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NAS WILLOW GROVE
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Confirmation Soil Investigation Report
Site Screening Area (SSA) 12

Naval Air Station
Joint Reserve Base
Willow Grove, Pennsylvania

Naval Facilities Engineering Command
Mid-Atlantic

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TETRA TECH

Confirmation Soil Investigation at Site Screening Area (SSA) 12

Background

Subsequent to the completion of the field work for the Phase II Remedial Investigation (TtNUS, 1997), the Environmental Protection Agency (EPA) requested that the Navy investigate various features that had been identified adjacent to Site 2 by the Environmental and Photographic Interpretation Center (EPIC). During their field reconnaissance of these features, the Navy discovered several drums and debris abandoned on the ground surface in a limited area. The Navy tasked Resources Management Concepts, Inc. (RMC) to remove the debris, obtain surface and shallow subsurface soil samples at the Epic features and the drum locations, and to analyze the samples for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and metals. A total of twenty-nine locations were sampled: 19 Epic feature locations and 10 drum locations. The Epic feature locations were sampled from a depth of 0 to 6 inches, and the drum locations were sampled from depths of 0 to 6 inches and 24 inches to 30 inches.

The results of the RMC investigation indicated that SVOCs, pesticides, and metals were present at some locations (RMC, 2003). Subsequent review of the data, however, indicated that data quality issues (high detection limits) compromised the usability of the data, resulting in inconclusive results, precluding decision-making relative to the regulatory disposition of the site. As a result, the Navy directed TtNUS to resample the soils at each location for VOCs, SVOCs, pesticides, PCBs, and metals. The area comprising the EPIC and drum locations is referred to as Site Screening Area (SSA) 12.

Methods of the Investigation

The sample locations were located and staked in the field from November 8 to November 14, 2007 using a Trimble Pro XRS Global Positioning System (GPS) unit and the Universal Trans Mercator (UTM) coordinates provided in the RMC report. Significant clearing with a brush cutter was required due to the amount of vegetative overgrowth in the area. The clearing was accomplished using a rented walk-behind brush cutter.

The field investigation was conducted from December 5 to December 7, 2007. The investigation consisted of the collection of surface and shallow subsurface soil samples from 26 locations in the vicinity of Site Screening Area (SSA) 12. Two of the EPIC feature locations (11E and 12E) and one of the former drum location (09D) were not sampled because they were below a gravel roadway that was laid down since the RMC samples were taken. This roadway that runs through SSA12 had been widened significantly since the original samples were collected in 2003. One soil sample was collected from a depth of 0 to 6 inches at each EPIC feature location, and two soil samples were obtained (from depths of

0 to 6 inches and 24 to 30 inches) at each former drum location. Figure 1 shows the soil sample locations. Table 1 summarizes the soil samples collected.

The field procedures followed Tetra Tech NUS standard operating procedures (SOPs) as presented in the Work Plan for Soil Investigation at Site Screening Area 12 Between Site 2 and Site 5 (November 2007). Tetra Tech NUS personnel performed all sample collection, sample handling, and sample management throughout the investigation. All sampling data were recorded on sample log sheets and in the site logbook by the Tetra Tech NUS field geologist. The soil was described by the site geologist and was screened for evidence of contamination with a photoionization detector (PID). Any qualitative visual signs of potential contamination (such as soil staining) were noted on the sample log, Appendix A. In addition, photographs were taken of each sample location, and are included in Appendix B.

Surface soil samples were collected using a disposable trowel and subsurface soil samples were obtained using a stainless steel hand auger and disposable trowel. The portion of each sample that was to be analyzed for volatile organic compounds was collected using an Encore sampling device following the manufacturer's instructions. Surface soil samples for VOC analysis were collected from undisturbed ground from a depth of six inches below the ground surface. Subsurface soil samples for VOC analysis were collected directly from the hand auger bowl. Samples for all other analytical fractions were homogenized prior to being placed in the laboratory-supplied sample jars. Samples were packaged in iced coolers and shipped to the laboratory at the end of each sampling day via overnight courier.

Surplus soil generated during sampling was placed back at the point of generation. All non-disposable sampling equipment was decontaminated prior to field sampling, between samples, and at the conclusion of sampling activities following the procedures detailed in the work plan.

Field Observations

The soil consisted mainly of silt, with varying amounts of sand and clay. Debris was observed in the soil at two locations: SS09E (metal fragments) and SB08D (glass fragments, pieces of metal wire, and rusty metal fragments). No PID readings greater than background were recorded. No soil staining or odors were observed at any of the sample locations.

Miscellaneous debris was observed throughout the study area, particularly in the area of the former drum locations and Epic feature locations 13E through 19E. The debris included construction debris, bottles (some partially melted), china, and engine parts. During the clearing operations, an object that appeared to be a piece of ordnance was observed on the ground surface near sample location 16E. The object was approximately 8 inches long. Brush clearing operations were halted and TtNUS personnel evacuated the area. The Base contact was notified, and security personnel and the Base fire department

were called to secure the site. EOD personnel determined that the object was hollow and was not dangerous. The EOD personnel removed the object from the site for disposal. Clearing operations continued when security personnel indicated that the area was safe.

Analytical Results

The analytical results were compared to EPA Region 3 Risk Based Concentrations (RBCs) for residential soil. SVOCs, pesticides, and metals were identified at concentrations above these screening levels. Table 2 summarizes the positive detections from the analytical results and compares them to RBCs. Figure 2 shows the locations of the samples containing screening level exceedances.

SVOCs, consisting of polyaromatic hydrocarbons (PAHs), were detected at concentrations above screening levels at four former drum locations (1D, 2D, 7D, and 8D) and twelve EPIC feature locations (1E, 4E, 5E, 7E, 8E, 9E, 13E, 14E, 15E, 17E, 18E, and 19E). The highest concentrations of SVOCs were detected in sample SSA12-SS17E-000.5, which contained benzo(a)anthracene (3700J [J = estimated] ug/kg), benzo(a)pyrene (2,600 ug/kg), benzo(b)fluoranthene (2,800 ug/kg), benzo(k)fluoranthene (2,700J ug/kg), dibenz(a,h)anthracene (610J ug/kg) and indeno(1,2,3-cd)pyrene (2,400J ug/kg) at concentrations above screening levels.

Dieldrin was detected at concentrations above screening levels in the surface soil at one former drum location (8D) and two Epic feature locations (7E and 10E). The highest concentration of dieldrin, 500J ug/kg, was detected in sample SSA12-SS07E-000.5. There were no other pesticides detected above screening levels.

Arsenic was detected at concentrations exceeding screening levels in all of the samples collected. The arsenic concentrations ranged from 2.2 mg/kg (in sample SSA12-01E-000.5) to 13.3 mg/kg (in sample SSA12-08D-2.02.5). Thallium was detected at concentrations exceeding screening levels in four samples: SSA12-SB05D-2.02.5 (7J mg/kg), SSA12-SB06D-2.02.5 (5.8J mg/kg), SSA12-SB07D-2.02.5 (6.1K [K = biased high] mg/kg, and SSA12-SB08D-2.02.5 (41.1K mg/kg). Iron and lead were detected in sample SSA12-SB08D-2.02.5 at concentrations of 166,000 mg/kg and 1,250 mg/kg, respectively.

TABLES

TABLE 1
SOIL SAMPLE SUMMARY
SSA 12 SOIL INVESTIGATION
NAS JRB WILLOW GROVE, PENNSYLVANIA

Sample Location	Analytical Sample	Soil Sample Depth Interval (ft bgs)	Sample Description	PID Reading (ppm)	Analysis
SS01E	SSA12-SS01E-000.5	0 – 0.5	Silty sand	0	Full TCL/TAL
SS02E	SSA12-SS02E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS03E	SSA12-SS03E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS04E	SSA12-SS04E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS05E	SSA12-SS05E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS06E	SSA12-SS06E-000.5	0 – 0.5	Clayey silt	0	Full TCL/TAL
SS07E	SSA12-SS07E-000.5	0 – 0.5	Clayey silt	0	Full TCL/TAL
SS08E	SSA12-SS08E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS09E	SSA12-SS09E-000.5	0 – 0.5	Sandy silt, some metal fragments	0	Full TCL/TAL
SS10E	SSA12-SS10E-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SS13E	SSA12-SS13E-000.5	0 – 0.5	Silt, some sand	0	Full TCL/TAL
SS14E	SSA12-SS14E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS15E	SSA12-SS15E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS16E	SSA12-SS16E-000.5	0 – 0.5	Sandy silt	0	Full TCL/TAL
SS17E	SSA12-SS17E-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SS18E	SSA12-SS18E-000.5	0 – 0.5	Clayey silt	0	Full TCL/TAL
SS01D	SSA12-SS01D-000.5	0 – 0.5	Clayey silt	0	Full TCL/TAL
SB01D	SSA12-SB01D-0.51.0	0.5 – 1.0	Clayey silt, some sand	0	Full TCL/TAL
SS02D	SSA12-SS02D-000.5	0 – 0.5	Clayey silt	0	Full TCL/TAL
SB02D	SSA12-SB02D-2.02.5	2.0 – 2.5	Silt, some sand	0	Full TCL/TAL
SS03D	SSA12-SS03D-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SB03D	SSA12-SB03D-1.52.0	1.5 – 2.0	Silty sand, some clay	0	Full TCL/TAL
SS04D	SSA12-SS04D-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SB04D	SSA12-SB04D-2.02.5	2.0 – 2.5	Silty clay	0	Full TCL/TAL
SS05D	SSA12-SS05D-000.5	0 – 0.5	Silt	0	Full TCL/TAL
SB05D	SSA12-SB05D-2.02.5	2.0 – 2.5	Clayey silt	0	Full TCL/TAL
SS06D	SSA12-SS06D-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SB06D	SSA12-SB06D-2.02.5	2.0 – 2.5	Clayey silt	0	Full TCL/TAL
SS07D	SSA12-SS07D-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SB07D	SSA12-SB07D-2.02.5	2.0 – 2.5	Silty clay	0	Full TCL/TAL
SS08D	SSA12-SS08D-000.5	0 – 0.5	Silt, some clay	0	Full TCL/TAL
SB08D	SSA12-SB08D-2.02.5	2.0 – 2.5	Clayey silt and debris (glass, rusty metal, wire)	0	Full TCL/TAL
SS10D	SSA12-SS10D-000.5	0 – 0.5	Silt, trace of clay	0	Full TCL/TAL
SB10D	SSA12-SB10D-2.02.5	2.0 – 2.5	Silt	0	Full TCL/TAL

