Appendices for Area P RFI

September 2010

Final

Appendix A

QA/QC

Appendix A-1

Analytical Services

ANALYTICAL SERVICES AND PROCEDURES

ANALYTICAL SERVICES

The analytical services for the field investigation program were provided by the following USACE and National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratories:

- Accutest Laboratories, Inc. (Accutest), Orlando, FL: Accutest used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB.* (SW-846) (USEPA, 2004) methodologies in providing analytical support for this investigation. Chemical analyses included: volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), metals, pesticides, polychlorinated biphenyls (PCBs), herbicides, explosives, full toxicity characteristic leaching procedure (TCLP) analysis, ignitability, reactive sulfide, reactive cyanide, and corrosivity as pH. Accutest used *USEPA Methods for Chemical Analysis of Water and Wastes* (MCAWW) (USEPA, 1983) for chemical oxygen demand (COD) and biological oxygen demand (BOD) analysis.
- Datachem Laboratories, Inc. (Datachem), Salt Lake City, UT: Datachem was subcontracted by Accutest to perform analytical support for perchlorates. Datachem used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB* (SW-846) (USEPA, 2004) methodologies for this analysis.
- SGS Environmental Services, Inc. (SGS), Wilmington, NC: SGS was subcontracted by Accutest to perform analytical support for dioxins/furans. SGS used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB* (SW-846) (USEPA, 2004) methodologies for this analysis.

ANALYTICAL PROCEDURES

Analytical protocols used were in accordance with USEPA-approved methods for the analysis of environmental (i.e., organic, and inorganic parameters) and waste characterization samples. All methods performed were within the *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006) and the *DoD Perchlorate Handbook* (DoD, 2006) guidelines. The methodologies for environmental samples are summarized in **Table A-1** and for waste characterization samples in **Table A-2**. A brief discussion of the methodologies is presented in the following sections below.

Organics

Target compound list (TCL) VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, herbicides, explosives, including nitroglycerin (NG) and pentaerythritol tetranitrate (PETN), PAHs, and dioxins/furans were analyzed using USEPA-approved methodologies. The laboratory procedures and methodologies for organic compounds are summarized below.

Table A-1
Summary of Analytical Methods for Environmental Samples

Parameter	Matrix	Analytical Method
Chemical Parameters		
TCL VOCs	Aqueous	USEPA SW-846 5030B/8260B
	Soil	USEPA SW-846 5035A/8260B
TCL SVOCs	Aqueous	USEPA SW-846 3510C/8270C
	Soil	USEPA SW-846 3550B/8270C
TCL Pesticides	Aqueous	USEPA SW-846 3510C/8081A
	Soil	USEPA SW-846 3550B/8081A
TCL PCBs	Aqueous	USEPA SW-846 3510C/8082
	Soil	USEPA SW-846 3550B/8082
Herbicides	Aqueous	USEPA SW-846 3510C/8151A
	Soil	USEPA SW-846 3550B/8151A
Explosives	Aqueous	USEPA SW-846 3535A/8330A Modified
	Soil	USEPA SW-846 8330B/8330A Modified
Nitroglycerin & PETN	Aqueous	USEPA SW-846 3535A/8332
	Soil	USEPA SW-846 8330B/8332
Polynuclear Aromatic Hydrocarbons	Aqueous	USEPA SW-846 3510C/8270C SIM
	Soil	USEPA SW-846 3550B/8270C SIM
Perchlorates	Aqueous	USEPA SW-846 LC-MS-CLO_4/6850 SIM
Dioxins/furans	Aqueous	USEPA SW-846 8290
	Soil	USEPA SW-846 8290
TAL Metals	Aqueous	USEPA SW-846 3010A/6010B & 7470A
	Soil	USEPA SW-846 3050B/6010B & 7471A

Table A-2
Summary of Analytical Methods for Waste Characterization Samples

Parameter	Matrix	Analytical Method
TCLP VOCs	Solid	USEPA SW-846 1311/5030B/8260B
TCLP SVOCs	Solid	USEPA SW-846 1311/3510C/8270C
TCLP Pesticides	Solid	USEPA SW-846 1311/3510C/8081A
TCLP Herbicides	Solid	USEPA SW-846 1311/3510C/8151A
TCLP Metals	Solid	USEPA SW-846 1311/3010A/6010B & 1311/7470A
TCL PCBs	Solid	USEPA SW-846 3550B/8082
Explosives	Solid	USEPA SW-846 8330B/8330A Modified
Nitroglycerin & PETN	Solid	USEPA SW-846 8330B/8332
Ignitability	Solid	USEPA SW-846 1010
Reactive Cyanide	Solid	USEPA SW-846 Chapter 7.3.3
Reactive Sulfide	Solid	USEPA SW-846 Chapter 7.3.4
Biological Oxygen Demand	Aqueous	USEPA MCAWW 405.1
Chemical Oxygen Demand	Aqueous	USEPA MCAWW 410.1
Corrosivity as pH	Aqueous	USEPA SW-846 9040C

TCL VOCs: Aqueous and solid samples were analyzed for TCL VOCs using USEPA SW-846 Method 5030B/8260B for aqueous samples and USEPA SW-846 5035A/8260B for solid matrices using purge and trap technology. TCLP extracts were analyzed according to USEPA SW-846 Method 1311/5030B/8260B for investigative-derived material (IDM) solid samples. Soil samples were collected using field preservation techniques. Approximately 5 grams of soil sample was added to pre-tarred vials containing methanol and/or de-ionized ultra filtered water (DIUF); then sent to the laboratory for analysis. Aqueous samples were sent to the laboratory in zero headspace vials. An inert gas was bubbled through a mixture of reagent water and 5 gram soil sample or through a 25 mL aqueous sample contained in a specifically designed purging chamber at 40°C for soil and ambient temperature for water. The vapor was swept through a sorbent column where the purgeable compounds were trapped. After purging was completed for both solid and aqueous samples, the sorbent column was heated and backflushed with the inert gas to desorb the purgeable compounds onto a gas chromatograph programmed to separate the purgeable compounds, which were then detected with a mass spectrometer. The gas chromatography/mass spectroscopy (GC/MS) instrument was calibrated for a series of target analytes using chemical standards of known concentration and purity. Quantification of these target analytes was performed against specific internal standards as identified in the respective method. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time and mass spectra.

TCL SVOCs/PAHs: Aqueous and solid samples were analyzed for TCL SVOCs and PAHs using USEPA SW-846 Method 8270C. The use of selective ion monitoring (SIM) using USEPA SW-846 Method 8270C SIM was employed for PAH analysis to achieve lower quantitation and detection limits in order to meet screening criteria. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP SVOC extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The extracts were injected into a gas chromatograph programmed to separate the compounds, which are then detected with a mass spectrometer. The gas chromatograph/mass spectrometer instrument was calibrated for a series of target analytes using chemical standards of known concentration and purity. Quantification of these target analytes was performed against specific internal standards as identified in the respective method. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time and mass spectra.

TCL Pesticides/PCBs: Aqueous and solid samples were analyzed for TCL pesticides using USEPA SW-846 Method 8081A and for TCL PCBs using USEPA SW-846 Method 8082. Samples were prepared for analysis using extraction techniques. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP pesticide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The extracts were injected onto a gas chromatography programmed to separate the compounds, which are then detected with an electronic capture device (ECD). Sulfur cleanups were employed to aid in the quantification based upon the matrix interferences. Sample concentrations were confirmed on dissimilar columns.

Herbicides: Aqueous and solid samples were analyzed for herbicides according to USEPA SW-846 Method 8151A. Samples were prepared for analysis using extraction techniques. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP herbicide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. Aqueous and solid samples were extracted with diethyl ether and then esterified with diazomethane. The derivatives were determined by gas chromatography with an electron capture detector (GC/ECD). The results were reported as acid equivalents. Sample concentrations were confirmed on dissimilar columns.

Explosives: Aqueous and solid (including IDM) samples were analyzed for explosives using USEPA SW-846 Method 8330A Modified. Aqueous samples were extracted using a Solid-phase Extraction (SPE) procedure USEPA SW-846 3535A. A measured volume of sample was adjusted to a specified pH and then extracted using a SPE device. Target analytes were eluted from the solid-phase media using methylene chloride. The resulting solvent extract was dried using sodium sulfate and concentrated. The concentrated extract were exchanged into a solvent compatible with subsequent cleanup procedures and then measurement of the target analytes separated on a C-18 reverse phase column. The wavelength was set at 254 nanometers and confirmed on a cyanide reverse column. For soil samples, they were homogenized and analyzed using USEPA SW-846 Method 8330B/8330A Modified. Because only a small 2-g portion (sub-sample) of the 10-g or larger sample was taken for analysis, the bulk sample was thoroughly mixed to allow for representative sub-sampling. This was achieved by air-drying at room temperature for 24 hours, sieving through a 30-mesh sieve, grinding, and mixing the bulk sample, after subjectively removing vegetation (organic debris) and pebbles. Soil samples were extracted using acetonitirile in an ultrasonic bath, then filtered and determined similarly to aqueous samples. Sample concentrations were confirmed on dissimilar columns.

Nitroglycerin/PETN: Aqueous and solid (including IDM) samples were analyzed for nitroglycerin and PETN using USEPA SW-846 Method 8332. For soil samples, they were homogenized and analyzed using USEPA SW-846 Method 8330B/8330A Modified. Solid samples were extracted with acetonitrile in an ultrasonic bath, then filtered and mixed with a calcium chloride solution. Aqueous samples were extracted using a Solid-phase Extraction (SPE) procedure USEPA SW-846 3535A, as described for explosives. The concentrations were quantified using an isocratic high pressure liquid chromatography (HPLC) system equipped with a column heater and ultraviolet (UV) detector. Sample concentrations were confirmed on dissimilar columns. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time using primary and secondary columns.

Dioxins/Furans: Aqueous and solid samples were analyzed for dioxin/furans using USEPA SW-846 Method 8290. The analytical method used high-resolution gas chromatography and high-resolution mass spectrometry (HRGC/HRMS) on purified sample extracts. This method is specific for the analysis of 2,3,7,8-tetrachlorinated dibenzofuran (2,3,7,8-TCDD), substituted penta-, hexa-, hepta- and octachlorinated dibenzo-p-dioxins and substituted penta-, hexa-, hepta- and octachlorinated dibenzofurans in aqueous and solid samples. The extracts were injected onto a high-resolution gas chromatograph programmed to separate the compounds, which are then detected with a high-resolution mass spectrometer as confirmation.

Inorganics

Target analyte list (TAL) metals and perchlorate were analyzed using USEPA SW-846 methodologies. The laboratory procedures for inorganic compounds are summarized below.

TAL Metals: Aqueous and solid samples were analyzed for TAL metals using a combination of the following methodologies: inductively coupled plasma (ICP) and cold vapor atomic absorption (CVAA). Trace metals were analyzed using USEPA SW-846 3010A/6010B for aqueous samples and USEPA SW-846 Method 3050B/6010B for solid samples. TCLP extracts were digested according to USEPA SW-846 Method 1311/3010A/6010B for the solid IDM samples collected. The ICP method involved the simultaneous or sequential multi-element determination of trace elements in solution. The basis of the method is the measurement of atomic emission by optical spectrometry. Samples were nebulized and the aerosol that was produced was transported to the plasma torch where excitation occurs. Characteristic atomic-line emission spectra are produced by a radio-frequency ICP. A background correction technique was utilized to compensate for variable background contribution for the determination of trace elements.

Aqueous and solid samples were analyzed for mercury using CVAA according to USEPA SW-846 Method 7470A for aqueous samples and Method 7471A for solid samples. TCLP extracts were digested according to USEPA SW-846 Method 1311/7470A for solid IDM samples. A sample aliquot was initially digested with nitric acid to free combined mercury. The mercury was then reduced to its elemental state and aerated from the solution into a closed system. The mercury vapor was passed through a cell positioned in the path of the mercury light source and the measured abundance was proportional to the concentration of mercury in the sample.

Perchlorate: Perchlorate was analyzed for aqueous samples by using either USEPA SW-846 Method 6850 SIM by HPLC/MS following the *DoD Perchlorate Handbook* (DoD, 2006b) requirements. The HPLC-MS method 6850 uses a second order external standard approach using laboratory ChemStation software. The method provides HPLC-MS conditions for the detection of perchlorate in SIM mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. In general, water samples were extracted at a neutral pH with methylene chloride, using LC-MS-CLO_4 method. Sample extracts were injected into the HPLC-MS and the ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in the quantitation. Confirmation was obtained by the use of the mass spectrometer.

Waste Characterization

Samples were collected on a site wide basis to characterize IDM and were analyzed for hazardous waste characteristics using USEPA-approved methodologies, including TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP pesticides, TCLP herbicides, ignitability, reactive cyanide, reactive sulfide, TCL PCBs, explosives, chemical oxygen demand (COD), biological oxygen demand (BOD), and corrosivity as pH. The laboratory procedures and methodologies are summarized below and in the prior section.

TCLP Extraction: Solid IDM samples were collected for full TCLP waste characterization and extracted using the USEPA SW-846 Method 1311. Aqueous IDM samples were collected for TCLP metals analysis. The final liquid extract was separated from the sample material and combined with the initial liquid phase (if applicable). The sample TCLP extract was then treated as an aqueous sample for analysis for TCLP VOCs, TCLP SVOCs, TCLP pesticides, TCLP herbicides, and TCLP metals. Brief discussions of the procedures and methodologies are presented below and in the prior section.

Explosives/PETN/NG: Solid IDM samples were analyzed for explosives and PETN using USEPA SW-846 Method 8330B/8330A Modified and for NG using USEPA SW-846 Method 8330B/8332 Modified. Brief discussions of these procedures and methodologies are presented in the prior section.

Reactive Cyanide: Solid IDM samples were analyzed for reactive cyanide using USEPA SW-846 Method Chapter 7.3.3. The cyanide as hydrocyanic acid (HCN) was released from cyanide complexes by means of a reflux-distillation operation and absorbed in a scrubber containing sodium hydroxide solution. The cyanide ion in the absorbing solution was then determined colorimetrically. In the colorimetric measurement, the cyanide was converted to cyanogen chloride, CNCl, by reaction with chloramine-T at a pH less than 8.0 without hydrolyzing the cyanate. After the reaction was completed, color was formed on the addition of pyridine-pyrazolone or pyridine-barbituric acid reagent. The absorbance was read at 578 nm for pyridine-barbituric acid. To obtain colors of comparable intensity, the sample and the standards contain the same salt content. The titrimetric measurement uses a standard solution of silver nitrate to titrate cyanide in the presence of a silver sensitive indicator.

Reactive Sulfide: Solid IDM samples were analyzed for reactive sulfide using USEPA SW-846 Method Chapter 7.3.4. This procedure is a colorimetric determination. Sulfide reacts with dimethyl-p-phenylenediamine in the presence of ferric chloride to produce methylene blue.

