completeness for acceptable data is defined as the percentage of acceptable data obtained judged to be valid versus the total quantity of data generated (see equation B). Acceptable data include both data that pass all the QC criteria (unqualified data) and data that may not pass all the QC criteria but had appropriate corrective actions taken (qualified but usable data).

Equation A. $$\%\text{Completeness} = C \times \frac{100}{n}$$

Where:

C = actual number of samples collected
n = total number of samples planned

Equation B. $$\%\text{Completeness} = V \times \frac{100}{n'}$$

Where:

V = number of measurements judged valid
n' = total number of measurements made

The overall completeness goal for this sampling event is 90 percent for all project data.

A total of 422 Subarea 5B soil samples including the field duplicates were collected and analyzed. One hundred percent of the samples identified in the WP/FSAP Addendum were collected meeting the completeness goal for the number of samples collected versus number of samples planned.

The completeness goal achieved for acceptable data was 99.61 percent of the number of measurements judged to be valid versus the total number of measurements made for all Subarea 5B samples analyzed. Table 4-5 is a summary of the number of results that were estimated or rejected.

Table 4-5. Summary of Data Completeness Following Data Validation

	Number of Analyte Detections Without Qualifiers	Number of Estimated Results	Number of Rejected Results	Number of Non-Detect Results	Number of Estimated Non-Detect Results	Total Analytes Detect and Non-Detect	Percent of Analyte Results Judged Valid Versus Total Analyte Results Collected
Dioxins	1203	2769	0	4427	84	8483	100
Formaldehyde	34	9	0	119	0	162	100
Cyanide	0	0	0	162	0	162	100
Hexavalent Chromium	32	299	0	163	5	499	100
Mercury	21	287	0	177	14	499	100
Metals	7037	6819	15	866	233	14790	99.89
Perchlorate-314	0	7	0	487	5	499	100
Perchlorate-6850	0	0	0	62	0	62	100
Energetics	1	3	0	2907	5	2916	100
NDMA	54	36	0	70	2	162	100
Alcohols, terphenyls, glycols	5	50	0	913	4	972	100
Total Petroleum Hydrocarbons	222	79	1	1048	74	1424	100
PCBs	214	422	0	4436	916	5988	100
Pesticides	47	137	124	4076	236	4620	97.32
Herbicides	163	136	186	1689	26	2200	91.55
VOCs	60	125	0	17374	330	17889	100
VOCs – SIM	0	2	0	265	0	267	100
SVOC	47	402	58	23391	215	24113	99.76
SVOC - SIM	1425	1522	0	8773	93	11813	100
Fluoride/Nitrate	338	282	0	30	11	661	100
Oxidation Reduction Potential	499	0	0	0	0	499	100
Completeness Total for All Subarea 5B Samples Collected and Judged Valid							**99.61%**

The following analyte results were rejected per analyses:

- Method 6020
  - 15 antimony results out of 14,970 results (0.1 percent)
- Method 8015M
  - One TPH-EFH (C8-C11) result out of 2,055 results (0.05 percent)
- Method 8081A

  - 124 pesticide results out of 5,060 results (2.45 percent)

- Method 8151A
  - 186 herbicide results out of 2,420 results (7.68 percent)

- Method 8270C
  - 58 SVOC results out of 13,310 results (0.43 percent)

The completeness goals for both the number of samples collected in Subarea 5B and the number of measurements judged to be valid were met.

No sampling deviations occurred during this sampling event. The data reported and not rejected, are suitable for their intended use for characterization of Area IV of SSFL. The DQIs identified in the WP/FSAP (CDM 2010) met appropriate criteria. The achievement of the completeness goals for the data indicates a sufficient amount of usable data has been generated on which to base project decisions.

4.10 Assessment of Data Usability and Reconciliation with WP/FSAP Goals

Over 99 percent of the data validated and reported in this TM are suitable for their intended use for site characterization. Sample results that were rejected are not suitable for project use. The rejected analyte results do not impact achievement of the overall project objectives. The MDLs reported generally met the expected limits proposed by the analytical laboratory in their contract agreement with CDM.

Sample results that were qualified as estimated are usable for project decisions. Numerous dioxin results were qualified as estimated and/or non-detect due to the low detection limits. This data is considered usable.

Field duplicate precision met criteria a majority of the time. RPDs were outside criteria predominantly when the sample results were close to the RL and/or below the project required action limits. Decisions based on results close to the RL should be made with a degree of caution. The achievement of the completeness goals for number of samples collected, and the number of sample results acceptable for use provides sufficient quality data to support project decisions.

Section 5
References

CDM. 2010. *Draft Work Plan/Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California.* October 14.

CDM. 2011. *Addendum No. 1 to Master Work Plan/Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California, EPA Subarea 5B Soil Sampling*. January 21.

CH2M Hill. 2008. *Group 5 – Central Portion of Areas III and IV RCRA Facility Investigation Report Santa Susana Field Laboratory, Ventura County, California*. November.

EPA. 2008. *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. EPA-540-R-08-01. June.

EPA. 2005. *EPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review*. EPA-540-R-05-001. September.

EPA. 2004. *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA 540-R-04-004. October.

HydroGeoLogic, Inc. 2010a. *Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California.* October 4.

HydroGeoLogic, Inc. 2010b. *Subarea 5B Field Sampling Plan Addendum, Santa Susana Field Laboratory Site, Area IV Radiological Study.* December 15.

MEC^{X}. 2009. *Quality Assurance Project Plan, Santa Susana Field Laboratory, RCRA Facility Investigation, Surficial Media Operable Unit*. March.

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Appendix A
Analytical Results Tables

Appendix B
Laboratory Reports
(On CD)

Appendix C
Data Usability Assessment Report and Data Validation Reports
(On CD)

Appendix D
Master Database Table
(On CD)

Legend

- Sample Location
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5B Sample Locations

0 50 100 200 300 Feet

Santa Susana Field Laboratory
Ventura County, California
Exhibit 1

CDM Smith

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