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	EPA Region 3 Residential Soil RBC	SSA12-SS01D-000.5		SSA12-SB01D-0.5-1.0		SSA12-SS02D-000.5		SSA12-SB02D-2.0-2.5		SSA12-SB02D-2.02.5-D		SSA12-SS03D-000.5	
Sample Date:		12/07/07		12/07/07		12/07/07		12/07/07		12/07/07		12/05/07	
Top Depth (feet):		0		0.5		0		2		2		0	
Bottom Depth (feet):		0.5		1		0.5		2.5		2.5		0.5	
Duplicate of:										SSA12-SB02D-2.0-2.5			
INORGANICS	**mg/kg**	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	7.8E+04	12500		12800		21000		12100		12400		13400	
Antimony	3.1E+01	1.4	B	1.3	B	1.7	B	0.33	UR	0.33	UR	1.1	B
Arsenic	4.3E-01	4.2		4		5.2		4.7		4.7		6.3	
Barium	1.6E+04	107		98.3		139		50		51.5		142	
Beryllium	1.6E+02	0.84	K	0.85	K	1.3	K	0.66	K	0.62	K	0.81	K
Cadmium	3.9E+01	0.07	U	0.06	U	0.08	U	0.06	U	0.06	U	5.2	L
Calcium	NA	4080		3300		2760		692		761		1970	
Chromium	2.3E+02	20.6	J	19	J	30.3	J	21.4	J	20.4	J	21.1	
Cobalt	NA	6.7	J	6.8	J	6.7	J	5.6	J	11.9	J	7.7	K
Copper	3.1E+03	19.6	J	16.7	J	30.8	J	11.2	J	11.3	J	39.9	J
Iron	5.5E+04	17200	J	17200	J	21300	J	21900	J	21200	J	21200	
Lead	4.0E+02	55.6		43.3		84.7		7.5		8.1		66	
Magnesium	NA	2290		2100		3070		1820		1860		1750	
Manganese	1.6E+03	518	J	484	J	164	J	240	J	392	J	647	K
Mercury	2.3E+01	0.099		0.098		0.16		0.019	U	0.02	U	0.13	K
Nickel	1.6E+03	15.1	J	13.7	J	20.1	J	8.4	J	9.9	J	37.4	
Potassium	NA	1590		1330		1440		664	L	694	L	917	L
Silver	3.9E+02	0.07	UR	0.06	UR	0.08	UR	0.06	UR	0.06	UR	0.12	L
Sodium	NA	131	B	549	K	170	B	133	B	141	B	96.5	B
Thallium	5.5E+00	3	J	2.9	J	4.2	J	3.7	J	4	J	3.1	K
Vanadium	7.8E+01	26.4		27.5		42.8		36.6		35.1		31.8	
Zinc	2.3E+04	111		77.2		104		19.3		22.4		466	
SEMIVOLATILES	**ug/kg**	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	3.1E+05	470	U	430	U	270	U	200	U	210	U	240	U
Acenaphthene	4.7E+06	160	J	140	J	270	U	200	U	210	U	240	U
Acenaphthylene	4.7E+06	170	J	130	J	270	U	200	U	210	U	240	U
Anthracene	2.3E+07	630	J	600	J	270	U	200	U	210	U	240	U
Benz(a)anthracene	2.2E+02	2000	J	1800	J	430	J	200	U	210	U	240	U
Benzo(a)pyrene	2.2E+01	1900	J	1600	J	580	J	200	U	210	U	240	U
Benzo(b)fluoranthene	2.2E+02	1800	J	1500	J	630	J	200	U	210	U	240	U
Benzo(g,h,i)perylene	3.1E+05	1100	J	870	J	430	J	200	U	210	U	240	U
Benzo(k)fluoranthene	2.2E+03	1900	J	1500	J	620	J	200	U	210	U	240	U
Bis(2-ethylhexyl)phthalate	4.6E+04	470	U	430	U	340		200	U	210	U	240	U
Carbazole	3.2E+04	290	J	220	J	270	U	200	U	210	U	240	U
Chrysene	2.2E+04	2000	J	1800	J	640	J	200	U	210	U	240	U
Dibenz(a,h)anthracene	2.2E+01	570	J	450	J	270	U	200	U	210	U	240	U
Fluoranthene	3.1E+06	4700	J	4800	J	930	J	200	U	210	U	120	J
Fluorene	3.1E+06	160	J	150	J	270	U	200	U	210	U	240	U
Indeno(1,2,3-cd)pyrene	2.2E+02	1400	J	1100	J	470	J	200	U	210	U	240	U
Phenanthrene	3.1E+05	1900	J	1800	J	360	J	200	U	210	U	240	U
Pyrene	2.3E+06	4700	J	4200	J	1100		200	U	210	U	240	U

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	EPA Region 3 Residential Soil RBC	SSA12-SS01D-000.5		SSA12-SB01D-0.5-1.0		SSA12-SS02D-000.5		SSA12-SB02D-2.0-2.5		SSA12-SB02D-2.02.5-D		SSA12-SS03D-000.5	
Sample Date:		12/07/07		12/07/07		12/07/07		12/07/07		12/07/07		12/05/07	
Top Depth (feet):		0		0.5		0		2		2		0	
Bottom Depth (feet):		0.5		1		0.5		2.5		2.5		0.5	
Duplicate of:										SSA12-SB02D-2.0-2.5			
VOLATILES	**ug/kg**	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	4.7E+07	15	B	12	B	29	B	4	B	3.7	B	26	B
Acetone	7.0E+07	200		140		470		31	B	27	B	310	
Benzene	1.2E+04	6.8	U	5.7	U	8.7	U	5.6	U	5.4	U	6.8	U
Carbon Disulfide	7.8E+06	6.8	U	5.7	U	8.7	U	1.1	J	5.4	U	6.8	U
Dichlorodifluoromethane	1.6E+07	6.8	U	5.7	U	8.7	U	5.6	U	5.4	U	6.8	U
Methyl Acetate	7.8E+07	6.8	U	5.7	U	8.7	U	5.6	U	5.4	U	6.8	U
Toluene	6.3E+06	6.8	U	5.7	U	8.7	U	5.6	U	5.4	U	6.8	U
Trichlorofluoromethane	2.3E+07	6.8	U	5.7	U	8.7	U	5.6	U	5.4	U	6.8	U
PESTICIDES	**ug/kg**	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	2.7E+03	4.5	UJ	8.4	UJ	5.2	UJ	4	UJ	4	UJ	4.6	UJ
4,4'-DDE	1.9E+03	8.2	J	27	J	7.6	R	4	UJ	4	UJ	4.6	UJ
4,4'-DDT	1.9E+03	6.8	J	12	J	7.9	J	4	UJ	4	UJ	4.6	UJ
Aldrin	3.8E+01	2.3	UJ	4.3	UJ	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Alpha-BHC	1.0E+02	2.3	UJ	4.3	UJ	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Alpha-Chlordane	1.8E+03	2.7	J	6	R	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Beta-BHC	3.5E+02	29	R	2.2	UJ	16	R	1	UJ	1	UJ	1.2	UJ
Delta-BHC	NA	1.4	J	4.3	UJ	1.9	J	2	UJ	2.1	UJ	0.57	J
Dieldrin	4.0E+01	5.9	J	8.7	J	20	J	4	UJ	4	UJ	1.2	J
Endosulfan I	4.7E+05	1.6	J	4.3	UJ	0.67	J	2	UJ	2.1	UJ	2.4	UJ
Endosulfan II	4.7E+05	4.5	UJ	8.4	UJ	5.2	UJ	4	UJ	4	UJ	4.6	UJ
Endosulfan Sulfate	4.7E+05	4.5	UJ	82	R	16	J	4	UJ	4	UJ	4.6	UJ
Endrin	2.3E+04	4.5	UJ	10	R	5.2	UJ	4	UJ	4	UJ	4.6	UJ
Endrin Aldehyde	2.3E+04	4.5	UJ	10	J	11	R	4	UJ	4	UJ	4.6	UJ
Endrin Ketone	2.3E+04	4.5	UJ	15	J	5.2	UJ	9.4	R	4	UJ	4.6	UJ
Gamma-BHC (Lindane)	4.9E+02	2.3	UJ	2.3	J	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Gamma-Chlordane	1.8E+03	8.5	J	4.3	UJ	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Heptachlor	1.4E+02	1.1	J	4.3	UJ	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Heptachlor Epoxide	7.0E+01	2.3	UJ	4.3	UJ	2.7	UJ	2	UJ	2.1	UJ	2.4	UJ
Methoxychlor	3.9E+05	23	UJ	43	UJ	27	UJ	20	UJ	21	UJ	24	UJ