Flashpoint: Solid IDM samples were analyzed for flashpoint or ignitability using USEPA SW-846 Method 1010. A sample was heated at a slow, constant rate with continual stirring. A small flame was directed into the cup at regular intervals with simultaneous interruption of stirring. The flash point is the lowest temperature at which application of the test flame ignites the vapor above the sample.

TCL PCBs: Solid IDM samples were analyzed for TCL PCBs using USEPA SW-846 Method 3550B/8082. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP VOCs: Solid IDM samples were analyzed for TCLP VOCs using USEPA SW-846 Method 1311/8260B. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP SVOCs: Solid IDM samples were analyzed for TCLP SVOCs using USEPA SW-846 Method 1311/8270C. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP Pesticides: Solid IDM samples were analyzed for TCLP pesticides using USEPA SW-846 Method 1311/8081A. The samples were prepared for analysis using extraction techniques. TCLP pesticide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The

extracts were injected onto a gas chromatography programmed to separate the compounds, which are then detected with an electronic capture device (ECD). Sulfur cleanups were employed to aid in the quantification based upon the matrix interferences. Sample concentrations were confirmed on dissimilar columns.

TCLP Herbicides: Solid IDM samples were analyzed for TCLP herbicides according to USEPA SW-846 Method 1311/8151A. Samples were prepared for analysis using extraction techniques. TCLP herbicide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The samples were extracted with diethyl ether and then esterified with diazomethane. The derivatives were determined by gas chromatography with an electron capture detector (GC/ECD). The results were reported as acid equivalents. Sample concentrations were confirmed on dissimilar columns.

TCLP Metals: Aqueous and solid IDM samples were analyzed for TCLP metals using a combination of the following methodologies: inductively coupled plasma (ICP) and cold vapor atomic absorption (CVAA). Aqueous IDM samples were extracted using the USEPA SW-846 Method 1311. The final liquid extract was separated from the sample material and combined with the initial liquid phase (if applicable). The sample TCLP extract was then treated as an aqueous sample for analysis for TCLP metals. Brief discussions of these procedures and methodologies are presented in the prior section.

Corrosivity as pH: Aqueous IDM samples were analyzed for corrosivity as pH using USEPA SW-846 Method 9040C. A sample pH was directly measured electrometrically using either a glass electrode in combination with a reference potential or a combination electrode.

BOD: Aqueous IDM samples were analyzed for BOD using USEPA MCAWW Method 405.1. A seeded sample, or an appropriate dilution, was incubated for 5 days at 20 degrees Celsius in the dark. The dilution water or seeded dilution water was added as a buffered salt solution to minimize oxygen uptake. The reduction in dissolved oxygen concentration during the incubation period yields a measure of the biological oxygen demand.

COD: Aqueous IDM samples were analyzed for COD using USEPA MCAWW Method 410.1. Organic and oxidizable inorganic substances were oxidized by potassium dichromate in 50% sulfuric acid solution at reflux temperature. Silver sulfate was used as a catalyst and mercuric sulfate was added to remove chloride interference. The excess dichromate was titrated with standard ferrous ammonium sulfate using orthophenanthroline ferrous complex as an indicator.

Appendix A-2

QA Analysis

QUALITY ASSURANCE/QUALITY CONTROL EVALUATION

The project quality assurance and quality control criteria to perform characterization and remediation activities at eleven Solid Waste Management Units (SWMUs) and Areas of Concern at Radford Army Ammunition Plant (RFAAP) are based on *RFAAP Final Master Work Plan* (MWP) (URS, 2003) as specified in MWP Addendum 019 (Shaw, 2007). The MWP and Addendum 019 were implemented through the integration of well-defined quality control elements for activities associated with the task assignment. The quality control criteria defined for sampling and analysis activities were developed in conjunction with specifications contained in *USACE EM200-1-3, Requirements for the Preparation of Sampling and Analysis Plans*, (USACE, 2001), *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006a), *USEPA Office of Solid Waste and Emergency Response Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), Update IIIB* (November, 2004), *USEPA Methods for the Chemical Analysis of Water and Wastes* (March, 1983), and *DoD Perchlorate Handbook* (March, 2006b).

Table A-3 outlines the data quality indicators as to their definitions, project goals, sampling and analytical assessments. Data quality was assessed through the evaluation of sampling activities and field measurements associated with the chemical analytical data in order to assess the reliability of the chemical analyses and the accuracy and precision of information acquired from the laboratory.

Table A-3
RFI Data Quality Indicators

Data Quality Indicator	Definition	Goal	Sampling Assessment	Analytical Assessment
Precision	Quantitative measure of the variability of a group of measurements in comparison to the average value	Low relative percent difference	Duplicate samples	MS/MSD or lab sample duplicate; Field sample duplicate
Accuracy	Bias in a measurement system	Low bias	Blank contamination	Analysis spike results (LCS, MS, surrogate, MSD)
Representativeness	Degree to which the measured results accurately reflect the medium being sampled	100%	Holding times, blanks, associated documentation	Inferred from accuracy, precision, and completeness evaluation
Completeness	Percentage of measurements which are judged to be usable	≥90%	Records review	Data validation
Comparability	Qualitative parameter expressing the confidence with which one data set can be compared with another	High	Work plans, quality documents	Analytical methods
Sensitivity	Quantitative measure of the level of detection and quantitation.	High	Review of analytical method or procedures and instrumentation	Analysis of MDLs and MRLs per analyte, analytical method, and matrix

Review of Documentation

The following documentation was required by the field investigation program in order to provide a quality assessment of data collected during routine investigative activities:

- **Field Logbooks:** Hardback logbooks with numbered pages were used to log daily activities, and data collected during the course of field activities. Designated logbooks were also used to record calibration records and equipment maintenance as they were performed. Entries into field logbooks were evaluated for completeness and accuracy.
- **Field Parameter Table:** Documentation of collected samples was provided to the laboratory on a spreadsheet developed by Shaw specifically for USACE investigations. Field Parameter Tables were electronically generated based on information recorded in field logbooks and Chain-of-Custody for every sample, including QC samples. The completed forms contained the required information for encoding chemical data into Environmental Restoration Information System (ERIS) database.
- **Chain-of-Custody:** Samples were collected and relinquished under stringent Chain-of-Custody protocols as specified in the project MWP. A review of the Chain-of-Custodies identified transcription errors that were corrected by drawing a single line through the incorrect information and subsequently correct information was supplied, dated, and initialed.
- **Sample Tracking Table:** Documentation of collected samples was recorded in an electronic sample tracking table as a tool to track project status. Field entries included the field sample identification, sample depth (where applicable), date collected, laboratory ID, deliverable due dates, and requested laboratory analyses. The status of completeness was tracked from work planning stage through data validation completion.

Sampling activities were performed in compliance with standard operating procedures (SOPs) and each individual performing sampling was aware of the requisite protocols for collection of environmental samples.

Data Reporting

Data packages were provided to Shaw in Shaw Alliance Level 4 CLP-like deliverables with electronic data deliverable files from the laboratory. Detected target compound values above the reporting limit and within the acceptable calibration range were reported as determined to no more than three significant figures. Target analytes detected below the lower calibration standard, estimated detection limit (dioxin and furans), or the reporting limit (whichever was greater) and above the method detection limit were reported as estimated values "J." Appropriate data qualifiers were applied during validation process and recorded in an electronic database.

Data Reduction and Validation

Data validation determines the acceptability or unacceptability of the data quality based on a set of pre-defined criteria. Data validation is defined as the systematic process for reviewing a data package against a set of criteria to provide assurance that the data is adequate for its intended uses. These criteria depend upon the type(s) of data involved and the purpose for which data are collected. The intended use of the data and the associated acceptance criteria for data quality was identified before the data collection effort began. Both the organic and inorganic chemical data (except for the waste characterization and natural attenuation data) were validated. The data were validated in accordance with *RFAAP Final Master Work Plan* (URS, 2003) QAP requirements, *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006a), *USEPA Office of Solid Waste and Emergency Response Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), Update IIIB* (November, 2004), *USEPA Methods for the Chemical Analysis of Water and Wastes* (March, 1983), *DoD Perchlorate Handbook* (March, 2006b), and laboratory SOPs. The data qualifier scheme was consistent with USEPA Region III conventions using the *USEPA Region III Modifications to National Functional Guidelines for Inorganic Data Review* (USEPA, 1993b), *USEPA Region III Modifications to the National Functional Guidelines for Organic Data Review Multi-media, Multi-concentration* (USEPA, 1994c), and the *USEPA Region III Dioxin/Furan Data Validation Guidance* (USEPA, 1999d) as appropriate.

Data packages were validated to ensure compliance with specified analytical, Quality Assurance/Quality Control (QA/QC) requirements, data reduction procedures, data reporting requirements, and required accuracy, precision, and completeness criteria. This includes (as applicable), but is not limited to:

- Sample temperature, preservation, and holding times.
- Instrument performance check (for GC, GC/MS, LC/MS).
- Calibration (initial and continuing).
- Blanks (calibration, preparatory, rinse, and trip).
- Matrix spike and spike duplicate recoveries.
- Laboratory and field sample duplicate pairs.
- Surrogate spike recoveries (for organics).
- Laboratory control samples.
- Interference check sample (for metals).
- Serial dilution (for metals).
- Internal standards and retention times (for GC, GC/MS, LC/MS).
- Quantitative verification.

Results were assessed for accuracy and precision of laboratory analysis to identify the limitations and quantity of data. The data validation reports are contained in **Appendix A-3**. The quality of the data collected in support of the sampling activity was considered acceptable, unless qualified rejected "R" during the validation process. The samples that qualified "B" for blank contamination were considered non-detect at the MRL or level of blank contamination, whichever was greater. The samples qualified "J", "UJ", "L", "UL", or "K" were considered acceptable as estimated or non-detect estimated.

Data Review

Data obtained from both the laboratory and data validation were reviewed by the Shaw Project Chemist to assess whether the project-specific data quality objectives, as defined in the associated MWP, were met.

Data Quality Objectives

Data quality objectives were developed concurrently with the Work Plan to ensure: (1) the reliability of field sampling, chemical analyses, and physical analyses; (2) the collection of sufficient data; (3) the quality of data generated was acceptable for its intended use; and (4) valid assumptions could be inferred from the data. Attainment of data quality objectives was assessed through evaluation of data collected using the following data quality indicators:

- **Precision** - a quantitative measure of the variability of a group of measurements in comparison to the average value.
- **Accuracy** - the bias in a measurement system.
- **Representativeness** - the degree to which the measured results accurately reflect the medium being sampled. Representativeness will be assessed based on accuracy, precision, and completeness.
- **Completeness** - the percentage of measurements which are judged to be useable.
- **Comparability** - defined as a qualitative parameter expressing the confidence with which one data set can be compared with another.
- **Sensitivity** - describes the method detection, quantitation, and reporting limits. It also may be expressed as the slope of the analytical curve (intensity verses concentration).

Data quality was assessed through the evaluation of sampling activities and field measurements associated with the chemical data in order to verify the reliability of the chemical analyses and the accuracy and precision of information acquired from the laboratory.

Precision: Method or laboratory precision performed by the laboratory was evaluated during the validation process. Overall sampling or field precision was evaluated during the data review process. Precision is measured by calculating and evaluating the relative percent difference (RPD) between the results of field or laboratory duplicate pairs. The RPD is calculated by the following equation:

$$RPD = \frac{/XA-XB/ * 100}{XM}$$

Where:
XA and XB are duplicate analyses, and
XM is the average value [(XA + XB)/2] of the duplicate analyses.

The RPD was calculated for those analytes which were detected at levels exceeding the method detection limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Analytical results were qualified as estimated (J) for RPDs exceeding criteria for both the sample and its duplicate pair.

Laboratory duplicate sample determinations were used to demonstrate acceptable method precision by the laboratory at the time of analysis and evaluated. Laboratory precision was performed either on the sample and its duplicate pair or the matrix spike and its spike duplicate pair. Duplicate analyses were performed to generate data in order to assess the long-term precision of the analytical method on various matrices. RPDs must be within established control limits.

- **Laboratory Duplicate Analysis:** Laboratory duplicate pairs (dupe) or laboratory spiked duplicate pairs (MSDs) were evaluated for the Area P samples. Laboratory duplicate pairs or laboratory spiked duplicate pairs were within specified precision criteria for each parameter and/or compound except for those compounds listed in the **Table A-4**. Analytical results were qualified as estimated (J) for RPDs exceeding criteria for where the associated compounds were detected. While these parameters were qualified estimated due to the high RPDs, the data was still considered useable, the precision data quality goal was met, and the qualified data did not impact the data quality for the RFI. Further discussion may be found in the data validation reports located in **Appendix A-3**.

Table A-4
Laboratory Duplicate Analysis

Field ID	Analyte	QC Type	Val Qual.	Comments
APSB08B	Calcium	Sample Dupe	J	High RPD
APSB08B	Magnesium	Sample Dupe	J	High RPD
APSB08B	Zinc	Sample Dupe	J	High RPD

J = Indicates estimated value due to QC non-conformance. Reported value may not be accurate or precise.

- **Field Duplicate Analysis:** Field duplicates were collected during the RFI on a 10% frequency per matrix to identify the cumulative precision of the sampling and analytical process, which includes the homogenization of soil samples. The RPD was calculated for those analytes that were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. For where values exceeding calibration range, the diluted values were evaluated. If one of the duplicate pair was non-detect and other <MRL, then the field duplicate was not evaluated. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD (35% RPD for metals) for the aqueous and solid matrix sample pairs. Field precision frequency was conducted on a site-wide basis. Field duplicate pairs were within specified precision criteria for each parameter and/or compound except for those compounds listed in the **Table A-5**. Analytical results were qualified as estimated "J" or "UJ" for exceeding criteria. While these noted parameters were qualified estimated due to the high RPDs or detections greater than the MRL and a non-detect in the duplicate, the data was still considered useable, the precision data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Table A-5
Field Duplicate Analysis

Field ID	Duplicate Pair	Analyte	Val Qual.	Comments
APGW05	TMGW05	Aluminum	J	High RPD
APGW05	TMGW05	Barium	J	High RPD
APGW05	TMGW05	Chromium	J	High RPD
APGW05	TMGW05	Iron	J	High RPD
APGW05	TMGW05	Lead	J	High RPD
APGW05	TMGW05	Magnesium	J	High RPD
APGW05	TMGW05	Nickel	J	High RPD
APGW05	TMGW05	Potassium	J	High RPD
APGW05	TMGW05	Vanadium	J	High RPD
APGW05	TMGW05	Zinc	J	High RPD
APGW05	TMGW05	Tetrachloroethylene	J	High RPD

J = Indicates an estimated value due to QC non-conformance. Reported value may not be accurate or precise.
UJ= Indicates an estimated non-detected value due to QC non-conformance. Reported value may not be accurate or precise.
MRL= Method Reporting Limit
ND= Non-detect

Accuracy: Accuracy is the measure of bias in a system. The accuracy of the results is measured by percent recovery (%R). Laboratory analytical accuracy was assessed through the use of laboratory blanks (method and calibration), rinse blanks, trip blanks, laboratory control samples (LCSs), matrix spike samples (MSs) and surrogates. Trip blanks were not required for soil samples, but were collected with associated rinse blank samples and evaluated. Laboratory analytical accuracy was reviewed during the validation of data. Sampling accuracy was assessed by evaluating blank contamination and the impact of contaminant contributions originating from non-point sources, such as field sampling equipment decontamination procedures, or laboratory contamination. QC samples evaluated for this assessment included equipment blanks and laboratory method or preparatory blanks. The data validation qualifiers would be applied for analytical non-conformances as outlined in the USEPA Region III validation guidance. Accuracy was measured as percent recovery by the following equation:

$$\%R = \frac{(\text{test value} - \text{spiked value}) * 100}{(\text{true value amount spiked})}$$

The test value is the concentration of the LCS, MS, or MSD determined from analysis. The spiked value for the MS and MSD is the original un-spiked sample concentration and for the LCS is zero. The true value is the concentration of amount spiked into the MS or MSD and the true concentration for the LCS.