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB03D-1.5-2.0**		**SSA12-SS04D-000.5**		**SSA12-SB04D-2.0-2.5**		**SSA12-SS05D-000.5**		**SSA12-SB05D-2.0-2.5**		**SSA12-SS06D-000.5**	
Sample Date:	**12/05/07**		**12/05/07**		**12/05/07**		**12/07/07**		**12/07/07**		**12/07/07**	
Top Depth (feet):	**1.5**		**0**		**2**		**0**		**2**		**0**	
Bottom Depth (feet):	**2**		**0.5**		**2.5**		**0.5**		**2.5**		**0.5**	
Duplicate of:												
INORGANICS	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	15100		13700		13900		13400		19700		14800	
Antimony	0.71	B	1.4	B	0.48	B	0.77	B	0.35	UR	0.7	B
Arsenic	5.2		6.3		6.2		6.8		6.9		6.3	
Barium	84.1		130		49.1		88.5		56.6		84.6	
Beryllium	0.81	K	0.86	K	0.71	K	0.95	K	0.7	K	1	K
Cadmium	0.68	J	9.4		0.06	UR	0.07	U	0.06	U	0.07	U
Calcium	1090		1960		673		1900		750		742	
Chromium	18.6		27.1		19.9		17	J	27.7	J	16.8	J
Cobalt	8.6	K	8.9	K	11	K	6.1	J	6.1	J	5.8	J
Copper	16.4	J	51.9	J	12.5	J	15.1	J	16.9	J	16.7	J
Iron	19600		22100		24300		16600	J	31800	J	15800	J
Lead	23.3		102		10.3		35.5		10.7		32.5	
Magnesium	1460		1840		1650		1540		2230		1430	
Manganese	502	K	753	K	437	K	605	J	206	J	685	J
Mercury	0.072	K	0.18	K	0.037	K	0.13		0.037		0.17	
Nickel	17.5		63.5		11.2		11.1	J	12.1	J	11.2	J
Potassium	699	L	925	L	661	L	659	L	814	L	528	L
Silver	0.06	UR	0.44	L	0.06	UR	0.07	UR	0.06	UR	0.07	UR
Sodium	119	B	119	B	126	B	95.5	B	144	B	88.2	B
Thallium	3.3	K	3.8	K	3.8	K	3.6	J	7	J	2.7	J
Vanadium	27.4		32.7		34.5		29.6		45.4		27.4	
Zinc	139		731		35.7		54.5		30		88.2	
SEMIVOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	210	U	240	U	200	U	230	U	220	U	240	U
Acenaphthene	210	U	240	U	200	U	230	U	220	U	240	U
Acenaphthylene	210	U	240	U	200	U	230	U	220	U	240	U
Anthracene	210	U	240	U	200	U	230	U	220	U	240	U
Benz(a)anthracene	210	U	240	U	200	U	230	U	220	U	240	U
Benzo(a)pyrene	210	U	240	U	200	U	230	U	220	U	240	U
Benzo(b)fluoranthene	210	U	240	U	200	U	230	U	220	U	240	U
Benzo(g,h,i)perylene	210	U	240	U	200	U	230	U	220	U	240	U
Benzo(k)fluoranthene	210	U	240	U	200	U	230	U	220	U	240	U
Bis(2-ethylhexyl)phthalate	210	U	240	U	200	U	230	U	220	U	240	U
Carbazole	210	U	240	U	200	U	230	U	220	U	240	U
Chrysene	210	U	240	U	200	U	230	U	220	U	240	U
Dibenz(a,h)anthracene	210	U	240	U	200	U	230	U	220	U	240	U
Fluoranthene	210	U	130	J	200	U	230	U	220	U	140	J
Fluorene	210	U	240	U	200	U	230	U	220	U	240	U
Indeno(1,2,3-cd)pyrene	210	U	240	U	200	U	230	U	220	U	240	U
Phenanthrene	210	U	240	U	200	U	230	U	220	U	240	U
Pyrene	210	U	240	U	200	U	230	U	220	U	140	J

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB03D-1.5-2.0**		**SSA12-SS04D-000.5**		**SSA12-SB04D-2.0-2.5**		**SSA12-SS05D-000.5**		**SSA12-SB05D-2.0-2.5**		**SSA12-SS06D-000.5**	
Sample Date:	**12/05/07**		**12/05/07**		**12/05/07**		**12/07/07**		**12/07/07**		**12/07/07**	
Top Depth (feet):	**1.5**		**0**		**2**		**0**		**2**		**0**	
Bottom Depth (feet):	**2**		**0.5**		**2.5**		**0.5**		**2.5**		**0.5**	
Duplicate of:												
VOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	660	U	35	B	640	U	25	B	7.5	B	32	B
Acetone	4600	J	380		2200	J	510		83	B	450	
Benzene	260	U	6.8	U	260	U	7	U	5.9	U	6.9	U
Carbon Disulfide	260	U	6.8	U	260	U	7	U	5.9	U	6.9	U
Dichlorodifluoromethane	260	U	1.8	J	260	U	7	U	5.9	U	6.9	U
Methyl Acetate	260	J	6.8	U	260	U	7	U	5.9	U	6.9	U
Toluene	260	U	6.8	U	260	U	7	U	5.9	U	6.9	U
Trichlorofluoromethane	260	U	6.8	U	260	U	7	U	5.9	U	6.9	U
PESTICIDES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	4.1	UJ	8.3	R	4	UJ	4.5	UJ	4.2	UJ	9.1	R
4,4'-DDE	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
4,4'-DDT	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	3.4	J
Aldrin	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	2.4	UJ
Alpha-BHC	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	2.4	UJ
Alpha-Chlordane	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	2.4	UJ
Beta-BHC	1.1	UJ	6.6	R	1	UJ	1.2	UJ	1.1	UJ	1.2	UJ
Delta-BHC	2.1	UJ	0.88	J	2	UJ	2.3	UJ	2.2	UJ	1	J
Dieldrin	4.1	UJ	4.6	UJ	4	UJ	1.4	J	4.2	UJ	4.1	J
Endosulfan I	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	2.4	UJ
Endosulfan II	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
Endosulfan Sulfate	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
Endrin	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
Endrin Aldehyde	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
Endrin Ketone	4.1	UJ	4.6	UJ	4	UJ	4.5	UJ	4.2	UJ	4.6	UJ
Gamma-BHC (Lindane)	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	2.4	UJ
Gamma-Chlordane	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	13	R
Heptachlor	2.1	UJ	0.8	J	2	UJ	2.3	UJ	2.2	UJ	0.83	J
Heptachlor Epoxide	2.1	UJ	2.4	UJ	2	UJ	2.3	UJ	2.2	UJ	0.99	J
Methoxychlor	21	UJ	24	UJ	20	UJ	23	UJ	22	UJ	24	UJ

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB06D-2.0-2.5**		**SSA12-SS07D-000.5**		**SSA12-SB07D-2.0-2.5**		**SSA12-SS08D-000.5**		**SSA12-SB08D-2.0-2.5**		**SSA12-SS10D-000.5**	
Sample Date:	**12/07/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**	
Top Depth (feet):	**2**		**0**		**2**		**0**		**2**		**0**	
Bottom Depth (feet):	**2.5**		**0.5**		**2.5**		**0.5**		**2.5**		**0.5**	
Duplicate of:												
INORGANICS	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	18700		7260		17900		14400		20100		13400	
Antimony	0.61	B	0.8	B	0.52	B	0.93	B	10.4	J	1.1	B
Arsenic	7.4		12.8		11.8		6		13.3		5.8	
Barium	46.3		59.7		51		103		233		97	
Beryllium	0.61	K	0.65	K	0.7	K	0.9	K	0.49	K	0.91	K
Cadmium	0.06	U	0.07	UR	0.06	UR	0.09	B	15.7		0.07	UR
Calcium	589		1360		868		4520		4750		1440	
Chromium	23.1	J	11.7		26.8		18.9		58.8		15.8	
Cobalt	10.6	J	3.9	K	5.1	K	5.4	K	11	K	5	K
Copper	19.5	J	16.1	J	16.1	J	24.8	J	654	J	21.5	J
Iron	31600	J	11900		36900		19100		166000		14300	
Lead	9.3		40.5		11.2		66.7		1250		37.6	
Magnesium	2010		998		2190		2740		2300		1500	
Manganese	263	J	271	K	185	K	488	K	1020	K	632	K
Mercury	0.034		0.47	K	0.072	K	0.24	K	0.12	K	0.17	K
Nickel	12.3	J	8.1		10.7		12.7		115		10.9	
Potassium	710	L	537	L	814	L	886	L	600	L	584	L
Silver	0.06	UR	0.09	L	0.06	UR	3.5		7		0.07	UR
Sodium	136	B	108	B	101	B	125	B	195	B	90.1	B
Thallium	5.8	J	1.5	R	6.1	K	3.6	K	41.1	K	2.1	K
Vanadium	41.6		19.5		42		29.7		29.4		24.8	
Zinc	28.1		48.9		39.8		133		2100		241	
SEMIVOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	210	U	160	J	210	U	480	U	220	U	230	U
Acenaphthene	210	U	250	U	210	U	220	J	220	U	230	U
Acenaphthylene	210	U	250	U	210	U	480	U	220	U	230	U
Anthracene	210	U	250	U	210	U	720	J	220	U	230	U
Benz(a)anthracene	210	U	120	J	210	U	2600	J	220	U	230	U
Benzo(a)pyrene	210	U	140	J	210	U	2500	J	100	J	230	U
Benzo(b)fluoranthene	210	U	250	U	210	U	2900	J	220	U	230	U
Benzo(g,h,i)perylene	210	U	250	U	210	U	1500	J	220	U	230	U
Benzo(k)fluoranthene	210	U	150	J	210	U	2200	J	120	J	230	U
Bis(2-ethylhexyl)phthalate	360	J	250	U	210	U	480	UJ	23000	J	230	U
Carbazole	210	U	250	U	210	U	480	U	220	U	230	U
Chrysene	210	U	280	J	210	U	2900	J	130	J	110	J
Dibenz(a,h)anthracene	210	U	250	U	210	U	560	J	220	U	230	U
Fluoranthene	210	U	340	J	210	U	4900	J	200	J	240	J
Fluorene	210	U	250	U	210	U	160	J	220	U	230	U
Indeno(1,2,3-cd)pyrene	210	U	250	U	210	U	1700	J	220	U	230	U
Phenanthrene	210	U	300	J	210	U	2800	J	100	J	160	J
Pyrene	210	U	320	J	210	U	5300	J	190	J	200	J

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB06D-2.0-2.5**		**SSA12-SS07D-000.5**		**SSA12-SB07D-2.0-2.5**		**SSA12-SS08D-000.5**		**SSA12-SB08D-2.0-2.5**		**SSA12-SS10D-000.5**	
Sample Date:	**12/07/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**	
Top Depth (feet):	**2**		**0**		**2**		**0**		**2**		**0**	
Bottom Depth (feet):	**2.5**		**0.5**		**2.5**		**0.5**		**2.5**		**0.5**	
Duplicate of:												
VOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	7.1	B	11	B	6.2	B	16	B	10	B	11	B
Acetone	110		210		380		360		940	J	170	
Benzene	5.8	U	8.3	U	5.3	U	7.4	U	4.4	J	6.5	U
Carbon Disulfide	2.1	J	8.3	U	5.3	U	7.4	U	5.5	U	6.5	U
Dichlorodifluoromethane	5.8	U	8.3	U	5.3	U	7.4	U	5.5	U	6.5	U
Methyl Acetate	5.8	U	8.3	U	5.3	U	7.4	U	5.5	U	6.5	U
Toluene	5.8	U	8.3	U	5.3	U	7.4	U	16	B	6.5	U
Trichlorofluoromethane	5.8	U	8.3	U	5.3	U	7.4	U	5.5	U	6.5	U
PESTICIDES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	4.1	UJ	2.5	J	4.1	UJ	4.6	UJ	4.2	UJ	16	R
4,4'-DDE	4.1	UJ	7.1	J	4.1	UJ	6.2	J	1.6	J	4.5	UJ
4,4'-DDT	4.1	UJ	13	J	4.1	UJ	13	J	4.2	UJ	4.9	R
Aldrin	2.1	UJ	2.5	UJ	2.1	UJ	0.76	J	2.2	UJ	2.3	UJ
Alpha-BHC	2.1	UJ	2.5	UJ	2.1	UJ	2.4	UJ	0.83	J	2.3	UJ
Alpha-Chlordane	2.1	UJ	2.5	UJ	2.1	UJ	2.4	UJ	2.2	UJ	1.9	J
Beta-BHC	1.1	UJ	1.3	UJ	1.1	UJ	1.2	UJ	1.1	UJ	1.2	UJ
Delta-BHC	2.1	UJ	1.1	J	2.1	UJ	1.4	J	2.2	UJ	2.3	UJ
Dieldrin	4.1	UJ	20	J	4.1	UJ	71	J	23	J	5.9	J
Endosulfan I	2.1	UJ	2.5	UJ	2.1	UJ	1	J	2.2	UJ	2.3	UJ
Endosulfan II	4.1	UJ	4.9	UJ	4.1	UJ	4.6	UJ	4.2	UJ	4.5	UJ
Endosulfan Sulfate	4.1	UJ	4.9	UJ	4.1	UJ	15	R	9.6	R	4.5	UJ
Endrin	4.1	UJ	4.9	UJ	4.1	UJ	4.6	UJ	4.2	UJ	4.5	UJ
Endrin Aldehyde	4.1	UJ	3.4	J	4.1	UJ	5.1	J	4.2	UJ	4.5	UJ
Endrin Ketone	4.1	UJ	5.7	J	4.1	UJ	4.6	UJ	4.2	UJ	4.5	UJ
Gamma-BHC (Lindane)	2.1	UJ	2.5	UJ	2.1	UJ	2.4	UJ	2.2	UJ	2.3	UJ
Gamma-Chlordane	2.1	UJ	2.5	UJ	2.1	UJ	2.4	UJ	2.2	UJ	3.6	R
Heptachlor	2.1	UJ	0.85	J	2.1	UJ	2.4	UJ	2.2	UJ	2.3	UJ
Heptachlor Epoxide	2.1	UJ	1.8	J	2.1	UJ	2.4	UJ	2.2	UJ	2.3	UJ
Methoxychlor	21	UJ	25	UJ	21	UJ	24	UJ	22	UJ	23	UJ

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB10D-2.0-2.5**		**SSA12-SS01E-000.5**		**SSA12-SS02E-000.5**		**SSA12-SS03E-000.5**		**SSA12-SS04E-000.5**		**SSA12-SS05E-000.5**		**SSA12-SS06E-000.5**	
Sample Date:	**12/05/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**	
Top Depth (feet):	**2**		**0**		**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**2.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:														
INORGANICS	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	18700		9330		12700		12900		13700		11200		16700	
Antimony	0.34	UL	0.69	B	0.57	B	1.2	B	0.51	B	0.83	B	0.91	B
Arsenic	5.4		2.2		5		2.8		3.3		6.7		5.8	
Barium	53.6		38.9		70		57.6		78.3		79.6		67	
Beryllium	0.62	K	0.38	K	0.77		0.44	K	0.84	K	0.71	K	0.74	K
Cadmium	0.06	UR	0.06	UR	0.07	UR	0.06	UR	0.06	U	0.18	B	0.06	UR
Calcium	765		587		626		850		980		2050		780	
Chromium	28.6		8.8		13.2		38.5		12.3	J	17.5		23.1	
Cobalt	4.5	K	4	K	4.3	K	4.7	K	5.7	J	5.2	K	5.5	K
Copper	15.1	J	6.8	J	12.6	J	15	J	10.9	J	24.6	J	14.4	J
Iron	21600		9480		11300		14700		14900	J	16400		21700	
Lead	10.9		12.9		29.9		172		14.4		179		27.4	
Magnesium	2680		925		1190		1070		1440		1830		2050	
Manganese	111	K	204	K	419	K	329	K	462	J	306	K	224	K
Mercury	0.044	K	0.026	K	0.11	K	0.043	K	0.028		0.069	K	0.043	K
Nickel	13		6.2		9.3		8.1		9.9	J	11.4		11.7	
Potassium	846	L	474	L	464	L	526	L	481	L	728	L	667	L
Silver	0.06	UR	0.06	UR	0.07	UR	0.06	UR	0.06	UR	0.07	UR	0.06	UR
Sodium	127	B	81.2	B	104	B	98.3	B	102	B	143	B	226	B
Thallium	3.2	K	1.3	J	1.8	J	2.5	K	2.4	J	3	K	3.6	K
Vanadium	43		14.5		22		17.5		20.7		25.9		36.6	
Zinc	35.5		21.6		40.2		61.6		27.6		74.8		51.4	
SEMIVOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	200	U	200	U	240	U	220	U	210	U	230	U	220	U
Acenaphthene	200	U	200	U	240	U	220	U	210	U	230	U	220	U
Acenaphthylene	200	U	170	J	240	U	220	U	210	U	230	U	220	U
Anthracene	200	U	130	J	240	U	220	U	210	U	230	U	220	U
Benz(a)anthracene	200	U	520	J	240	U	220	U	200	J	230	U	220	U
Benzo(a)pyrene	200	U	480	J	240	U	220	U	220	J	130	J	220	U
Benzo(b)fluoranthene	200	U	500	J	240	U	220	U	240	J	230	U	220	U
Benzo(g,h,i)perylene	200	U	290	J	240	U	220	U	150	J	230	U	220	U
Benzo(k)fluoranthene	200	U	500	J	130	J	99	J	250		130	J	220	U
Bis(2-ethylhexyl)phthalate	200	U	200	U	240	U	440		210	U	230	U	220	U
Carbazole	200	U	200	U	240	U	220	U	210	U	230	U	220	U
Chrysene	200	U	620	J	160	J	110	J	280	J	160	J	220	U
Dibenz(a,h)anthracene	200	U	200	U	240	U	220	U	210	U	230	U	220	U
Fluoranthene	200	U	1200	J	360	J	220		590	J	310		220	U
Fluorene	200	U	200	U	240	U	220	U	210	U	230	U	220	U
Indeno(1,2,3-cd)pyrene	200	U	330	J	240	U	220	U	170	J	230	U	220	U
Phenanthrene	200	U	560	J	270	J	130	J	300	J	160	J	220	U
Pyrene	200	U	1100	J	330	J	180	J	500	J	240		220	U