Method and calibration blanks, rinse blanks, trip blanks, surrogates, laboratory control samples, and matrix spikes were evaluated and discussion follows.

Method and Calibration Blanks: A method blank also known as a preparatory blank is a volume of analyte-free water or soil that is processed through the entire analytical scheme (i.e., extraction, digestion, concentration, and analysis) as with the actual samples. Method blanks monitor potential laboratory-induced contamination. Results were qualified "B" for blank contamination by the laboratory and/or through the data validation process. In accordance with USEPA Region III data validation guidelines, reported sample results were considered "non-detect" and qualified with the letter "B" if the detected sample concentration was within 5 times (10 times for common laboratory contaminants: methylene chloride, acetone, 2-butanone, OCDD, OCDF, and common phthalate esters) the concentration in the associated method blank. The method blank contamination assessment was evaluated during the data validation process and may be found in the data validation reports located in **Appendix A-3**. Method blanks were calculated and compared against the same matrix environmental samples on a batch specific basis. Method (preparatory) blanks were reported in ng/L, mg/L, or µg/L units for aqueous matrices and pg/g, mg/kg, or µg/kg for solid matrices. No unit conversions were necessary for method blanks since they were treated in the same manner as the samples. Calibration blanks were also compared against the environmental samples for select parameters. Calibration blanks are aqueous samples and were reported in aqueous units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units pg/g, µg/kg, or mg/kg from the given aqueous rinse blank or calibration blanks concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final digestate or extract volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

- **Method and Calibration Blank Analysis:** For aqueous matrices, the method and calibration blanks were non-detect for all target parameters and/or compounds of interest except for beryllium. For solid matrices, the method blanks were non-detect for all target parameters and/or compounds of interest except for antimony, beryllium, mercury, potassium, sodium, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, OCDD, OCDF, Total HxCDFs, and Total HpCDFs. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to method and calibration blanks may be found in the data validation reports located in **Appendix A-3.**

Rinse Blanks: The blank contamination assessment was performed to assess the impact of contaminant contributions originating from non-point sources, such as field sampling equipment decontamination procedures. Rinse blanks were intended to identify cross-contamination between samples as a result of sampling equipment decontamination procedures. Rinse blanks were collected by pouring the required volume of de-ionized, organic-free water over the equipment and collecting the water in the appropriate sample containers. Rinse blanks were performed at a rate of one per 20 samples collected or 5% per matrix per sampling technique. The rinse blank results were evaluated to ascertain the efficiency of decontamination and assess the potential for cross-contamination. Rinse blanks were analyzed for the analytes of concern for the RFI. In accordance with USEPA Region III data validation guidelines, the detected concentration in the sample were qualified "B" for blank contamination and was considered non-detect if the sample concentration was within five times (10 times for common laboratory contaminants such as acetone, 2-butanone, methylene chloride, OCDD, OCDF, and phthalate esters) the concentration in the associated equipment blank. Rinse blanks are aqueous samples and were reported in ng/L, µg/L, or mg/L units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units pg/g, µg/kg, or mg/kg from the given aqueous rinse blank concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final digestate or extract volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

Table A-6
B-Qualified Data Summary

Field ID	Analyte	Result	LQ	Units	Field ID	Analyte	Result	LQ	Units
APGW02	Beryllium	4.7	J	UG/L	APSB09B	Antimony	0.50	J	MG/KG
APGW03	Beryllium	12.4		UG/L	APSB09B	Potassium	697		MG/KG
APGW04	Beryllium	5.2	J	UG/L	APSB10A	Antimony	0.51	J	MG/KG

APGW05	Beryllium	6.5	J	UG/L	APSB10A	Potassium	853		MG/KG
APSB06A	Antimony	0.94	J	MG/KG	APSB10B	Antimony	0.46	J	MG/KG
APSB06B	Antimony	1.1	J	MG/KG	APSB10B	Potassium	725		MG/KG
APSB07A	Antimony	0.72	J	MG/KG	APSD01	1,2,3,4,7,8-HxCDF	0.938	A	PG/G
APSB07A	Sodium	52.0	J	MG/KG	APSD01	2,3,7,8-TCDF	0.509	A	PG/G
APSB07B	Antimony	1.0	J	MG/KG	APSD01	Antimony	0.88	J	MG/KG
APSB08A	Antimony	1.2	J	MG/KG	APSD01	Sodium	111	J	MG/KG
APSB08A	Sodium	232	J	MG/KG	APSD01	Mercury	0.038	J	MG/KG
APSB08B	Antimony	0.83	J	MG/KG	TMSB06B	Antimony	1.2	J	MG/KG
APSB09A	Antimony	0.59	J	MG/KG	TMSB07B	Antimony	1.2	J	MG/KG
APSB09A	Potassium	796		MG/KG					

J = A = Indicates an estimated value for estimating a concentration <MRL or <EDL and ≥ MDL.
B = The analyte has been detected in the sample and the associated laboratory or field blank.
EMPC= Estimated Maximum Possible Concentration.

- **Rinse Blank Analysis:** Rinse blank 072607R applies to the soil samples collected at Area P. This rinse blank was taken from the stainless steel bowl and trowel used to collect the field soil samples. For rinse blank 072607R, all analytes were non-detect for all target parameters and/or compounds of concern except for nickel, potassium, sodium, 1,2,3,4,6,7,8-HpCDF, OCDF, and Total HpCDFs. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to rinse blanks may be found in the data validation reports located in **Appendix A-3.**

Trip Blanks: Trip blanks were prepared by the project contract laboratory and accompanied the samples requiring VOC analysis. One trip blank was transported with each VOC sample cooler to the laboratory for each day of sampling. The trip blanks were prepared by pouring the required volume of de-ionized, organic-free water into appropriate sample containers in the laboratory. The trip blanks were analyzed for the TCL VOCs. The trip blank results were used to assess the potential incidental contamination due to sample transport before, during, and after field operations (i.e., exposure to air) and/or contamination due to the sample container. In accordance with USEPA Region III data validation guidelines, the detected concentration in the sample was considered a "non-detect" (i.e., qualified "B" for blank contamination) and was excluded from consideration if the sample concentration was within five times (10 times for common laboratory contaminants such as acetone, 2-butanone, methylene chloride) the concentration in the associated trip blank. Trip blanks are aqueous samples and were reported in µg/L units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units µg/kg from the given aqueous rinse blank VOC concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

- **Trip Blank Analysis:** The trip blanks TB072607W and TB072607S apply to both surface and subsurface soil samples collected on 7/26/07 at Area P. For trip blanks TB072607W and TB072607S, all target analytes were non-detect for all parameters and/or compounds of concern, except for methyl chloride in trip blank TB072607W. The trip blank TB073107 apples to groundwater collected at Area P. For trip blank TB073107, all target analytes were non-detect for all parameters and/or compounds of concern. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to trip blanks may be found in the data validation reports located in **Appendix A-3.**

Surrogates: Laboratory performance on individual samples is evaluated through the review of surrogate spike samples for organic compounds. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%R) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006).

- **Surrogates:** For aqueous matrices, surrogate recoveries were within criteria for all target parameters and/or compounds of interest. For solid matrices, the surrogates were within criteria for all target parameters and/or compounds of interest. In most cases, no data qualification was required in either matrices due to either other spiked surrogates were within criteria not warranting qualification or the laboratory accidentally double spiked the surrogate into the sample. Further discussion about surrogates may be found in the data validation reports located in **Appendix A-3.**

Laboratory Control Samples: The LCSs were analyzed to assess general method performance by the ability of the laboratory to successfully recover the target analytes from a control matrix. The LCS is similar in composition to the method blank. For aqueous analyses, spiked analyte-free reagent water was used. For soil analyses, a purified solid matrix (e.g., sand, sodium sulfate, or other purified solid) was used. The LCSs were spiked with single-component target analytes before it is carried through the preparation, cleanup, and determinative procedures. LCSs were performed at a rate of one per preparation batch per matrix. When samples were not subjected to a separate preparatory procedure (i.e., purge and trap VOC analyses, or aqueous Hg analysis), the CCV may have been used as the LCS, provided the CCV acceptance limits were used for evaluation.

- **Laboratory Control Sample Recovery Analysis:** The results of the LCS were evaluated, in conjunction with other QC information during the data validation process to ascertain the acceptability of the data generated for that batch of samples. The LCS samples were evaluated for each SDG and are matrix specific. For LCS samples, USACE DoD QSM and laboratory criteria limits were used for each method in the validation process. The aqueous LCS samples were within specified criteria for all target parameters and/or compounds of concern except for benzo(a)pyrene, endrin aldehyde, o-nitrotoluene, m-nitrotoluene, and p-nitrotoluene for select SDGs. The solid LCS samples were within specified criteria for all target parameters and/or compounds of concern except for 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, beta-BHC, delta-BHC, dicamba, dichloroprop, dinoseb, endrin, endrin aldehyde, methyl bromide, and vinyl chloride. Data qualifiers were applied as appropriate to associated samples based upon these outliers. In some cases, the associated sample was non-detect for a high recovery; therefore, no qualifiers were required. Further discussion about laboratory control samples may be found in the data validation reports located in **Appendix A-3.** While qualification was applied due to high or low LCS recoveries, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Matrix Spikes: The MS was used to assess the performance of the method as applied to a particular project matrix. A MS is an environmental sample to which known concentrations of certain target analytes have been added before sample manipulation from the preparation, cleanup, and determinative procedures have been implemented. The original field sample was mixed or shaken to ensure homogeneous fractions when allowed by the method. MSs were performed at a rate of one per preparation batch or 5% whichever was more frequent per matrix. The results of the MS are evaluated, in conjunction with other QC information during the validation process to assess the effect of the matrix on the bias of the analysis. If a matrix spike duplicate (MSD) was analyzed, it was also evaluated.

- **Matrix Spike and Matrix Spike Duplicate Recovery Analysis:** The results of the MS/MSD were evaluated, in conjunction with other QC information during the data validation process to ascertain the acceptability of the data generated for that batch of samples. Only spiked project site Area P samples were evaluated. For MS/MSD samples, USACE DoD QSM and laboratory criteria limits were used for each method in the validation process. For aqueous matrices, MS and MSD samples were within specified criteria for all target parameters and/or compounds of interest except for 1,3-dinitrobenzene, benzoic acid, benzo(a)pyrene, benzo(b)fluoranethene, benzo(k)fluoranthene, and endrin aldehyde. For solid matrices, MS and MSD samples were within specified criteria for all target parameters and/or compounds of interest except for 1,1,1-trichloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1-methylnaphthalene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2,4-DB, 2,4-D, 2,4-dinitrotoluene, 2,4-dimethylphenol, 2,6-dinitrotoluene, 2-hexanone, 2,4,5-TP, 2,4,5-T, 2,4,6-trinitrotoluene, 2-amino-4,6-dinitrotoluene, 3,3'-dichlorobenzidine, 4-amino-2,6-dinitrotoluene, 4-chloroaniline, 4,6-dinitro-2-methylphenol, 4-nitrotoluene, 4-4'-DDD, 4,4'-DDE, 4-methyl-2-pentanone, acetone, aldrin, alpha-BHC, aluminum, antimony, arsenic, barium, benzoic acid, cadmium, calcium, carbon disulfide, carbon tetrachloride, cis-1,3-dichloropropene, chloroform, chromium, chrysene, cobalt, copper, delta-BHC, dalapon, dicambia, dichloroprop, dinoseb, endrin, endrin aldehyde,

endosulfan I, endosulfan II, ethylbenzene, gamma chlorodane, heptachlor, heptachlor epoxide, hexachloroethane, hexachlorocyclopentadiene, iron, lead, magnesium, manganese, methyl bromide, methoxychlor, methyl ethyl ketone, nickel, PCB-1016, p-nitrotoluene, potassium, selenium, silver, sodium, tetryl, thallium, toluene, trans-1,3-dichloropropene, trichloroethene, vanadium, zinc, vinyl chloride, and o-xylene. The spiked samples were qualified as applicable to USEPA Region III guidance. In some cases, the sample amount was greater than the amount spiked or the associated sample was non-detect for a high recovery; therefore, no qualifiers were required. Further details may be found in the data validation reports located on a CD at the back of this report. While qualification was applied due to high or low MS or MSD recoveries in some cases, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Completeness: Completeness is a measure of the amount of information that must be collected during the field investigation to allow for successful achievement of the objectives. An adequate amount and type of data must be collected for conclusions to be valid. Missing data may reduce the precision of estimates or introduce bias, thus lowering the confidence level of the conclusions. While completeness has been historically presented as a percentage of the data that is considered usable, this does not take into account critical sample locations or critical analytical parameters.

The amount and type of data that may be lost due to sampling or analytical error cannot be predicted or evaluated in advance. The importance of lost or suspect data will be evaluated in terms of the sample location, analytical parameter, nature of the problem, decision to be made, and the consequence of an erroneous decision. Critical locations or parameters for which data is found to be inadequate will either be re-sampled and re-analyzed or the data will be appropriately qualified based on the decision of the project QA manager. The completeness goal percentage of usable data is set at 90%.

Sampling completeness was assessed through evaluation of the total number of samples proposed for collection in the work plan versus the actual number of samples collected and analyzed. Analytical completeness was assessed by comparing the number of useable data points collected to the total number of data points generated. Completeness is calculated using the following equations:

$$\%\,\text{Sampling Completeness} = \frac{\text{No. of actual samples collected}}{\text{No. of proposed samples}}$$

$$\%\,\text{Analytical Completeness} = \frac{\text{No. of usable data}}{\text{No. of requested analyses}}$$

For the purposes of this report, unusable data are defined to include rejected data points ("R" qualifier).