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SB10D-2.0-2.5**		**SSA12-SS01E-000.5**		**SSA12-SS02E-000.5**		**SSA12-SS03E-000.5**		**SSA12-SS04E-000.5**		**SSA12-SS05E-000.5**		**SSA12-SS06E-000.5**	
Sample Date:	**12/05/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**		**12/06/07**	
Top Depth (feet):	**2**		**0**		**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**2.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:														
VOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	14	U	10	B	19	B	24	B	19	B	26	B	9.3	B
Acetone	32	B	170		270		300		230		300		140	
Benzene	5.5	U	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
Carbon Disulfide	1.3	J	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
Dichlorodifluoromethane	5.5	U	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
Methyl Acetate	5.5	U	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
Toluene	5.5	U	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
Trichlorofluoromethane	5.5	U	5.3	U	7.2	U	6.1	U	5.6	U	7	U	5.6	U
PESTICIDES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	3.8	UJ	4	UJ	37	R	19	J	4	UJ	12	J	4.2	UJ
4,4'-DDE	3.8	UJ	4	UJ	4.6	UJ	4.2	UJ	4	UJ	2.5	J	2.1	J
4,4'-DDT	3.8	UJ	4	UJ	5	J	3.2	J	4	UJ	4.6	J	3.5	J
Aldrin	2	UJ	2	UJ	2.4	UJ	0.83	J	2.1	UJ	0.91	J	2.2	UJ
Alpha-BHC	2	UJ	2	UJ	2.4	UJ	2.2	UJ	2.1	UJ	0.71	J	2.2	UJ
Alpha-Chlordane	2	UJ	2	UJ	3.7	J	4.6	J	2.1	UJ	4.5	R	2.2	UJ
Beta-BHC	0.99	UJ	1	UJ	1.2	UJ	1.1	UJ	1	UJ	9	R	1.1	UJ
Delta-BHC	2	UJ	2	UJ	2.4	UJ	2.2	UJ	2.1	UJ	2.3	UJ	2.2	UJ
Dieldrin	3.8	UJ	2.8	J	22	J	38	J	8.5	J	37	J	6.5	J
Endosulfan I	2	UJ	2	UJ	2.4	UJ	2.2	UJ	2.1	UJ	1.4	J	2.2	UJ
Endosulfan II	3.8	UJ	4	UJ	4.6	UJ	4.2	UJ	4	UJ	4.5	UJ	4.2	UJ
Endosulfan Sulfate	3.8	UJ	1.5	J	5.4	J	4.2	UJ	4	UJ	2.5	J	4.2	UJ
Endrin	3.8	UJ	4	UJ	4.6	UJ	4.2	UJ	4	UJ	4.5	UJ	4.2	UJ
Endrin Aldehyde	3.8	UJ	1.8	J	4	R	4.2	UJ	4	UJ	4.5	UJ	4.2	UJ
Endrin Ketone	3.8	UJ	4	UJ	4.6	UJ	4.2	UJ	4	UJ	4.5	UJ	4.2	UJ
Gamma-BHC (Lindane)	2	UJ	2	UJ	2.4	UJ	2.2	UJ	2.1	UJ	2.3	UJ	2.2	UJ
Gamma-Chlordane	0.95	J	2	UJ	3.3	R	6.5	R	2.1	UJ	7.5	R	2.2	UJ
Heptachlor	2	UJ	0.87	J	2.4	UJ	2.2	UJ	2.1	UJ	2.3	UJ	2.2	UJ
Heptachlor Epoxide	2	UJ	2	UJ	2.4	UJ	2.3	J	2.1	UJ	2.4	J	2.2	UJ
Methoxychlor	20	UJ	20	UJ	24	UJ	22	UJ	21	UJ	23	UJ	22	UJ

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SS07E-000.5**		**SSA12-SS08E-000.5**		**SSA12-SS09E-000.5**		**SSA12-SS10E-000.5**		**SSA12-SS13E-000.5**		**SSA12-SS14E-000.5**		**SSA12-SS15E-000.5**	
Sample Date:	**12/06/07**		**12/06/07**		**12/06/07**		**12/07/07**		**12/06/07**		**12/06/07**		**12/06/07**	
Top Depth (feet):	**0**		**0**		**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:														
INORGANICS	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	16600		11500		12300		12900		11900		13400		11000	
Antimony	1.4	B	0.71	B	3.1	B	0.68	B	0.79	B	0.71	B	0.77	B
Arsenic	6.2		2.8		6.2		6.2		6.9		5.5		9	
Barium	130		100		171		82.9		69.7		95.1		102	
Beryllium	0.94	K	0.97	K	0.75	K	0.85		0.71	K	0.91	K	0.88	K
Cadmium	0.42	B	0.07	U	2	K	0.07	U	0.07	U	0.07	U	0.08	B
Calcium	3720		1580		6650		1360		2770		2990		6040	
Chromium	25.9	J	19	J	18.3	J	14.1	J	15.8	J	16.3	J	17	J
Cobalt	5.7	J	7.3	J	5.4	J	4.9	J	5.9	J	5.6	J	5.3	J
Copper	49	J	18	J	180	J	16.9	J	17.3	J	23.5	J	25.1	J
Iron	20500	J	16100	J	14000	J	12500	J	14500	J	14300	J	15600	J
Lead	289		25.7		336		35.6		46.3		36		92.8	
Magnesium	2180		1840		2260		1300		1560		1660		2910	
Manganese	276	J	381	J	468	J	465	J	475	J	494	J	483	J
Mercury	0.1		0.042		0.059		0.16		0.12		0.15		0.14	
Nickel	15.4	J	13.9	J	13.4	J	9.2	J	11.1	J	10.8	J	13	J
Potassium	831	L	1290		1150		552	L	942	L	774	L	1050	L
Silver	0.08	UR	0.07	UR	0.87	L	0.07	UR	0.26	L	0.07	UR	0.17	L
Sodium	187	B	135	B	168	B	87.1	B	111	B	114	B	134	B
Thallium	3.8	J	2.6	J	2.8	J	1.9	J	2.4	J	2.7	J	3.3	J
Vanadium	37.3		25.7		21.1		22.9		25.2		24.8		23.8	
Zinc	214		43		313		48		67.9		62.4		92.2	
SEMIVOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	270	U	260	U	230	U	240	U	240	U	490	U	250	U
Acenaphthene	270	U	260	U	170	J	240	U	240	U	130	J	250	U
Acenaphthylene	270	U	260	U	230	U	240	U	240	U	390	J	180	J
Anthracene	270	U	110	J	710	J	240	U	240	U	650	J	480	J
Benz(a)anthracene	270	U	660		1800	J	240	U	520	J	2000	J	1900	J
Benzo(a)pyrene	140	J	650		1600	J	240	U	630	J	2200	J	2100	J
Benzo(b)fluoranthene	270	U	710		1800	J	240	U	610	J	2700	J	2500	J
Benzo(g,h,i)perylene	270	U	350		970	J	240	U	460	J	1500	J	1500	J
Benzo(k)fluoranthene	170	J	650		1500	J	240	U	630	J	1600		1800	J
Bis(2-ethylhexyl)phthalate	270	U	260	U	230	U	360		1500		490	U	250	U
Carbazole	270	U	260	U	230	U	240	U	240	U	490	U	250	J
Chrysene	190	J	710		2000	J	110	J	680	J	2400	J	2300	J
Dibenz(a,h)anthracene	270	U	160	J	490	J	240	U	140	J	670	J	690	J
Fluoranthene	410	J	1300		5100	J	220	J	1100	J	5300	J	4900	J
Fluorene	270	U	260	U	280	J	240	U	240	U	200	J	250	U
Indeno(1,2,3-cd)pyrene	270	U	400		1200	J	240	U	490	J	1800	J	1700	J
Phenanthrene	280	J	510		2800	J	140	J	460	J	2500	J	2100	J
Pyrene	360	J	1300		4800	J	210	J	1200	J	5900	J	5000	J

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SS07E-000.5**		**SSA12-SS08E-000.5**		**SSA12-SS09E-000.5**		**SSA12-SS10E-000.5**		**SSA12-SS13E-000.5**		**SSA12-SS14E-000.5**		**SSA12-SS15E-000.5**	
Sample Date:	**12/06/07**		**12/06/07**		**12/06/07**		**12/07/07**		**12/06/07**		**12/06/07**		**12/06/07**	
Top Depth (feet):	**0**		**0**		**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:														
VOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	25	B	11	B	13	B	20	B	24	B	30	B	25	B
Acetone	340		160		140		230		280		310		290	
Benzene	8.6	U	7.6	U	2.2	J	7.9	U	7.4	U	7.9	U	8.3	U
Carbon Disulfide	8.6	U	7.6	U	6.4	U	1.9	J	7.4	U	7.9	U	8.3	U
Dichlorodifluoromethane	8.6	U	7.6	U	6.4	U	7.9	U	7.4	U	7.9	U	12	
Methyl Acetate	8.6	U	7.6	U	6.4	U	7.9	U	7.4	U	7.9	U	8.3	U
Toluene	8.6	U	7.6	U	6.4	U	7.9	U	7.4	U	7.9	U	8.3	U
Trichlorofluoromethane	8.6	U	7.6	U	6.4	U	7.9	U	7.4	U	7.9	U	3.8	J
PESTICIDES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	52	UJ	2.4	J	4.5	UJ	23	UJ	4.6	UJ	4.7	UJ	9.7	UJ
4,4'-DDE	52	UJ	5.1	UJ	5	R	23	UJ	3.4	R	15	J	25	J
4,4'-DDT	52	UJ	5.1	UJ	7.4	R	23	UJ	11	R	14	J	30	J
Aldrin	27	UJ	2.6	UJ	2.3	UJ	12	UJ	2.4	UJ	0.61	J	5	UJ
Alpha-BHC	27	UJ	2.6	UJ	2.3	UJ	12	UJ	2.4	UJ	2.4	UJ	5	UJ
Alpha-Chlordane	27	UJ	2.6	UJ	2.2	R	12	UJ	1.1	J	2.8	J	5	UJ
Beta-BHC	14	UJ	18	R	16	R	13	J	14	R	1.2	UJ	67	R
Delta-BHC	27	UJ	0.87	J	2.3	UJ	12	UJ	1.6	J	2.2	J	5	UJ
Dieldrin	500	J	20	J	12	J	140	J	4.6	UJ	8.3	R	25	J
Endosulfan I	27	UJ	1.2	J	0.91	J	12	UJ	1.3	J	3.9	R	5	UJ
Endosulfan II	52	UJ	5.1	UJ	4.5	UJ	23	UJ	4.6	UJ	4.7	UJ	150	R
Endosulfan Sulfate	52	UJ	5.1	UJ	8.8	J	23	UJ	23	R	16	R	54	J
Endrin	52	UJ	5.1	UJ	4.5	UJ	23	UJ	4.6	UJ	4.7	UJ	6.9	J
Endrin Aldehyde	52	UJ	2.8	J	4.7	J	23	UJ	5.6	R	11	J	27	J
Endrin Ketone	52	UJ	6.7	R	4.5	UJ	23	UJ	14	J	12	J	9.7	UJ
Gamma-BHC (Lindane)	27	UJ	2.6	UJ	2.3	UJ	12	UJ	2.4	UJ	2.4	UJ	5	UJ
Gamma-Chlordane	27	UJ	2.6	UJ	13	R	12	UJ	2.4	UJ	15	R	7.6	R
Heptachlor	27	UJ	2.6	UJ	2.3	UJ	12	UJ	2.4	UJ	1.9	J	5	UJ
Heptachlor Epoxide	27	UJ	2.6	UJ	1.6	J	12	UJ	1.3	J	2.4	UJ	5	UJ
Methoxychlor	270	UJ	26	UJ	23	UJ	120	UJ	24	UJ	24	UJ	41	J

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SS16E-000.5**		**SSA12-SS16E-000.5-D**		**SSA12-SS17E-000.5**		**SSA12-SS18E-000.5**		**SSA12-SS19E-000.5**	
Sample Date:	**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**	
Top Depth (feet):	**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:			**SSA12-SS16E-000.5**							
INORGANICS	**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**		**mg/kg**	
Aluminum	7630		7840		12000		12400		9890	
Antimony	0.97	B	0.57	B	1.1	B	0.62	B	0.77	B
Arsenic	8.4		6.5		4.7		4.1		3	
Barium	104		100		98.6		66.4		77.9	
Beryllium	0.69	K	0.66	K	0.79	K	0.7	K	0.77	K
Cadmium	0.59	J	0.61	J	0.07	UR	0.07	UR	0.06	UR
Calcium	1640		1830		4560		1710		1850	
Chromium	12.1		11.2		16.6		18.9		13.3	
Cobalt	5.3	K	5	K	6.1	K	7.8	K	6.2	K
Copper	29.6	J	28.6	J	23.1	J	227	J	12.5	J
Iron	16000		13500		26600		20600		13800	
Lead	74.4		71.6		43.6		29.1		27.5	
Magnesium	1170		1270		2180		1920		1510	
Manganese	324	K	317	K	405	K	320	K	430	K
Mercury	0.14	K	0.11	K	0.38	K	0.056	K	0.054	K
Nickel	9.2		8.9		13		11.6		10	
Potassium	1220		1340		1400		1130		1230	
Silver	5.2		4.5		0.68	L	0.07	UR	0.06	UR
Sodium	126	B	112	B	184	B	122	B	99.6	B
Thallium	3	K	2.2	K	3.8	K	3.3	K	1.8	J
Vanadium	18.2		16.6		25.1		30.6		21	
Zinc	109		106		72.7		45.3		43.1	
SEMIVOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Methylnaphthalene	220	U	210	U	250	U	230	U	200	U
Acenaphthene	220	U	210	U	250	J	230	U	200	U
Acenaphthylene	220	U	210	U	420	J	230	U	200	U
Anthracene	220	U	210	U	1200	J	170	J	91	J
Benz(a)anthracene	220	U	210	U	3700	J	660	J	500	
Benzo(a)pyrene	220	U	210	U	2600		630	J	500	
Benzo(b)fluoranthene	220	U	210	U	2800		670		480	
Benzo(g,h,i)perylene	220	U	210	U	2000	J	390	J	250	
Benzo(k)fluoranthene	94	J	91	J	2700	J	630	J	590	
Bis(2-ethylhexyl)phthalate	220	U	210	U	250	U	230	U	200	U
Carbazole	220	U	210	U	340	J	230	U	200	U
Chrysene	140	J	130	J	4000	J	740	J	520	
Dibenz(a,h)anthracene	220	U	210	U	610	J	230	U	100	J
Fluoranthene	190	J	200	J	8500	J	1500	J	930	
Fluorene	220	U	210	U	220	J	230	U	200	U
Indeno(1,2,3-cd)pyrene	220	U	210	U	2400	J	420	J	280	
Phenanthrene	140	J	130	J	4500	J	660		410	
Pyrene	190	J	190	J	8100	J	1400	J	1000	

TABLE 2
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**SSA12-SS16E-000.5**		**SSA12-SS16E-000.5-D**		**SSA12-SS17E-000.5**		**SSA12-SS18E-000.5**		**SSA12-SS19E-000.5**	
Sample Date:	**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**		**12/05/07**	
Top Depth (feet):	**0**		**0**		**0**		**0**		**0**	
Bottom Depth (feet):	**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
Duplicate of:			**SSA12-SS16E-000.5**							
VOLATILES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
2-Butanone	7.9	B	31	B	15	B	16	U	19	B
Acetone	130	J	390	J	130		36	B	200	
Benzene	6.8	U	6.9	U	6.9	U	6.3	U	5.2	U
Carbon Disulfide	3.2	J	6.9	U	6.9	U	6.3	U	5.2	U
Dichlorodifluoromethane	6.8	U	6.9	U	6.9	U	6.3	U	5.2	U
Methyl Acetate	6.8	U	6.9	U	6.9	U	6.3	U	5.2	U
Toluene	6.8	U	6.9	U	6.9	U	6.3	U	5.2	U
Trichlorofluoromethane	6.8	U	6.9	U	6.9	U	6.3	U	5.2	U
PESTICIDES	**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**		**ug/kg**	
4,4'-DDD	11	R	2.5	J	4.9	UJ	1.8	J	4	UJ
4,4'-DDE	4.3	UJ	1.7	J	9.9	R	4.5	UJ	4	UJ
4,4'-DDT	7.8	R	6	J	8.8	J	4.7	J	1.5	J
Aldrin	2.2	UJ	2.1	UJ	2.5	UJ	2.3	UJ	2	UJ
Alpha-BHC	2.2	UJ	2.1	UJ	2.5	UJ	2.3	UJ	2	UJ
Alpha-Chlordane	1.3	J	2	J	2.5	UJ	2.3	UJ	2	UJ
Beta-BHC	7.8	R	8.9	R	1.3	UJ	13	R	12	R
Delta-BHC	2.2	UJ	2.1	UJ	1.5	J	1.7	J	2	UJ
Dieldrin	5	J	5.7	J	4.9	UJ	4.5	UJ	4	UJ
Endosulfan I	0.91	J	1	J	1.6	J	0.6	J	0.68	J
Endosulfan II	4.3	UJ	4.1	UJ	4.9	UJ	4.5	UJ	4	UJ
Endosulfan Sulfate	3.5	J	2.4	J	4.9	UJ	22	J	4	UJ
Endrin	4.3	UJ	4.1	UJ	4.9	UJ	4.5	UJ	4	UJ
Endrin Aldehyde	1.7	J	4.1	UJ	6.7	J	3.6	J	4	UJ
Endrin Ketone	4.3	UJ	1.8	J	11	J	8.8	J	4	UJ
Gamma-BHC (Lindane)	2.2	UJ	2.1	UJ	2.5	UJ	2.3	UJ	2	UJ
Gamma-Chlordane	2.2	UJ	3.2	R	2.5	UJ	2.3	UJ	2	UJ
Heptachlor	2.2	UJ	2.1	UJ	0.68	J	2.3	UJ	2	UJ
Heptachlor Epoxide	0.94	J	0.92	J	2.5	UJ	0.9	J	2	UJ
Methoxychlor	22	UJ	21	UJ	25	UJ	13	J	20	UJ