- **Completeness Analysis-Area P:** Ten soil samples, five groundwater samples, two project wide IDM samples (one aqueous and one solid), three trip blanks, and three rinse blanks were proposed for collection at Area P as specified in MWP Addendum 019 (Shaw, 2007). The field duplicates, rinse blanks, and IDM samples were collected on a site-wide basis. All samples were collected and analyzed for the parameters as specified in MWP Addendum 019, except for two rinse blanks (one rinse blank for the 07/31/07 groundwater samples and one rinse blank for the 07/19/07 sediment sample). One groundwater sample was not collected because groundwater was not encountered during the direct push activities at sample location APGW01. Because this groundwater sample was not collected, a sediment sample (APSD01) was collected in its place. The resulting sampling completeness quotient is 100% and meets the pre-defined goals of 90% for the sampling program. There were no direct impacts for the omitted rinse blanks. The overall analytical percent completeness was assessed by parameter group and matrix for the samples collected. Analysis of the all samples resulted in the generation of 3637 out of 3637 data points deemed to be useable, generating an overall analytical completeness quotient of 100%. No data was rejected for Area P. The completeness percentages met the pre-defined goal of 90% for all Area P sampling events and did not impact the overall RFI.

Representativeness: Representativeness is a measure of the degree to which the measured results accurately reflect the medium being sampled. It is a qualitative parameter that is addressed through the proper design of the sampling program in terms of sample location, number of samples, and actual material collected as a "sample" of the whole.

Sampling protocols were developed to assure that samples collected are representative of the media. Field handling protocols (e.g., storage, handling in the field, and shipping) were designed to protect the representativeness of the collected samples. Proper field documentation and QC inspections were used to establish that protocols were followed and that sample identification and integrity was maintained and met pre-defined goals.

Comparability: Comparability is the confidence with which one data set can be compared to another. Comparability was controlled through the use of SOPs that have been developed to standardize the collection of measurements and samples and approved analytical technique with defined QC criteria. USEPA-approved methodologies were used in providing laboratory analytical support for this project. Laboratory SOPs were developed from these methods. Consistent and proper calibration of equipment throughout the field exercises, as described in MWP Addendum 019 and the MWP (URS, 2003), will assist in the comparability of measurements. Field documentation and QA audits were used to establish that protocols for sampling and measurement follow appropriate SOPs and met pre-defined goals.

Levels of Concern

An integral part of the identification of DQOs is the establishment of LOCs. These levels were compared with analytical PQLs and MDLs prior to analytical method selection to ensure the method was capable of addressing project DQOs, preclude occurrence of false negative issues, and assess best available technology limitations. Although LOCs selected as potential concerns may not necessarily reflect RFI-specific objectives, they were developed to ensure that the chosen analytical methods have detection limits sensitive enough to achieve compliance with appropriate site-specific screening levels or other specified criteria for soil. The LOCs for Area P are based on soil applicable or relevant and appropriate requirements (ARARs) and To-Be-Considered (TBC) guidance and are as follows:

The sediment ARAR/TBC guidance includes:

- RFAAP Facility-Wide Background inorganic soil concentrations (IT, 2001).
- Oakridge National Laboratory (ORNL) Regional Screening Table – Residential and Industrial Scenarios with a hazard index (HI) = 0.1 for non-carcinogen compounds and a dilution attenuation factor (DAF) = 20 for the SSL Transfer levels (September 12, 2008)

The groundwater and surface water ARAR/TBC guidance includes:

- Oakridge National Laboratory Regional Screening Table – Tap Water Scenario (September 12, 2008) with a hazard index (HI) = 0.1 for non-carcinogen compounds.
- USEPA Drinking Water Maximum Contaminant Levels (August, 2006).

Sensitivity (quantitation, reporting, and detection limits): The term sensitivity is used broadly to describe the method detection, quantitation, and reporting limits established to meet project-specific data quality objectives; and not limited to the definition which describes the capability of a method or instrument to discriminate between measurement responses. The method detection limits (MDLs) and the practical quantitation limits (PQLs) published within USEPA methods are based upon a reagent water matrix, and are not necessarily reflective of typical sample matrices; therefore, care was taken in establishing limits for laboratory analysis. Methods were selected based upon their sensitivity, technological, and economical considerations while keeping the screening values and available methodology in mind and were sufficient in meeting the given levels of concern (LOCs).

The laboratory generated PQLs and MDLs were compared at the onset of the project. The MDL is the minimum concentration of an analyte that can be measured and reported with a 99% confidence that the analyte is above zero and is identified from the analysis of a sample in a given matrix containing the analyte. The MDLs were derived by the method based upon 40 CFR Chapter 136 Appendix B. The MDL values differ and change periodically because each MDL is laboratory, instrument, analyst, matrix, and method specific. Therefore, the more conservative MDLs were reported where there were multiple instruments and or studies performed. The PQLs are the values at which the laboratory has demonstrated the ability to reliably quantitate the target value of an analyte for the method performed and are based upon the lowest calibration standard used for the initial calibration curve or the lowest verification standard performed. PQLs must be at least 3 times the MDL.

The laboratory used a method reporting limit (MRL) or sample quantitation limit to report non-detects for each sample. The MRL is the threshold value below which the laboratory reports non-detected values as "U," "ND," or "<" and will vary for each sample based upon matrix, dilution, sample volumes, percent moistures (for solids), and the method performed. For dioxin and furans, the estimated detection limit (EDL) method was reported. The sample specific EDL is the concentration of a given analyte required to produce a signal with a peak height of at least 2.5 times the background signal level and is calculated only for where each 2,3,7,8-substituted congener was not identified. The sample specific EDL level is above the actual MDL levels at a representative level for reporting dioxins and furans.

Data was calculated over a linear range and the resulting highest concentration within the linear range represents the upper quantitation limit. Each target compound for every sample was reported at a specific level. Any target analytes detected above the MDL, but less than the MRL or 3 times the MDL (whichever was greater), were reported as estimated values "J." Target analytes detected above the upper calibration standard were diluted and analyzed within established calibration windows or qualified. The units used for aqueous samples were ng/L, µg/L, or mg/L and for solid samples were pg/g, µg/kg, or mg/kg.

- Comparing the groundwater samples from Area P against the USEPA ORNL tap water RBCs, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane, 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 2,4-dinitrophenol, 2,4,6-trichlorophenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-chloroaniline, aldrin, antimony, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-chloroethyl)ether, bis(chloroisopropyl)ether, carbon tetrachloride, chloroform, dibenz(a,h)anthracene, dieldrin, heptachlor epoxide, hexachlorobenzene, hexachlorobutadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, MCPA, MCPP, mercury, naphthalene, nitrobenzene, nitroglycerin, n-nitrosodi-n-propylamine, pentachlorophenol, PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260, tetrachloroethene, thallium, toxaphene, and vinyl chloride had MDLs greater than the given tap water RBCs for select samples. Comparing the groundwater samples against the Drinking Water MCLs, aluminum, antimony, hexachlorobenzene, pentachlorophenol, and thallium had MDLs greater than the given MCLs for select samples. The samples had higher sensitivity levels due to the given available USEPA method sensitivity capabilities as well as any required sample dilutions and/or sample volume adjustments due to either high analyte concentration and/or matrix interferences. Though an uncertainty may be present with these sensitivity gaps between the MCLs and/or tap water RBCs to the MDLs for these compounds, it is unlikely that they present an impact to the decisions regarding the RFI.

- Comparing the soil samples from Area P against the USEPA ORNL residential RBCs, nitroglycerin, PCB-1254, and thallium had MDLs greater than the given residential RBCs for select samples. Comparing the soil samples against the USEPA ORNL industrial RBCs, all target compound MDLs were less than the given industrial RBCs except for thallium for select samples. Comparing the soil samples against site-wide metals background concentrations, thallium had an MDL greater than the given site-wide metals background for select samples. The samples had higher sensitivities due to the given available USEPA method sensitivity capabilities as well as percent solid adjustments for dryness, and any required sample dilutions or sample volume adjustments due to either high analyte concentration and/or matrix interferences. Though an uncertainty may be present with these sensitivity gaps between the residential RBCs, industrial RBCs, and/or background concentrations to the MDLs for these compounds, it is unlikely that they present an impact to the decisions regarding the RFI.
- Comparing the sediment sample (APSD01) from Area P against the USEPA ORNL residential RBCs, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene , 2,4-dinitrotoluene , 2,6-dinitrotoluene , 2-amino-4,6-Dinitrotoluene, 2-nitrotoluene , 4-amino-2,6-dinitrotoluene, 4-nitrotoluene, nitrobenzene, nitroglycerin, n-nitrosodi-n-propylamine, PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260, RDX, and tetryl had MDLs greater than the given residential RBCs for select samples. Comparing the sediment samples against the USEPA ORNL industrial RBCs, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,6-dinitrotoluene, 2-nitrotoluene, nitrobenzene, PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260, and RDX had MDLs greater than the given industrial RBCs for select samples. Comparing the sediment samples against site-wide metals background concentrations, thallium had MDLs greater than the given site-wide metals background concentrations for select samples. The samples had higher sensitivities due to the given available USEPA method sensitivity capabilities as well as percent solid adjustments for dryness, and any required sample dilutions or sample volume adjustments due to either high analyte concentration and/or matrix interferences. Though an uncertainty may be present with these sensitivity gaps between the residential RBCs, industrial RBCs, and/or background concentrations to the MDLs for these compounds, it is unlikely that they present an impact to the decisions regarding the RFI.

Appendix A-3

Data Validation Reports and Form I

Shaw Environmental, Inc.
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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Dioxin Furans
SGS Paradigm Analytical Laboratories, Inc. SDGs G383-583
(Accutest SDG F51154)

DATE: September 26, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. The samples were analyzed for Dioxin Furan compounds using USEPA SW-846 Method 8290 High Resolution Gas Chromatography/High Resolution Mass Spectroscopy (HRGC/HRMS). A total of five aqueous samples and seventeen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
41SW08	F51154-6	41SD11	F51154-22
41SW09	F51154-7	49SS02	F51154-23
41SW10	F51154-8	49SS03	F51154-24
41SD08	F51154-9	49SS04	F51154-25
41SD09	F51154-10	49SS05	F51154-26
41SD10	F51154-11	59SS06	F51154-27
LFSD01	F51154-15	59SS07	F51154-28
TMSD01	F51154-16	59SS08	F51154-29
LFSW01	F51154-17	59SS09	F51154-30
APSD01	F51154-18	59SS10	F51154-31
TMSW01	F51154-20	TMSS05	F51154-32

Data were reviewed and validated using a combination of project QAPP, *DOD Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *USEPA Region III Dioxin/Furan Data Validation Guidance* (March, 1999). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
X		Blank Analysis
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Internal Standards (IS) Recovery Standard Solutions
	X	Cleanup Standards
	X	Laboratory Control Standard or Ongoing Precision Result (OPR)
X		Matrix Spike and Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

9/26/07
Date

RFAAP VALIDATION REPORT
DIOXIN FURAN REVIEW
SDGs G383-583
(Accutest SDG F51154)

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, dioxin and furans are shipped cooled (@4°C ± 2°C) with a maximum holding time of 30 days from sample collection to preparative extraction and 45 days from preparative extraction to determinative analysis. For solid samples, dioxin and furans are shipped cooled (@4°C ± 2°C) with a maximum holding time of 30 days from sample collection to preparative extraction and 45 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous and soil samples were collected on 07/18/07 and 07/19/07. For samples collected 07/18/07, the dioxins and furans were extracted on 07/26/07 and 07/29/07 and analyzed on 07/28/07, 07/30/07, and 07/31/07. For samples collected 07/19/07, the dioxins and furans were extracted on 07/26/07, 07/29/07, 07/30/07, and 07/31/07 and analyzed on 07/31/07 and 08/01/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory (or field) blank analyses is to determine the existence and magnitude of contamination problems resulting from field and laboratory activities. No contamination should be found in any of the blanks >EDL (estimated detection limit). The DoD QSM criteria specifies all concentrations should be less than ½ MRL (<MRL for common laboratory contaminants OCDD and OCDF) and <2EDL for the calibration blanks. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants OCDD or OCDF, or 5 times (5X) the maximum amount for other target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 100) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. ng/L	Action Level ng/L	B qualified samples
07/28/07	LMB14381	All congeners <EDL	NA	NA	None
09/09/07	RB083007	All congeners <EDL	NA	NA	None
Analysis Date	**QC Blank ID**	**Compound**	**Max Conc. pg/g**	**Action Level pg/g**	**B qualified samples**
07/30/07	LMB14383	OCDD	0.640J	6.40	None
07/30/07	LMB14383	2,3,7,8-TCDF	0.0940J	0.47	None
07/30/07	LMB14383	1,2,3,4,7,8-HxCDF	0.186J	0.93	None
07/30/07	LMB14383	1,2,3,4,6,7,8-HpCDF	0.776J	3.88	None
07/30/07	LMB14383	OCDF	1.57J	15.7	None
07/30/07	LMB14383	Total TCDFs	0.0940J	0.47	None
07/30/07	LMB14383	Total HxCDFs	0.186J	0.93	None
07/30/07	LMB14383	Total HpCDFs	0.776J	3.88	None
07/31/07	LMB14385	1,2,3,4,6,7,8-HpCDD	0.374J	1.87	None
07/31/07	LMB14385	OCDD	1.31J	13.1	None
07/31/07	LMB14385	2,3,7,8-TCDF	0.174J	0.87	41SD11, APSD01
07/31/07	LMB14385	1,2,3,4,7,8-HxCDF	0.256J	1.28	41SD11, APSD01
07/31/07	LMB14385	1,2,3,4,6,7,8-HpCDF	1.79J	8.95	41SD11
07/31/07	LMB14385	OCDF	3.80J	19.0	41SD11
07/31/07	LMB14385	Total HpCDDs	0.374J	1.87	None
07/31/07	LMB14385	Total TCDFs	0.174J	0.87	None
07/31/07	LMB14385	Total HxCDFs	0.444J	2.22	None
07/31/07	LMB14385	Total HpCDFs	1.79J	8.95	None
08/01/07	LMB14389	OCDD	0.702J	7.02	None
08/01/07	LMB14389	2,3,7,8-TCDF	0.122J	0.61	49SS04, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10
08/01/07	LMB14389	2,3,4,7,8-PeCDF	0.0680J, EMPC	0.34	49SS04, 59SS09, 59SS10
08/01/07	LMB14389	1,2,3,4,6,7,8-HpCDF	0.650J	3.25	None
08/01/07	LMB14389	OCDF	1.12J	11.2	None
08/01/07	LMB14389	Total TCDFs	0.122J	0.61	None
08/01/07	LMB14389	Total PeCDFs	0.0680J	0.34	None
08/01/07	LMB14389	Total HxCDFs	0.0940J	0.47	None
08/01/07	LMB14389	Total HpCDFs	0.650J	3.25	None
07/28/07	RB071807	All congeners <EDL	NA	NA	None
08/03/07	072407R	All congeners <EDL	NA	NA	None
08/08/07	072507R	1,2,3,4,6,7,8-HpCDF	0.849J	4.25	None
08/08/07	072507R	OCDF	1.42J	14.2	None
08/08/07	072507R	Total HpCDFs	0.849J	4.25	None

J = Estimated value <MRL and >EDL.
EMPC = Estimated Maximum Possible Concentration.