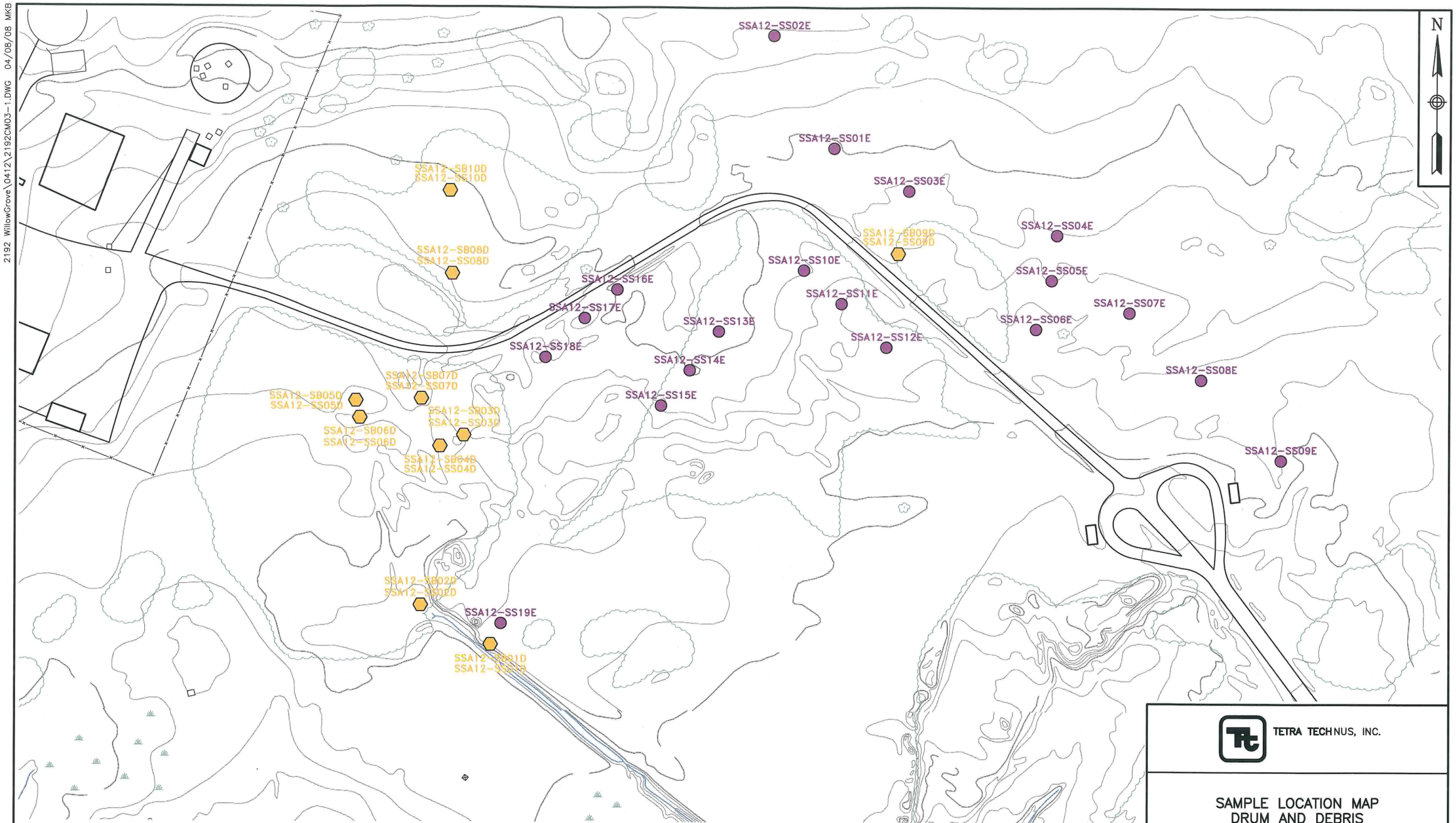
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE SCREENING AREA 12 - SOILS
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
B -- Positive result is considered to be an artifact of blank contamination, and should not be considered present.
J -- Value is considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
K -- Positive result is considered biased high due to exceedance of technical quality control criteria.
L -- Positive result is considered biased low due to exceedance of technical quality control criteria.
R -- Positive result is considered unusable due to exceedance of technical quality control criteria.
U -- Value is a non-detected result as reported by the laboratory.
UJ -- Non-detected result is considered estimated due to exceedance of technical quality control criteria.
UL -- Non-detected result is considered biased low due to exceedance of technical quality control criteria.
UR -- Non-detected result is considered unusable due to exceedance of technical quality control criteria.

Database source file: H:\WILLOWGROVE\SITE SSA 12\MAR1808N003.DBF data retrieved on: 03/18/08

FIGURES

2192 WillowGrove\0412\2192CM03-1.DWG 04/08/08 MKB



LEGEND

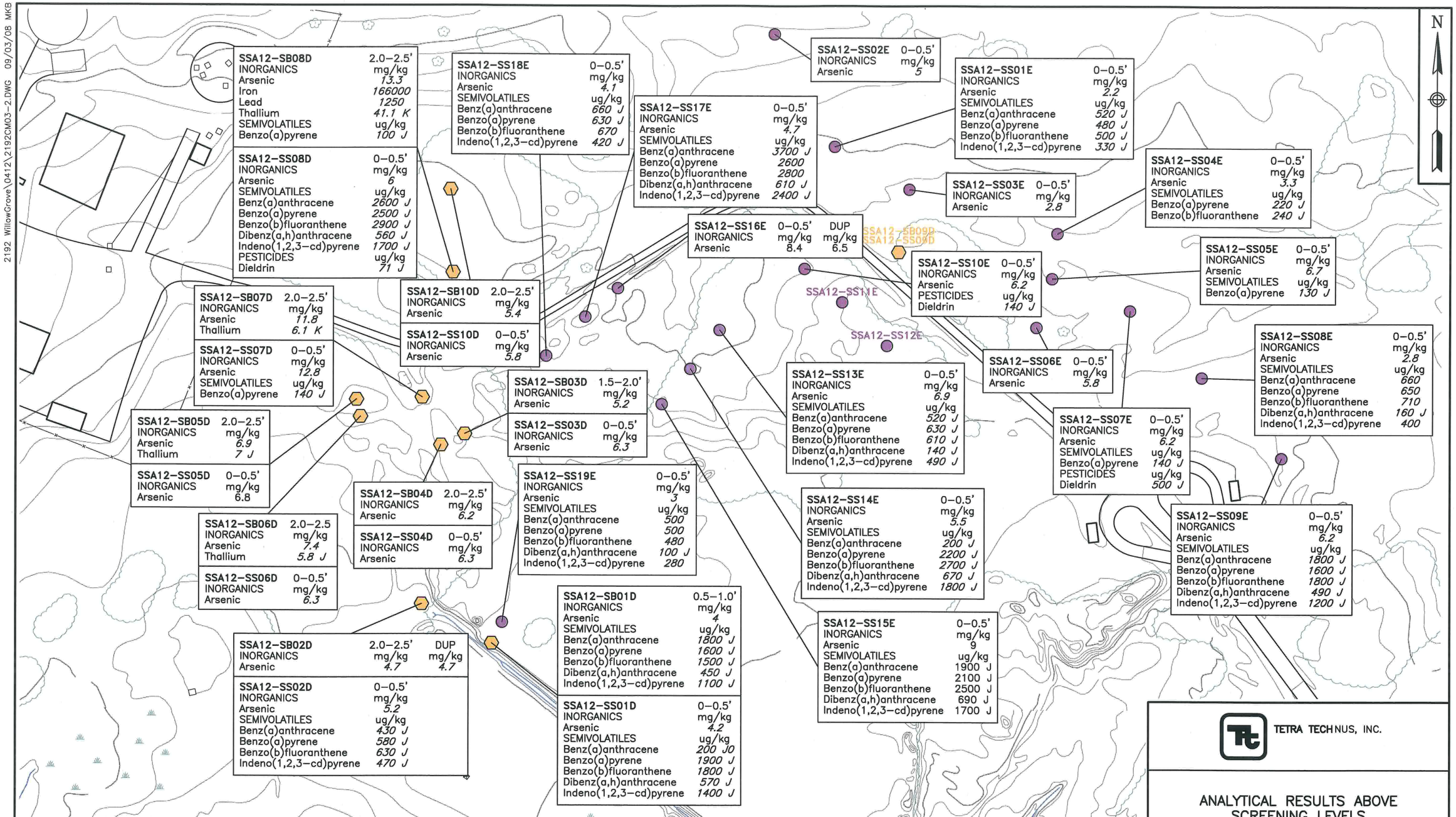
- RMC SOIL BORING LOCATION/EPIC FEATURE LOCATION
- RMC SOIL BORING LOCATION/DRUM LOCATION

TETRA TECHNUS, INC.

SAMPLE LOCATION MAP
DRUM AND DEBRIS
REMOVAL AREA (SSA 12)
NAS JRB WILLOW GROVE

FILE 2192CM03-1.dwg	SCALE AS NOTED
FIGURE NUMBER FIGURE 1	REV 0 / DATE 04/08/08

2192 WillowGrove\0412\2192CM03-2.DWG 09/03/08 MKB



LEGEND

- RMC SOIL BORING LOCATION/EPIC FEATURE LOCATION
- RMC SOIL BORING LOCATION/DRUM LOCATION

NOTE: ONLY EXCEEDANCES OF EPA REGION 3 RBCs FOR RESIDENTIAL SOIL ARE POSTED.

TETRA TECH NUS, INC.