III-Instrument Performance Check

Instrument must be tuned with perfluorokerosene (PFK) to achieve a static resolving power of at least 10,000 (10% valley) and lock-mass ion between lowest and highest masses for each descriptor and level of reference compound ≤10%. Documentation of the mass spectrometer resolving power is accomplished by recording the peak profile of the high-mass reference signal (typically m/z 330.9792) obtained during a peak examination by using the low-mass PFK ion at m/z 292.9825 or lower in mass as reference. At the beginning of the each 12-hour period, the chromatographic resolution is verified in the same fashion as in the initial calibration through the analysis of HRCC solution on the DB-5 (or equivalent) column or through the analysis of the column performance solution on the SP-2331 or SP-225 (or equivalent) column. A 25% valley must be achieved between the close eluters.

- All PFK forms were verified and found to be in compliance with method specification. No qualifiers were applied.

IV-Initial Calibration
Once the window defining mix has been analyzed and the descriptor switching times have been verified, the five point calibration solutions can be analyzed prior to sample analysis. Per method and DoD QSM, the initial calibration criteria are as follows:

- The percent relative standard deviations for the mean response factors RRF(n) from the 17 unlabeled standards must not exceed ±20%, and those for the labeled reference compounds must not exceed ±30%;
- The signal to noise ratio ≥10% for all target ions;
- Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- For initial calibration performed on 07/10/07 for all target compounds on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), LFSW01 (F51154-17), APSD01 (F51154-18), TMSW01 (F51154-20), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this initial calibration.

V-Continuing Calibration
The continuing calibration consists of two parts: evaluation of the mass resolution and retention time check. Per method and DoD QSM, the following stipulates the continuing calibration criteria.

- The signal signal-to-noise ratio (S/N) must be at least 10:1 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard for each analyte.
- The relative response factor of each analyte for the unlabeled standard must be within ±20% of the average RF obtained from the initial calibration, and the RRF of each labeled standard must be within ±30% of the average RRF established during initial calibration. This is expressed in term of percent difference %D.
- Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- For continuing calibration performed on 07/28/07 @02:22 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 07/28/07 @13:44 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this continuing calibration.

- For continuing calibration performed on 07/28/07 @23:29 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 07/30/07 @17:04 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), and 41SD11 (F51154-22) apply to this continuing calibration.

- For continuing calibration performed on 07/31/07 @04:20 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples LFSW01 (F51154-17), TMSW01 (F51154-20), 49SS02 (F51154-23), and 49SS03 (F51154-24) apply to this continuing calibration.

- For continuing calibration performed on 07/31/07 @13:17 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/01/07 @00:39 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this continuing calibration.

- For continuing calibration performed on 08/01/07 @10:25 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/01/07 @14:32 on instrument HRMS1, all criteria were met. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this continuing calibration.

- For continuing calibration performed on 08/02/07 @01:54 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/02/07 @12:28 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/02/07 @16:03 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/03/07 @03:24 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/03/07 @14:47 on instrument HRMS1, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

VI-Internal Standards (IS) Recovery Standard Solutions
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: Recoveries of the isotopically-labeled recovery standards to fall within the 40 to 135 percent range for the tetra- through octachlorinated congeners, or as stated in the data package (DoD QSM limits 40-135%).

- All criteria were met. No qualifiers were applied.

VII-Cleanup Standards
Cleanup standards are added to every sample, blank, quality control sample, and calibration solution. This compound is added to the samples after extraction but prior to cleanup and is used to verify the percent recovery obtained using the isotope dilution technique. The control limits are 40 to 135 percent (DoD QSM limits 40-135%).

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Standard (LCS) or Ongoing Precision Result (OPR)
LCSs are used to monitor laboratory accuracy and precision by calculating the percent recoveries of the spiked compounds. Per DOD QSM and method criteria, acceptable performance is determined by:

1. Recoveries of the isotopically-labeled extraction standards to fall within 40-135% control limits for the tetra- through octachlorinated congeners, or as stated in the data package;

2. Recoveries (accuracy) of the unlabeled compounds should be within ±35% when spiked at the method quantitation limit and within ±30% when spiked above 20 times the method quantitation limit, or as stated in the data package;

3. When duplicate OPR are required, the relative percent difference (RPD) of the unlabeled analytes concentrations should be within 30% when spiked at the method quantitation limit and within ±20% when spiked above 20 times the method quantitation limit.

- Sample OPR14381 was used as LCS and LCSD on 07/28/07 analytical run. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this LCS.

- Sample OPR14383 was used as LCS and LCSD on 07/30/07 analytical run. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), and 41SD11 (F51154-22) apply to this LCS.

- Sample OPR14385 was used as LCS and LCSD on 07/31/07 analytical run. All criteria were met. No qualifiers were applied. Samples LFSW01 (F51154-17), TMSW01 (F51154-20), 49SS02 (F51154-23), and 49SS03 (F51154-24) apply to this LCS.

- Sample OPR14389 was used as LCS and LCSD on 08/01/07 analytical run. All criteria were met. No qualifiers were applied. Samples 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. Per DoD QSM, MS/MSD recoveries must be within in-house laboratory limits (75-125%) and RPD ≤20%.

- Sample LFSW01 (F51154-17) was used for the aqueous MS/MSD analysis on 07/31/07. OCDD (147%, 167%) and 2,3,4,7,8-PeCDF (RPD=21%) were outside lab criteria. For all other congeners, all criteria were met. OCDD was qualified estimated bias high "K" for detects for the spiked sample based upon the high recoveries. The associated LCS was within criteria limits. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- No project specific solid matrix MS/MSD was performed; therefore, it was not evaluated.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair LFSW01 (F51154-17) and TMSW01 (F51154-20) was collected for dioxin and furans. All detected dioxin and furans found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. All other dioxin and furans target compounds were non-detect. Total HpCDDs (71.7%) was above criteria due to low concentration levels detected below the MRL and were reported as estimated maximum possible concentration (EMPC). Total HpCDDs was qualified estimated "J" for the original and duplicate pair samples based upon these outliers. For all other dioxin and furans, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for Dioxin and Furans for Duplicate Pair LFSW01 (F51154-17) and TMSW01 (F51154-20)

Compound	Original Sample (ng/L)	Duplicate Pair (ng/L)	%RPD
1,2,3,4,6,7,8-HpCDD	0.00503J, EMPC	0.00448J	11.6
OCDD	0.0423J	0.0295J	35.7
1,2,3,7,8-PeCDF	0.00593U	0.00178J	NA
1,2,3,4,6,7,8-HpCDF	0.00205J	0.00609U	NA
OCDF	0.00586J	0.0122U	NA
Total HpCDDs	0.00949J, EMPC	0.00448	71.7
Total TCDFs	0.00622J, EMPC	0.00200U	NA
Total HpCDFs	0.00422J, EMPC	0.00609U	NA
Total PeCDFs	0.00202U	0.00373J, EMPC	NA

U = Value non-detect as <EDL.
J = Estimated value <MRL and >EDL. Data point qualified was estimated "J".
NA = Not Applicable.
EMPC = Estimated Maximum Possible Concentration

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for dioxin and furans. All detected dioxin and furans found in the sample and its duplicate pair and associated %RPD are noted in **Table 4**. All other dioxin and furans target compounds were non-detect. 2,3,7,8-TCDF (59.5%), 1,2,3,7,8-PeCDF (59.9%), 2,3,4,7,8-PeCDF (93.8%), 1,2,3,6,7,8-HxCDF (59.5%), 2,3,4,6,7,8-HxCDF (86.9%), 1,2,3,7,8,9-HxCDF (72.4%), Total TCDFs (84.2%), and Total PeCDFs (90.4%) was above criteria probably due to sample non-homogeneity and/or low sample concentration levels detected below the MRL. 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, Total TCDFs, and Total PeCDFs were qualified estimated "J" for the original and duplicate pair samples based upon these outliers. For all other dioxin and furans, all criteria were met.

Table 4 Field Precision Hits Analysis Summary for Dioxin and Furans for Duplicate Pair LFSD01 (F51154-15) and TMSD01 (F51154-16)

Compound	Original Sample (pg/g)	Duplicate Pair (pg/g)	%RPD
2,3,7,8-TCDD	2.38	1.72	32.2
1,2,3,7,8-PeCDD	7.55J	5.77J	26.7
1,2,3,4,7,8-HxCDD	7.83J	6.23	22.8
1,2,3,6,7,8-HxCDD	19.0	18.8	1.1
1,2,3,7,8,9-HxCDD	17.5	16.2	7.7
1,2,3,4,6,7,8-HpCDD	571	734	25.0
OCDD	5030	6660E	27.9
2,3,7,8-TCDF	5.58	3.02	59.5
1,2,3,7,8-PeCDF	5.73J	3.09J	59.9
2,3,4,7,8-PeCDF	10.6	3.83J	93.8
1,2,3,4,7,8-HxCDF	19.8	15.8	22.5
1,2,3,6,7,8-HxCDF	10.8	5.85J	59.5
2,3,4,6,7,8-HxCDF	11.7	4.61J	86.9
1,2,3,7,8,9-HxCDF	2.39J	1.12J	72.4
1,2,3,4,6,7,8-HpCDF	132	139	5.2
1,2,3,4,7,8,9-HpCDF	5.24J	4.97J	5.3
OCDF	385	416	7.7
Total TCDDs	37.9	27.8	30.8
Total PeCDDs	69.9	57.4	19.6
Total HxCDDs	200	186	7.3
Total HpCDDs	1060	1310	21.1
Total TCDFs	132	53.8	84.2
Total PeCDFs	137	51.7	90.4
Total HxCDFs	158	113	33.2
Total HpCDFs	328	333	1.5

E = Value exceeded calibration range. Data point qualified was estimated "J".
J = Estimated value <MRL and >EDL. Data point qualified was estimated "J".

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for dioxin and furans. All detected dioxin and furans found in the sample and its duplicate pair and associated %RPD are noted in **Table 5**. All other dioxin and furans target compounds were non-detect. All criteria were met. No qualifiers were applied.

Table 5 Field Precision Hits Analysis Summary for Dioxin and Furans for Duplicate Pair 49SS05 (F51154-26) and TMSS05 (F51154-32)

Compound	Original Sample (pg/g)	Duplicate Pair (pg/g)	%RPD
2,3,7,8-TCDD	0.333J, EMPC	0.241J, EMPC	32.1
1,2,3,7,8-PeCDD	2.89J	3.04J	5.1
1,2,3,4,7,8-HxCDD	9.00	10.8	18.2
1,2,3,6,7,8-HxCDD	36.5	27.8	27.1
1,2,3,7,8,9-HxCDD	21.0	19.2	9.0
1,2,3,4,6,7,8-HpCDD	946	950	0.4
OCDD	9640E	10300E	6.6
2,3,7,8-TCDF	0.938J	0.917J	2.3
1,2,3,7,8-PeCDF	0.567J	0.593J	4.5
2,3,4,7,8-PeCDF	1.04J	0.996J	4.3
1,2,3,4,7,8-HxCDF	4.61J	6.93J	40.2
1,2,3,6,7,8-HxCDF	3.71J	6.14	49.3
2,3,4,6,7,8-HxCDF	6.00	5.34J	11.6
1,2,3,7,8,9-HxCDF	0.839J	0.635J	27.7
1,2,3,4,6,7,8-HpCDF	138	132	4.4
1,2,3,4,7,8,9-HpCDF	10.2	8.10	23.0
OCDF	367	397	7.9
Total TCDDs	4.08J, EMPC	6.23J, EMPC	41.7
Total PeCDDs	13.2J, EMPC	15.9	18.6
Total HxCDDs	137	134J, EMPC	2.2
Total HpCDDs	1400	1420	1.4
Total TCDFs	8.68J, EMPC	10.4J, EMPC	18.0
Total PeCDFs	25.3J, EMPC	22.0J, EMPC	14.0
Total HxCDFs	138	129	6.7
Total HpCDFs	418	420	0.5

E = Value exceeded calibration range. Data point qualified was estimated "J".
J = Estimated value <MRL and >EDL. Data point qualified was estimated "J".
EMPC = Estimated Maximum Possible Concentration

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of at least one the several parameters such as the %D, %RSD, % recovery, and/or compound concentration. Values were found to be within 10%. Any value reported by the laboratory as estimated "A" based on an analyte to internal standard ratio below the calibration curve was qualified as estimated "J". The signal signal-to-noise ratio (S/N) must be greater than 2.5 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard. Any detected value with ether interference (I-lab flag) was qualified as estimated "J". For where the ion ratio failed the 25% criteria (*-lab flag), the estimated maximum possible concentration (EMPC) was reported and flagged estimated "J". For where presence of quantitation interference (Q-lab flag), the date was flagged estimated "J" for detects and "UJ" for non-detects.

- For sample 41SW08 (F51154-6), 1,2,3,7,8-PeCDD, 2,3,4,7,8-PeCDF, Total PeCDDs, and Total PeCDFs were qualified estimated non-detect "UJ" based upon the presence of quantitation interference.

- For sample 59SS09 (F51154-30), Total TCDFs was qualified estimated non-detect "J" based upon the presence of quantitation interference.

- OCDD exceeded upper calibration limit for samples 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), TMSD01 (F51154-16), and TMSS05 (F51154-32). OCDD was qualified estimated "J" for all associated samples based upon these outliers.

Sample: 41SW08 (F51154-6), OCDD

A(x) = sum of the integrated ion abundances of the quantitation ions for the unlabeled ions;
A(is) = sum of the integrated ion abundances of the quantitation ions for the labeled ions;
Q(is) = quantity, in ng/ul, of the internal standard added to the sample before extraction;
W = weight, in g, of the sample (solid or organic liquid) as dry weight, or volume in mL of an aqueous sample; and
Avg. RRF(n) = calculated mean relative response factor for the unlabeled analyte.

$$\text{Conc. (ng/L)} = \frac{(A(x)) * Q(is) * 1000}{A(is) * W * \text{Avg. RRF}} = \frac{(214000+222000) * 4.0 * 1000}{(36700000+40800000) * 953 * 1.0783} = 0.0219 \text{ ng/L}$$

Reported Value = 0.0219 ng/L
% Difference = 0.0%
Values were within 10% difference

Sample: 41SD09 (F51154-10), OCDD

A(x) = sum of the integrated ion abundances of the quantitation ions for the unlabeled ions;

A(is) = sum of the integrated ion abundances of the quantitation ions for the labeled ions;

Q(is) = quantity, in pg, of the internal standard added to the sample before extraction; Here need to multiply concentration (pg/uL) by final extract volume (uL).

W = weight, in g, of the sample (solid or organic liquid) as dry weight, or volume in mL of an aqueous sample; and

Avg. RRF(n) = calculated mean relative response factor for the unlabeled analyte.

$$\text{Conc. (ng/kg)} = \frac{(A(x)) * Q(is)}{A(is) * W * \text{Avg. RRF}} = \frac{(56400000+63100000) * 4.0 * 1000}{(26300000+29500000) * (12.20 * 0.7270) * 1.0783} =$$
$$= 896 \text{ ng/kg} = 896 \text{ pg/g}$$

Reported Value = 897 pg/g
% Difference = 0.1%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ EDL and <MRL or <3*EDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥EDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ EDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Form I Copy

SGS Environmental Services

Method 8290
F51154-6
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00164				
1,2,3,7,8-PeCDD	ND VJ	0.00525				Q
1,2,3,4,7,8-HxCDD	ND	0.00525				
1,2,3,6,7,8-HxCDD	ND	0.00525				
1,2,3,7,8,9-HxCDD	ND	0.00525				
1,2,3,4,6,7,8-HpCDD	ND	0.00525				
OCDD	0.0219 J			45:10	0.97	A
2,3,7,8-TCDF	ND	0.00105				
1,2,3,7,8-PeCDF	ND	0.00525				
2,3,4,7,8-PeCDF	ND VJ	0.00525				Q
1,2,3,4,7,8-HxCDF	ND	0.00525				
1,2,3,6,7,8-HxCDF	ND	0.00525				
2,3,4,6,7,8-HxCDF	ND	0.00525				
1,2,3,7,8,9-HxCDF	ND	0.00525				
1,2,3,4,6,7,8-HpCDF	ND	0.00525				
1,2,3,4,7,8,9-HpCDF	ND	0.00525				
OCDF	ND	0.0105				
Total TCDDs	ND	0.00164				
Total PeCDDs	ND VJ	0.00525				Q
Total HxCDDs	ND	0.00525				
Total HpCDDs	ND	0.00525				
Total TCDFs	ND	0.00105				
Total PeCDFs	ND VJ	0.00525				Q
Total HxCDFs	ND	0.00525				
Total HpCDFs	ND	0.00525				
WHO-2005 TEQ (ND=0)	0.00000657		0.00000657			
WHO-2005 TEQ (ND=½)	0.00629		0.00629			

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51154-6		Weight / Volume:	953 mL
			Solids / Lipids:	NA %
			Original pH :	8
Laboratory Information			Batch ID:	WG14381
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-1C		Filename:	a27jul07a_3-8
Collection Date/Time:	07/18/07	10:40	Retchk:	a27jul07a_2-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12
Analysis Date/Time:	07/28/07	20:15	Initial Cal:	m8290-071007a

Form I (OH)

Method 8290
F51154-6
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.57	78.6	31:40	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.10	55.2	34:25	1.60	Q
13C12-1,2,3,6,7,8-HxCDD	2.0	1.64	82.0	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.73	86.3	40:39	1.06	
13C12-OCDD	4.0	3.79	94.7	45:09	0.90	
13C12-2,3,7,8-TCDF	2.0	1.76	88.0	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.41	70.5	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.37	68.5	36:28	0.53	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.69	84.7	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.365	91.3	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.269	67.3	34:13	1.63	Q
13C12-1,2,3,4,7,8-HxCDD	0.4	0.330	82.6	37:06	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.319	79.7	36:22	0.52	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.326	81.5	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-6		Weight / Volume:	953 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-1C		Filename:	a27jul07a_3-8	
Collection Date/Time:	07/18/07	10:40	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	20:15	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JMC
Date: 28/07/07

Reviewed by: [illegible]
Date: 8/9/07

Form I copy

SGS Environmental Services

Method 8290
F51154-7
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.00114~~	0.00257 J	31:40	0.60	*	A
1,2,3,7,8-PeCDD	0.00607 J			34:25	1.36		A
1,2,3,4,7,8-HxCDD	0.00468 J			37:07	1.27		A
1,2,3,6,7,8-HxCDD	0.00475 J			37:12	1.10		A
1,2,3,7,8,9-HxCDD	0.00495 J			37:27	1.23		A
1,2,3,4,6,7,8-HpCDD	0.00564 J			40:39	1.14		A
OCDD	0.0292 J			45:09	0.91		A
2,3,7,8-TCDF	0.00147 J			31:07	0.73		A
1,2,3,7,8-PeCDF	0.00662 J			33:37	1.62		A
2,3,4,7,8-PeCDF	0.00589 J			34:15	1.71		A
1,2,3,4,7,8-HxCDF	0.00532 J			36:22	1.30		A
1,2,3,6,7,8-HxCDF	0.00509 J			36:28	1.18		A
2,3,4,6,7,8-HxCDF	0.00409 J			37:00	1.16		A
1,2,3,7,8,9-HxCDF	0.00501 J			37:46	1.18		A
1,2,3,4,6,7,8-HpCDF	EMPC	~~0.00509~~	0.00536 J	39:21	1.22	*	A
1,2,3,4,7,8,9-HpCDF	0.00420			41:21	1.08		A
OCDF	0.00874			45:27	1.01		A
Total TCDDs	ND	~~0.00114~~	0.00257 J				
Total PeCDDs	0.00607						
Total HxCDDs	0.0144						
Total HpCDDs	0.00564						
Total TCDFs	0.00147						
Total PeCDFs	0.0125						
Total HxCDFs	0.0195						
Total HpCDFs	~~0.00420~~		0.00955 J				
WHO-2005 TEQ (ND=0)	0.0117		0.0143				
WHO-2005 TEQ (ND=½)	0.0123		0.0143				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-7		Weight / Volume:	982 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-2C		Filename:	a27jul07a_3-9	
Collection Date/Time:	07/18/07	11:05	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	21:04	Initial Cal:	m8290-071007a	

Form 1 Cm

SGS Environmental Services

Method 8290
F51154-7
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.51	75.4	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.40	69.8	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.58	78.9	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.69	84.7	40:39	1.05	
13C12-OCDD	4.0	3.70	92.4	45:09	0.89	
13C12-2,3,7,8-TCDF	2.0	1.72	86.0	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.34	67.1	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.50	74.8	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.64	82.1	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.364	90.9	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.311	77.8	34:13	1.61	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.339	84.7	37:06	1.26	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.350	87.6	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.337	84.1	41:21	0.42	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-7		Weight / Volume:	982 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-2C		Filename:	a27jul07a_3-9	
Collection Date/Time:	07/18/07	11:05	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	21:04	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 080907

Reviewed by: DD
Date: 8/9/07

Form I Corp

SGS Environmental Services

Method 8290
F51154-8
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00179				
1,2,3,7,8-PeCDD	ND	0.00538				
1,2,3,4,7,8-HxCDD	ND	0.00689				
1,2,3,6,7,8-HxCDD	ND	0.00702				
1,2,3,7,8,9-HxCDD	ND	0.00712				
1,2,3,4,6,7,8-HpCDD	ND	0.00538				
OCDD	0.0618 J			45:09	0.95	A
2,3,7,8-TCDF	ND	0.00128				
1,2,3,7,8-PeCDF	ND	0.00538				
2,3,4,7,8-PeCDF	ND	0.00538				
1,2,3,4,7,8-HxCDF	ND	0.00538				
1,2,3,6,7,8-HxCDF	ND	0.00538				
2,3,4,6,7,8-HxCDF	ND	0.00538				
1,2,3,7,8,9-HxCDF	ND	0.00538				
1,2,3,4,6,7,8-HpCDF	ND	0.00538				
1,2,3,4,7,8,9-HpCDF	ND	0.00538				
OCDF	ND	0.0108				
Total TCDDs	ND	0.00179				
Total PeCDDs	ND	0.00538				
Total HxCDDs	ND	0.00712				
Total HpCDDs	ND	0.00538				
Total TCDFs	ND	0.00128				
Total PeCDFs	ND	0.00538				
Total HxCDFs	ND	0.00538				
Total HpCDFs	ND	0.00538				
WHO-2005 TEQ (ND=0)	0.0000185		0.0000185			
WHO-2005 TEQ (ND=½)	0.00677		0.00677			

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-8		Weight / Volume:	929 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-3C		Filename:	a27jul07a_3-10	
Collection Date/Time:	07/18/07	11:45	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	21:52	Initial Cal:	m8290-071007a	

Form I Copy

SGS Environmental Services

Method 8290
F51154-8
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.34	67.0	31:39	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.30	65.1	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.37	68.6	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.49	74.3	40:39	1.06	
13C12-OCDD	4.0	3.16	79.1	45:07	0.90	
13C12-2,3,7,8-TCDF	2.0	1.51	75.7	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.28	63.9	33:37	1.60	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.34	66.8	36:28	0.53	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.43	71.4	39:21	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.329	82.1	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.291	72.8	34:13	1.64	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.301	75.1	37:06	1.29	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.319	79.7	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.297	74.3	41:19	0.42	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.27	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-8		Weight / Volume:	929 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-3C		Filename:	a27jul07a_3-10	
Collection Date/Time:	07/18/07	11:45	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	21:52	Initial Cal:	m8290-071007a	

FormVersion:[8290_DB_2.14]Report

Analyzed by: JWO
Date: 08/09/07

Reviewed by: [illegible]
Date: 8/9/07

Form I Corr

Method 8290
F51154-9
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.438~~	0.748 J	31:40	0.98	*	A
1,2,3,7,8-PeCDD	ND	1.43					
1,2,3,4,7,8-HxCDD	ND	1.43					
1,2,3,6,7,8-HxCDD	ND	1.43					
1,2,3,7,8,9-HxCDD	3.18 J			37:28	1.30		A
1,2,3,4,6,7,8-HpCDD	46.7			40:42	1.05		
OCDD	2080			45:13	0.89		
2,3,7,8-TCDF	EMPC	~~0.637~~	1.55 J	31:09	0.91	*	A
1,2,3,7,8-PeCDF	2.90 J			33:37	1.61		A
2,3,4,7,8-PeCDF	1.40 J			34:16	1.39		A
1,2,3,4,7,8-HxCDF	8.37 J			36:24	1.27		A
1,2,3,6,7,8-HxCDF	4.78 J			36:30	1.34		A
2,3,4,6,7,8-HxCDF	1.49 J			37:01	1.35		A
1,2,3,7,8,9-HxCDF	ND	1.43					
1,2,3,4,6,7,8-HpCDF	62.2			39:22	1.03		
1,2,3,4,7,8,9-HpCDF	1.26 J			41:22	1.07		A
OCDF	53.9			45:31	0.86		
Total TCDDs	~~2.77~~		3.52 J				
Total PeCDDs	4.57						
Total HxCDDs	~~13.0~~		13.5 J				
Total HpCDDs	99.0						
Total TCDFs	~~16.5~~		27.6 J				
Total PeCDFs	~~30.6~~		32.6 J				
Total HxCDFs	~~43.3~~		45.3 J				
Total HpCDFs	75.6						
WHO-2005 TEQ (ND=0)	4.03		4.93				
WHO-2005 TEQ (ND=½)	5.21		5.86				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-9		Weight / Volume:	10.07 g	
			Solids / Lipids:	34.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-4B		Filename:	a30jul07a-8	
Collection Date/Time:	07/18/07	10:50	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/30/07	22:42	Initial Cal:	m8290-071007a	

Form I Copy

SGS Environmental Services

Method 8290
F51154-9
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.46	73.0	31:40	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.41	70.3	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.57	78.3	37:12	1.27	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.67	83.3	40:40	1.07	
13C12-OCDD	4.0	3.42	85.5	45:10	0.90	
13C12-2,3,7,8-TCDF	2.0	1.69	84.7	31:07	0.80	
13C12-1,2,3,7,8-PeCDF	2.0	1.37	68.7	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.41	70.7	36:30	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.52	76.1	39:22	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.341	85.3	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.253	63.1	34:15	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.297	74.1	37:07	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.299	74.6	36:24	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.289	72.3	41:22	0.42	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:28	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-9		Weight / Volume:	10.07 g	
			Solids / Lipids:	34.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-4B		Filename:	a30jul07a-8	
Collection Date/Time:	07/18/07	10:50	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/30/07	22:42	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JWF
Date: 08/09/07

Reviewed by: DM
Date: 8/9/07

Form 1 Copy

SGS Environmental Services

Method 8290
F51154-10
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.177~~	0.280 J	31:40	0.53	*	A
1,2,3,7,8-PeCDD	EMPC	~~0.564~~	0.259 J	34:27	1.80	*	A
1,2,3,4,7,8-HxCDD	0.316 J			37:07	1.08		A
1,2,3,6,7,8-HxCDD	EMPC	~~0.564~~	0.595 J	37:12	0.99	*	A
1,2,3,7,8,9-HxCDD	1.01 J			37:28	1.21		A
1,2,3,4,6,7,8-HpCDD	20.8			40:40	1.05		
OCDD	897			45:13	0.89		
2,3,7,8-TCDF	0.866 J			31:09	0.68		A
1,2,3,7,8-PeCDF	1.15 J			33:37	1.48		A
2,3,4,7,8-PeCDF	0.633 J			34:15	1.65		A
1,2,3,4,7,8-HxCDF	3.07 J			36:24	1.32		A
1,2,3,6,7,8-HxCDF	1.88 J			36:30	1.19		A
2,3,4,6,7,8-HxCDF	0.482 J			37:00	1.21		A
1,2,3,7,8,9-HxCDF	EMPC	~~0.564~~	0.189 J	37:49	1.67	*	A
1,2,3,4,6,7,8-HpCDF	22.2			39:22	1.05		
1,2,3,4,7,8,9-HpCDF	0.498 J			41:22	1.11		A
OCDF	20.8			45:31	0.87		
Total TCDDs	ND	~~0.177~~	0.280 J				
Total PeCDDs	1.59		2.15 J				
Total HxCDDs	6.16		6.76 J				
Total HpCDDs	44.4						
Total TCDFs	8.67		10.3 J				
Total PeCDFs	12.0		13.0 J				
Total HxCDFs	16.3						
Total HpCDFs	27.2						
WHO-2005 TEQ (ND=0)	1.70		2.31				
WHO-2005 TEQ (ND=½)	2.12		2.31				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-10		Weight / Volume:	12.20 g	
			Solids / Lipids:	72.7	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-5B		Filename:	a30jul07a-9	
Collection Date/Time:	07/18/07	11:15	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/30/07	23:30	Initial Cal:	m8290-071007a	