ANALYTICAL RESULTS ABOVE SCREENING LEVELS
SITE SCREENING AREA (SSA) 12
NAS JRB WILLOW GROVE

FILE	SCALE
2192CM03-2.dwg	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 2	0 / 09/03/08

APPENDIX A

SOIL SAMPLE COLLECTION LOGS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS01E-0005
Sample Location: SSA12-SS01E
Sampled By: D.Whalen / X.Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 0950 Method: Disposable trowel Monitor Reading (ppm): 0	0-6"	Dark Brown	SILTY SAND, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487788 Y 449013

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald J. Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS02E-0005
Sample Location: SSA12-SS02E
Sampled By: D. Whalen / X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 0930 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	DARK BROWN	SANDY SILT; MOIST SOME GRASS ROOTS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487771.9 Y 4449046

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

David Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS03E-000.5
Sample Location: SSA12-SS03E
Sampled By: D.whalen / X.chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1005 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SANDY SILT, moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487809.7 Y 4449000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS04E-000.5
Sample Location: SSA12-SS04E-000.5
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1140 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	BROWN	SANDY SILT, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487852.2 Y 4448986

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS05E-000.5
Sample Location: SSA12-SS05E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1115 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	DARK BROWN	SANDY SILT, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487850.3 Y 4448973

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS06E-0005
Sample Location: SSA12-SS06E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-6-07	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1021	0 - 6"	BROWN	CLAYEY SILT, moist
Method: disposable trowel			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			N/A	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487845.4 Y 4448959

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS07E-000.5
Sample Location: SSA12-SS07E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1158 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	CLAYEY SILT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			NA	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487872.5 Y 4448963

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): David Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS08E-000.5
Sample Location: SSA12-SS08E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1215 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	BROWN	SANDY SILT; wet, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			NA	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

	X	Y
UTM coordinates	487892.8	4448943

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS09E-000.5
Sample Location: SSA12-SS09E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1240 Method: disposable trowel Monitor Reading (ppm): 0	0 – 6"	DARK BROWN	SANDY SILT, SOME DEBRIS (metal fragments), MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

NA

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487915.1 Y 4448919

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS10E-0003
Sample Location: SSA12-SS10E
Sampled By: D. Whalen, K. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-7-07	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0855	0 - 6"	BROWN	SILT, SOME CLAY, MOIST
Method: disposable trowel			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			N/A	
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487778.7 Y 4448978

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

Sample ID No.: SSA12-SS13E-000.5
Sample Location: SSA12-SS13E
Sampled By: D.Whalen, X. Chen
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1535 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SILT, SOME SAND, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			NA	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487753.6 Y 4448961

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS14E-000.5
Sample Location: SSA12-SS14E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1505 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SANDY SILT, SOME ORGANIC MATTER, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			NA	
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler		
TCL SVOC, Pest/PCB	8 oz. jar		
TAL metals	2 oz. jar		

OBSERVATIONS / NOTES:

UTM coordinates: X 487744.8 Y 4448950.

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS15E-000.5
Sample Location: SSA12-SS15E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-07 Time: 1450 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SANDY SILT, moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487736 Y 4448940

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS16E-000.5
Sample Location: SSA12-SS16E
Sampled By: D. Whalen, K. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1040 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SANDY SILT, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

NA

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	2	
TCL SVOC, Pest/PCB	8 oz. jar	2	
TAL metals	2 oz. jar	2	

OBSERVATIONS / NOTES:

UTM coordinates: X 487724 Y 4448974

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: SSA12-FD-01

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA 12-SS17E-0003
Sample Location: SSA 12-SS17E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1000 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	DARK BROWN	SILT, SOME CLAY, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

N/A

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487714.9 Y 4448966

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS18E-000.5
Sample Location: SSA12-SS18E
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1025 Method: disposable trowel Monitor Reading (ppm): 0	0 – 6"	DARK BROWN	CLAYEY SILT, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			N/A	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487703.3 Y 4448955

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS01D-0005
Sample Location: SSA12-SS01D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 0925 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	Brown	CLAYEY SILT, MOIST

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487685 Y 4448872

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB01D-0.5/1.0
Sample Location: SSA12-SB01D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 1040 Method: hand auger Monitor Reading (ppm): 0	0.5'-1.0'	Brown	CLAYEY SILT, some SAND; Moist, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:			N/A	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

VTM coordinates: X 487685 Y 4448872

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Daniel Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS02D-000.5
Sample Location: SSA12-SS02D
Sampled By: D. whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 1055 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	BROWN	CLAYEY SILT, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			N/A	
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487665 Y 4448884

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB02D-2.0-2.5
Sample Location: SSA12-SB02D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-7-08	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1115	24" - 30"	Lt. Brown	SILT, SOME SAND and WEATHERED SANDSTONE FRAGMENTS; MOIST, no odor
Method: Hand auger			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	2	
TCL SVOC, Pest/PCB	8 oz. jar	2	
TAL metals	2 oz. jar	2	

OBSERVATIONS / NOTES:

UTM coordinates: X 487665 Y 4448884

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	SSA12 - FD-02

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS03D-000.5
Sample Location: SSA12-SS03D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1450 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SILT, SOME CLAY, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

NA

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487679 Y 4448983

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB03D-1.52.0
Sample Location: SSA12-SB03D
Sampled By: D. Whalen, Y. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/5/07 Time: 1620 Method: Hand auger Monitor Reading (ppm): 0	18"-24"	Brown	SILTY SAND, some CLAY and weathered SANDSTONE FRAGS; MOIST, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

Auger refusal at 2'
Encountered red-gray sandstone at 2'

UTM coordinates: X 487679 Y 4448983

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS04D-000.5
Sample Location: SSA12-SS04D
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1435 Method: disposable trowel Monitor Reading (ppm): 0	0 – 6"	DARK BROWN	SILT, SOME CLAY, MOIST

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487672 Y 4448930

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald W Kaler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB04D-2.0-2.5
Sample Location: SSA12-SB04D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1500 Method: Hand auger Monitor Reading (ppm): 0	24"-30"	Lt. Brown	SILTY CLAY; MOIST, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487672 Y 4448930

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald J. Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS05D-000.5
Sample Location: SSA12-SS05D
Sampled By: D. whalen, X. chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 1205 Method: disposable trowel Monitor Reading (ppm): 0	0 - 6"	DARK BROWN	SILT, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			NA	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487648 Y 4448944

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Dwall Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB05D-2.0-2.5
Sample Location: SSA12-SB05D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-7-07	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1235 Method: Hand auger Monitor Reading (ppm): 0	24"-30"	Lt. Brown	CLAYEY SILT; moist, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler		
TCL SVOC, Pest/PCB	8 oz. jar		
TAL metals	2 oz. jar		

OBSERVATIONS / NOTES:

UTM coordinates: X 487648 Y 4448944

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS06D-000.5
Sample Location: SSA12-SS06D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 1300 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	BROWN	SILT, SOME CLAY, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			NA	
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487649 Y 4448939

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Daniel Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB06D-2.02.5
Sample Location: SSA12-SB06D
Sampled By: D.whalen, X.chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-7-07 Time: 1315 Method: Hand auger Monitor Reading (ppm): 0	24"-30"	ORANGE-BROWN	CLAYEY SILT; moist, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler		
TCL SVOC, Pest/PCB	8 oz. jar		
TAL metals	2 oz. jar		

OBSERVATIONS / NOTES:

UTM coordinates X 487649 Y 4448939

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald J. Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS07D-000.5
Sample Location: SSA12-SS07D
Sampled By: Dwhalen, K.Chan
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1340 Method: disposable trowel Monitor Reading (ppm): 0	0 – 6"	DARK BROWN	SILT, SOME CLAY, MOIST

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

N/A

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487667 Y 4448944

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB07D-2.0-2.5
Sample Location: SSA12-SB07D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/5/07 Time: 1405 Method: Hand auger Monitor Reading (ppm): 0	24"-30"	Lt. Brown	SILTY CLAY; moist, no odor

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487667 Y 4448944

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SS08D-000.5
Sample Location: SSA12-SS08D
Sampled By: D. Whalen, X Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1230 Method: disposable trowel Monitor Reading (ppm): 0	0-6"	DARK BROWN	SILT, SOME CLAY, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
			N/A	
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487677 Y 4448980

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB08D-2.0-2.5
Sample Location: SSA12-SB08D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/5/07 Time: 1300 Method: Hand auger Monitor Reading (ppm): 0	24"-30"	Rusty Brown	CLAYEY SILT and Debris (glass frags, rusty metal pieces, wire, etc.); moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates X 487677 Y 4448980

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB10D-000.5
Sample Location: SSA12-SB10D
Sampled By: D. Whalen, X. Chen
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/5/07 Time: 1130 Method: Disposable trowel Monitor Reading (ppm): 0	0 – 6"	Dark Brown	SILT, trace of CLAY; moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

N/A

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler	✓	
TCL SVOC, Pest/PCB	8 oz. jar	✓	
TAL metals	2 oz. jar	✓	

OBSERVATIONS / NOTES:

UTM coordinates: X 487677 Y 4449004

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Willow Grove SSA 12 Soil Investigation
Project No.: 2192

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SSA12-SB10D-2025
Sample Location: SSA12-SB10D
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-07 Time: 1205 Method: Hand Auger Monitor Reading (ppm): 0	24" - 30"	Lt. Brown	SILT; moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOA	3 x Encore sampler		
TCL SVOC, Pest/PCB	8 oz. jar		
TAL metals	2 oz. jar		

OBSERVATIONS / NOTES:

UTM coordinates X 487677 Y 4449004

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

APPENDIX B

PHOTOGRAPHS

Photo 1. Sample location SS01E.

Photo 2. Sample location SS02E.

Photo 3. Sample location SS03E.

Photo 4. Sample location SS04E.

Photo 5. Sample location SS05E.

Photo 6. Sample location SS06E.

Photo 7. Sample location SS07E.

Photo 8. Sample location SS08E.

Photo 9. Sample location SS09E.

Photo 10. Sample location SS10E.

Photo 11. Sample location SS13E.

Photo 12. Sample location SS14E.

Photo 13. Sample location SS15E.

Photo 14. Sample location SS16E.

Photo 15. Sample location SS17E.

Photo 16. Sample location SS18E.

Photo 17. Sample location SS19E.

Photo 18. Sample location SS/SB01D.

Photo 19. Sample location SS/SB02D.

Photo 20. Sample locations SS/SB03D (left) and SS/SB04D (right).

Photo 21. Sample location SS/SB05D.

Photo 22. Sample location SS/SB06D.

Photo 23. Sample location SS/SB07D.

Photo 24. Sample location SS/SB08D.

Photo 25. Sample location SS/SB10D.