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SGS Environmental Services

Method 8290
F51154-10
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.48	73.9	31:40	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.32	65.8	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.49	74.6	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.60	79.8	40:40	1.06	
13C12-OCDD	4.0	3.08	77.0	45:10	0.89	
13C12-2,3,7,8-TCDF	2.0	1.62	80.9	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.34	66.9	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.39	69.5	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.46	73.1	39:22	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.342	85.6	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.264	66.0	34:15	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.317	79.2	37:07	1.26	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.291	72.7	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.285	71.4	41:22	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:28	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-10		Weight / Volume:	12.20 g	
			Solids / Lipids:	72.7	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-5B		Filename:	a30jul07a-9	
Collection Date/Time:	07/18/07	11:15	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/30/07	23:30	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JW
Date: 080907

Reviewed by: DLD
Date: 8/9/07

for 5 cm

SGS Environmental Services

Method 8290
F51154-11
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.303~~	0.573 J	31:40	0.44	*	A
1,2,3,7,8-PeCDD	0.601			34:25	1.67		A
1,2,3,4,7,8-HxCDD	EMPC	~~1.35~~	0.805 J	37:07	1.50	*	A
1,2,3,6,7,8-HxCDD	EMPC	~~1.37~~	1.41 J	37:12	1.61	*	A
1,2,3,7,8,9-HxCDD	1.71 J			37:28	1.32		A
1,2,3,4,6,7,8-HpCDD	44.5			40:40	1.05		
OCDD	1790			45:10	0.89		
2,3,7,8-TCDF	1.58 J			31:09	0.78		A
1,2,3,7,8-PeCDF	2.68 J			33:37	1.60		A
2,3,4,7,8-PeCDF	1.27 J			34:15	1.74		A
1,2,3,4,7,8-HxCDF	7.44 J			36:22	1.22		A
1,2,3,6,7,8-HxCDF	4.60 J			36:28	1.24		A
2,3,4,6,7,8-HxCDF	1.68 J			37:00	1.27		A
1,2,3,7,8,9-HxCDF	0.541 J			37:48	1.15		A
1,2,3,4,6,7,8-HpCDF	58.6			39:22	1.04		
1,2,3,4,7,8,9-HpCDF	1.06 J			41:22	1.10		A
OCDF	48.4			45:28	0.88		
Total TCDDs	~~0.424~~		1.93 J				
Total PeCDDs	~~3.69~~		4.37 J				
Total HxCDDs	~~13.0~~		14.4 J				
Total HpCDDs	96.3						
Total TCDFs	~~17.2~~		19.3 J				
Total PeCDFs	~~27~~.1		28.1 J				
Total HxCDFs	41.0						
Total HpCDFs	69.2						
WHO-2005 TEQ (ND=0)	4.41		5.21				
WHO-2005 TEQ (ND=½)	4.70		5.21				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-11		Weight / Volume:	10.42 g
			Solids / Lipids:	47.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-6B		Filename:	a30jul07a-10
Collection Date/Time:	07/18/07	12:00	Retchk:	a30jul07a-1
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15
Analysis Date/Time:	07/31/07	0:19	Initial Cal:	m8290-071007a

Form I Copy

SGS Environmental Services

Method 8290
F51154-11
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards		-				
13C12-2,3,7,8-TCDD	2.0	1.46	72.8	31:39	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.39	69.6	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.53	76.3	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.63	81.6	40:39	1.05	
13C12-OCDD	4.0	3.25	81.4	45:10	0.90	
13C12-2,3,7,8-TCDF	2.0	1.64	82.2	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.35	67.6	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.41	70.5	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.48	73.8	39:22	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.400	99.9	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.308	77.0	34:13	1.61	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.340	85.0	37:07	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.359	89.8	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.346	86.4	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-11		Weight / Volume:	10.42 g	
			Solids / Lipids:	47.9	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-6B		Filename:	a30jul07a-10	
Collection Date/Time:	07/18/07	12:00	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	0:19	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JW
Date: 08/8/07

Reviewed by: DD
Date: 8/9/07

Form I Cont

SGS Environmental Services

Method 8290
F51154-15
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	2.38			31:40	0.76	
1,2,3,7,8-PeCDD	7.55 J			34:25	1.57	A
1,2,3,4,7,8-HxCDD	7.83 J			37:07	1.31	A
1,2,3,6,7,8-HxCDD	19.0			37:13	1.35	
1,2,3,7,8,9-HxCDD	17.5			37:28	1.28	
1,2,3,4,6,7,8-HpCDD	571			40:40	1.05	
OCDD	5030			45:10	0.89	
2,3,7,8-TCDF	5.58 J			31:09	0.69	
1,2,3,7,8-PeCDF	5.73 J			33:37	1.65	A
2,3,4,7,8-PeCDF	10.6 J			34:15	1.64	
1,2,3,4,7,8-HxCDF	19.8			36:22	1.25	
1,2,3,6,7,8-HxCDF	10.8 J			36:28	1.27	
2,3,4,6,7,8-HxCDF	11.7 J			37:00	1.38	
1,2,3,7,8,9-HxCDF	2.39 J			37:48	1.21	A
1,2,3,4,6,7,8-HpCDF	132			39:22	1.04	
1,2,3,4,7,8,9-HpCDF	5.24 J			41:22	1.17	A
OCDF	385			45:28	0.88	
Total TCDDs	37.9					
Total PeCDDs	69.9					
Total HxCDDs	200					
Total HpCDDs	1060					
Total TCDFs	~~132~~		140 J			
Total PeCDFs	~~137~~		137 J			
Total HxCDFs	~~158~~		163 J			
Total HpCDFs	328					
WHO-2005 TEQ (ND=0)	31.4		31.4			
WHO-2005 TEQ (ND=½)	31.4		31.4			

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-15		Weight / Volume:	10.10 g	
			Solids / Lipids:	60.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-8B		Filename:	a30jul07a-11	
Collection Date/Time:	07/19/07	11:30	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	1:07	Initial Cal:	m8290-071007a	

Form I Cont

SGS Environmental Services

Method 8290
F51154-15
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.48	73.9	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.41	70.7	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.56	78.0	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.67	83.5	40:39	1.07	
13C12-OCDD	4.0	3.37	84.3	45:10	0.89	
13C12-2,3,7,8-TCDF	2.0	1.63	81.4	31:07	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.37	68.6	33:37	1.60	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.42	70.8	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.50	75.2	39:22	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.342	85.5	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.258	64.5	34:13	1.61	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.301	75.2	37:06	1.28	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.307	76.7	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.295	73.9	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-15		Weight / Volume:	10.10 g	
			Solids / Lipids:	60.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-8B		Filename:	a30jul07a-11	
Collection Date/Time:	07/19/07	11:30	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	1:07	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JMC
Date: 080907

Reviewed by: [signature]
Date: 8/4/07

Form I copy

SGS Environmental Services

Method 8290
F51154-16
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	1.72			31:40	0.67	
1,2,3,7,8-PeCDD	5.77 J			34:25	1.60	A
1,2,3,4,7,8-HxCDD	6.23			37:07	1.35	
1,2,3,6,7,8-HxCDD	18.8			37:13	1.24	
1,2,3,7,8,9-HxCDD	16.2			37:28	1.29	
1,2,3,4,6,7,8-HpCDD	734			40:40	1.04	
OCDD	6660 J			45:10	0.89	E
2,3,7,8-TCDF	3.02 J			31:09	0.77	
1,2,3,7,8-PeCDF	3.09 J			33:37	1.66	A
2,3,4,7,8-PeCDF	3.83 J			34:15	1.60	A
1,2,3,4,7,8-HxCDF	15.8			36:22	1.31	
1,2,3,6,7,8-HxCDF	5.85 J			36:28	1.25	A
2,3,4,6,7,8-HxCDF	4.61 J			37:00	1.27	A
1,2,3,7,8,9-HxCDF	1.12 J			37:49	1.38	A
1,2,3,4,6,7,8-HpCDF	139			39:22	1.03	
1,2,3,4,7,8,9-HpCDF	4.97 J			41:22	1.02	A
OCDF	416			45:28	0.89	
Total TCDDs	~~27.8~~		28.8 J			
Total PeCDDs	57.4					
Total HxCDDs	186					
Total HpCDDs	1310					
Total TCDFs	~~53.8 J~~		54.3 J			
Total PeCDFs	~~51.7 J~~		58.1 J			
Total HxCDFs	113					
Total HpCDFs	333					
WHO-2005 TEQ (ND=0)	26.8		26.8			
WHO-2005 TEQ (ND=½)	26.8		26.8			

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-16		Weight / Volume:	11.67 g	
			Solids / Lipids:	70.5	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-9B		Filename:	a30jul07a-12	
Collection Date/Time:	07/19/07	10:30	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	1:55	Initial Cal:	m8290-071007a	

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SGS Environmental Services

Method 8290
F51154-16
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.50	75.0	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.41	70.7	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.58	78.8	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.68	83.8	40:39	1.06	
13C12-OCDD	4.0	3.62	90.4	45:10	0.90	
13C12-2,3,7,8-TCDF	2.0	1.67	83.5	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.40	70.1	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.45	72.5	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.55	77.4	39:22	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.383	95.7	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.286	71.5	34:13	1.60	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.336	84.0	37:06	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.346	86.6	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.330	82.5	41:22	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-16		Weight / Volume:	11.67 g	
			Solids / Lipids:	70.5	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-9B		Filename:	a30jul07a-12	
Collection Date/Time:	07/19/07	10:30	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	1:55	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 080907

Reviewed by: [illegible]
Date: 8/9/07

Form I Copy

Method 8290
F51154-17
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00175				
1,2,3,7,8-PeCDD	ND	0.00593				
1,2,3,4,7,8-HxCDD	ND	0.00593				
1,2,3,6,7,8-HxCDD	ND	0.00593				
1,2,3,7,8,9-HxCDD	ND	0.00593				
1,2,3,4,6,7,8-HpCDD	EMPC	~~0.00593~~	0.00503 J	40:39	0.88 *	A
OCDD	0.0423 K			45:10	0.87	A
2,3,7,8-TCDF	ND	0.00153				
1,2,3,7,8-PeCDF	ND	0.00593				
2,3,4,7,8-PeCDF	ND	0.00593				
1,2,3,4,7,8-HxCDF	ND	0.00593				
1,2,3,6,7,8-HxCDF	ND	0.00593				
2,3,4,6,7,8-HxCDF	ND	0.00593				
1,2,3,7,8,9-HxCDF	ND	0.00593				
1,2,3,4,6,7,8-HpCDF	0.00204 J			39:21	1.18	A
1,2,3,4,7,8,9-HpCDF	ND	0.00593				
OCDF	0.00586 J			45:28	0.79	A
Total TCDDs	ND	0.00175				
Total PeCDDs	ND	0.00593				
Total HxCDDs	ND	0.00593				
Total HpCDDs	~~0.00446~~		0.00949 J			
Total TCDFs	~~0.00382~~		0.00622 J			
Total PeCDFs	ND	~~0.00593~~	0.00202 J			
Total HxCDFs	ND	0.00593				
Total HpCDFs	~~0.00204~~		0.00422 J			
WHO-2005 TEQ (ND=0)	0.0000348		0.0000851			
WHO-2005 TEQ (ND=½)	0.00707		0.00709			

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51154-17		Weight / Volume:	843 mL
			Solids / Lipids:	NA %
			Original pH :	8
Laboratory Information			Batch ID:	WG14381
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-10C		Filename:	a30jul07a_2-4
Collection Date/Time:	07/19/07	11:20	Retchk:	a30jul07a-15
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15
Extraction Date:	07/26/07		End ConCal:	a30jul07a_2-11
Analysis Date/Time:	07/31/07	7:38	Initial Cal:	m8290-071007a

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Method 8290
F51154-17
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.47	73.6	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.46	73.2	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.66	83.1	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.76	88.1	40:37	1.06	
13C12-OCDD	4.0	3.84	95.9	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.68	84.2	31:06	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.41	70.6	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.51	75.6	36:28	0.53	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.66	83.2	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.360	89.9	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.276	69.1	34:13	1.63	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.322	80.5	37:06	1.26	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.341	85.3	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.326	81.5	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-17		Weight / Volume:	843 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-10C		Filename:	a30jul07a_2-4	
Collection Date/Time:	07/19/07	11:20	Retchk:	a30jul07a-15	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15	
Extraction Date:	07/26/07		End ConCal:	a30jul07a_2-11	
Analysis Date/Time:	07/31/07	7:38	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 08/2/07

Reviewed by: [illegible]
Date: 8/9/07

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SGS Environmental Services

Method 8290
F51154-18
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.168~~	0.191 J	31:39	0.62	*	A
1,2,3,7,8-PeCDD	0.875 J			34:25	1.45		A
1,2,3,4,7,8-HxCDD	1.53 J			37:07	1.18		A
1,2,3,6,7,8-HxCDD	4.08 J			37:12	1.28		A
1,2,3,7,8,9-HxCDD	4.19 J			37:27	1.29		A
1,2,3,4,6,7,8-HpCDD	178			40:40	1.04		
OCDD	2180			45:09	0.90		
2,3,7,8-TCDF	0.509 B			31:07	0.87		A
1,2,3,7,8-PeCDF	0.238 J			33:37	1.56		A
2,3,4,7,8-PeCDF	EMPC	~~0.561~~	0.0965 J	34:19	1.09	*	A
1,2,3,4,7,8-HxCDF	0.938 B			36:22	1.32		A
1,2,3,6,7,8-HxCDF	0.763 J			36:28	1.30		A
2,3,4,6,7,8-HxCDF	0.965 J			36:58	1.29		A
1,2,3,7,8,9-HxCDF	ND	0.561					
1,2,3,4,6,7,8-HpCDF	37.6			39:22	1.06		
1,2,3,4,7,8,9-HpCDF	1.14 J			41:22	1.11		A
OCDF	115			45:28	0.90		
Total TCDDs	ND	~~0.168~~	1.30 J				
Total PeCDDs	3.04		3.27 J				
Total HxCDDs	27.3						
Total HpCDDs	304						
Total TCDFs	3.13		3.48 J				
Total PeCDFs	5.63		5.80 J				
Total HxCDFs	23.2		23.4 J				
Total HpCDFs	95.5		95.9 J				
WHO-2005 TEQ (ND=0)	5.04		5.26				
WHO-2005 TEQ (ND=½)	5.23		5.28				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-18		Weight / Volume:	10.39 g
			Solids / Lipids:	85.8 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-13B		Filename:	a30jul07a-13
Collection Date/Time:	07/19/07	14:45	Retchk:	a30jul07a-1
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15
Analysis Date/Time:	07/31/07	2:44	Initial Cal:	m8290-071007a

Form I Conf

Method 8290
F51154-18
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.42	71.2	31:39	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.43	71.5	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.54	77.1	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.65	82.6	40:39	1.07	
13C12-OCDD	4.0	3.48	86.9	45:09	0.89	
13C12-2,3,7,8-TCDF	2.0	1.59	79.5	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.36	68.2	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.43	71.4	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.50	74.8	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.331	82.7	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.255	63.7	34:13	1.63	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.315	78.8	37:06	1.29	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.295	73.7	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.290	72.5	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.77	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-18		Weight / Volume:	10.39 g	
			Solids / Lipids:	85.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-13B		Filename:	a30jul07a-13	
Collection Date/Time:	07/19/07	14:45	Retchk:	a30jul07a-1	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1	
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15	
Analysis Date/Time:	07/31/07	2:44	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JMP
Date: 080907

Reviewed by: MM
Date: 8/9/07

Form I Cont

Method 8290
F51154-20
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00236				
1,2,3,7,8-PeCDD	ND	0.00609				
1,2,3,4,7,8-HxCDD	ND	0.00609				
1,2,3,6,7,8-HxCDD	ND	0.00609				
1,2,3,7,8,9-HxCDD	ND	0.00609				
1,2,3,4,6,7,8-HpCDD	0.00448 J			40:39	1.19	A
OCDD	0.0295 J			45:09	0.92	A
2,3,7,8-TCDF	ND	0.00200				
1,2,3,7,8-PeCDF	0.00178 J			33:37	1.58	A
2,3,4,7,8-PeCDF	ND	0.00609				
1,2,3,4,7,8-HxCDF	ND	0.00609				
1,2,3,6,7,8-HxCDF	ND	0.00609				
2,3,4,6,7,8-HxCDF	ND	0.00609				
1,2,3,7,8,9-HxCDF	ND	0.00609				
1,2,3,4,6,7,8-HpCDF	ND	0.00609				
1,2,3,4,7,8,9-HpCDF	ND	0.00609				
OCDF	ND	0.0122				
Total TCDDs	ND	0.00236				
Total PeCDDs	ND	0.00609				
Total HxCDDs	ND	0.00609				
Total HpCDDs	0.00448 J					
Total TCDFs	ND	0.00200				
Total PeCDFs	~~0.00178~~		0.00373 J			
Total HxCDFs	ND	0.00609				
Total HpCDFs	ND	0.00609				
WHO-2005 TEQ (ND=0)	0.000107		0.000107			
WHO-2005 TEQ (ND=½)	0.00754		0.00754			

Client Information			Sample Information	
Project Name:	F51154		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51154-20		Weight / Volume:	821 mL
			Solids / Lipids:	NA %
			Original pH :	8
Laboratory Information			Batch ID:	WG14381
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-14C		Filename:	a30jul07a_2-7
Collection Date/Time:	07/19/07	11:20	Retchk:	a30jul07a-15
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15
Extraction Date:	07/26/07		End ConCal:	a30jul07a_2-11
Analysis Date/Time:	07/31/07	10:03	Initial Cal:	m8290-071007a

Form I Cont

Method 8290
F51154-20
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.39	69.3	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.45	72.4	34:25	1.57	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.55	77.7	37:10	1.24	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.73	86.4	40:37	1.06	
13C12-OCDD	4.0	3.70	92.5	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.58	78.9	31:06	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.37	68.6	33:37	1.60	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.45	72.6	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.57	78.4	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.341	85.2	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.303	75.8	34:13	1.60	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.338	84.4	37:04	1.33	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.320	80.1	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.310	77.6	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.26	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-20		Weight / Volume:	821 mL	
			Solids / Lipids:	NA	%
			Original pH :	8	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-14C		Filename:	a30jul07a_2-7	
Collection Date/Time:	07/19/07	11:20	Retchk:	a30jul07a-15	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15	
Extraction Date:	07/26/07		End ConCal:	a30jul07a_2-11	
Analysis Date/Time:	07/31/07	10:03	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JLW
Date: 08/8/07

Reviewed by: [illegible]
Date: 8/9/07

Form I Cay

Method 8290
F51154-22
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.181					
1,2,3,7,8-PeCDD	ND	0.594					
1,2,3,4,7,8-HxCDD	0.214 J			37:07	1.33		A
1,2,3,6,7,8-HxCDD	0.537 J			37:10	1.29		A
1,2,3,7,8,9-HxCDD	1.27 J			37:27	1.30		A
1,2,3,4,6,7,8-HpCDD	27.9			40:40	1.04		
OCDD	1710			45:10	0.89		
2,3,7,8-TCDF	0.492 B			31:07	0.86		A
1,2,3,7,8-PeCDF	0.235 J			33:37	1.52		A
2,3,4,7,8-PeCDF	EMPC	~~0.594~~	0.356 J	34:15	1.86	*	A
1,2,3,4,7,8-HxCDF	0.801 B			36:22	1.21		A
1,2,3,6,7,8-HxCDF	0.297 J			36:28	1.29		A
2,3,4,6,7,8-HxCDF	EMPC	~~0.594~~	0.342 J	36:58	1.50	*	A
1,2,3,7,8,9-HxCDF	ND	0.594					
1,2,3,4,6,7,8-HpCDF	4.20 B			39:21	1.08		A
1,2,3,4,7,8,9-HpCDF	0.361 J			41:21	0.91		A
OCDF	11.2 B			45:28	0.86		A
Total TCDDs	ND	0.181					
Total PeCDDs	0.268						
Total HxCDDs	8.65						
Total HpCDDs	65.9						
Total TCDFs	~~2.38~~		2.55 J				
Total PeCDFs	~~2.56~~		3.10 J				
Total HxCDFs	~~4.74~~		5.08 J				
Total HpCDFs	10.5						
WHO-2005 TEQ (ND=0)	1.21		1.35				
WHO-2005 TEQ (ND=½)	1.75		1.77				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-22		Weight / Volume:	10.64 g
			Solids / Lipids:	79.1 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-15B		Filename:	a30jul07a-14
Collection Date/Time:	07/19/07	7:00	Retchk:	a30jul07a-1
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15
Analysis Date/Time:	07/31/07	3:32	Initial Cal:	m8290-071007a

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SGS Environmental Services

Method 8290
F51154-22
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.31	65.7	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.32	66.2	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.43	71.7	37:10	1.29	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.52	75.9	40:37	1.05	
13C12-OCDD	4.0	3.10	77.5	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.48	73.9	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.27	63.3	33:37	1.61	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.32	66.1	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.36	68.1	39:21	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.310	77.4	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.249	62.2	34:13	1.66	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.279	69.7	37:06	1.09	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.276	69.0	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.270	67.5	41:21	0.42	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-22		Weight / Volume:	10.64 g
			Solids / Lipids:	79.1 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-15B		Filename:	a30jul07a-14
Collection Date/Time:	07/19/07	7:00	Retchk:	a30jul07a-1
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-1
Extraction Date:	07/29/07		End ConCal:	a30jul07a-15
Analysis Date/Time:	07/31/07	3:32	Initial Cal:	m8290-071007a

Report Version: [8290_DB_2.14] Report

Analyzed by: JW
Date: 08-09-07

Reviewed by: RW
Date: 8/9/07

Form I Copy

SGS Environmental Services

Method 8290
F51154-23
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	EMPC	~~0.160~~	0.198 J	31:40	0.64 *	A
1,2,3,7,8-PeCDD	3.72 J			34:27	1.55	A
1,2,3,4,7,8-HxCDD	8.98			37:07	1.26	
1,2,3,6,7,8-HxCDD	29.3			37:12	1.28	
1,2,3,7,8,9-HxCDD	22.2			37:28	1.30	
1,2,3,4,6,7,8-HpCDD	1110			40:40	1.04	
OCDD	10000 J			45:10	0.90	E
2,3,7,8-TCDF	1.19			31:09	0.77	
1,2,3,7,8-PeCDF	1.45 J			33:37	1.52	A
2,3,4,7,8-PeCDF	0.348 J			34:19	1.44	A
1,2,3,4,7,8-HxCDF	8.47			36:24	1.23	
1,2,3,6,7,8-HxCDF	6.38			36:30	1.27	
2,3,4,6,7,8-HxCDF	8.25			37:00	1.28	
1,2,3,7,8,9-HxCDF	1.30 J			37:49	1.15	A
1,2,3,4,6,7,8-HpCDF	214			39:22	1.05	
1,2,3,4,7,8,9-HpCDF	13.7			41:22	1.10	
OCDF	736			45:28	0.89	
Total TCDDs	~~5.11~~		5.67 J			
Total PeCDDs	14.4					
Total HxCDDs	~~147~~		148 J			
Total HpCDDs	1670					
Total TCDFs	~~13.6~~		15.6 J			
Total PeCDFs	~~45.4~~		46.3 J			
Total HxCDFs	221					
Total HpCDFs	719					
WHO-2005 TEQ (ND=0)	29.1		29.3			
WHO-2005 TEQ (ND=½)	29.2		29.3			

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-23		Weight / Volume:	11.02 g
			Solids / Lipids:	89.6 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-16B		Filename:	a30jul07a_2-2
Collection Date/Time:	07/19/07	7:55	Retchk:	a30jul07a-15
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15
Extraction Date:	07/29/07		End ConCal:	a30jul07a_2-11
Analysis Date/Time:	07/31/07	6:01	Initial Cal:	m8290-071007a

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SGS Environmental Services

Method 8290
F51154-23
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.50	75.2	31:40	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.46	72.8	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.57	78.3	37:12	1.24	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.70	84.8	40:39	1.05	
13C12-OCDD	4.0	3.50	87.4	45:10	0.89	
13C12-2,3,7,8-TCDF	2.0	1.74	87.1	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.41	70.7	33:37	1.60	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.44	72.1	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.52	76.2	39:22	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.348	87.0	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.294	73.6	34:15	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.309	77.2	37:07	1.42	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.297	74.4	36:22	0.49	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.278	69.5	41:21	0.41	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:16	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-23		Weight / Volume:	11.02 g
			Solids / Lipids:	89.6 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-16B		Filename:	a30jul07a_2-2
Collection Date/Time:	07/19/07	7:55	Retchk:	a30jul07a-15
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15
Extraction Date:	07/29/07		End ConCal:	a30jul07a_2-11
Analysis Date/Time:	07/31/07	6:01	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 8/8/07

Reviewed by: _____
Date: 8/9/07

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TCDF Confirmation - Method 8290
F51154-23
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDF	1.71	0.274		20.84	0.79	

Labeled Standard	Spiked Amount (ng)	RT (min.)	Ratio	Qualifier
Extraction Standards				
$^{13}C_{12}$-2,3,7,8-TCDF	2.00	20.83	0.78	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-23		Weight / Volume:	11.02	g
			Solids / Lipids:	89.63	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	hrms3	
Sample ID:	G383-583-16B		Filename:	c11aug07a-8	
Collection Date/Time:	07/19/07	7:55	Retchk:	c11aug07a-2	
Receipt Date:	07/21/07	10:35	Begin ConCal:	c11aug07a-1	
Extraction Date:	07/29/07		End ConCal:	c11aug07a-25	
Analysis Date/Time:	08/11/07	13:07	Initial Cal:	mcf-c041807a	

Analyzed by: JWP
Date: 081307

Reviewed by: [signature]
Date: 8/13/07

Form I Copy

Method 8290
F51154-24
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	0.318 J			31:40	0.69		A
1,2,3,7,8-PeCDD	1.91 J			34:25	1.64		A
1,2,3,4,7,8-HxCDD	4.29 J			37:07	1.41		A
1,2,3,6,7,8-HxCDD	13.6			37:12	1.27		
1,2,3,7,8,9-HxCDD	11.7			37:28	1.26		
1,2,3,4,6,7,8-HpCDD	549			40:40	1.04		
OCDD	6510 J			45:10	0.90		E
2,3,7,8-TCDF	1.44			31:07	0.88		
1,2,3,7,8-PeCDF	1.80 J			33:37	1.74		A
2,3,4,7,8-PeCDF	EMPC	~~0.537~~	0.189 J	34:19	1.17	*	A
1,2,3,4,7,8-HxCDF	5.21 J			36:24	1.24		A
1,2,3,6,7,8-HxCDF	3.66 J			36:30	1.30		A
2,3,4,6,7,8-HxCDF	4.48 J			37:00	1.23		A
1,2,3,7,8,9-HxCDF	0.833 J			37:49	1.09		A
1,2,3,4,6,7,8-HpCDF	101			39:22	1.05		
1,2,3,4,7,8,9-HpCDF	7.64			41:22	1.01		
OCDF	389			45:28	0.89		
Total TCDDs	~~18.3~~		18.6 J				
Total PeCDDs	10.3						
Total HxCDDs	~~76.9~~		77.8 J				
Total HpCDDs	871						
Total TCDFs	~~17.4~~		17.8 J				
Total PeCDFs	~~29.1~~		30.0 J				
Total HxCDFs	101						
Total HpCDFs	325						
WHO-2005 TEQ (ND=0)	15.4		15.5				
WHO-2005 TEQ (ND=½)	15.5		15.5				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-24		Weight / Volume:	10.22 g	
			Solids / Lipids:	91.2	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-17B		Filename:	a30jul07a_2-3	
Collection Date/Time:	07/19/07	8:10	Retchk:	a30jul07a-15	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15	
Extraction Date:	07/29/07		End ConCal:	a30jul07a_2-11	
Analysis Date/Time:	07/31/07	6:50	Initial Cal:	m8290-071007a	

Form I Corp

SGS Environmental Services

Method 8290
F51154-24
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.53	76.4	31:40	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.52	75.9	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.61	80.3	37:12	1.25	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.73	86.4	40:39	1.04	
13C12-OCDD	4.0	3.56	88.9	45:09	0.89	
13C12-2,3,7,8-TCDF	2.0	1.78	88.9	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.45	72.3	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.46	72.9	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.56	78.2	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.355	88.8	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.299	74.9	34:15	1.63	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.300	74.9	37:06	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.304	76.0	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.288	72.0	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-24		Weight / Volume:	10.22 g
			Solids / Lipids:	91.2 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14383
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-17B		Filename:	a30jul07a_2-3
Collection Date/Time:	07/19/07	8:10	Retchk:	a30jul07a-15
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a-15
Extraction Date:	07/29/07		End ConCal:	a30jul07a_2-11
Analysis Date/Time:	07/31/07	6:50	Initial Cal:	m8290-071007a

Report Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 08/01/07

Reviewed by: _____
Date: 8/9/07

Form I Copy

TCDF Confirmation - Method 8290
F51154-24
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDF	1.95	0.585		20.83	0.77	

Labeled Standard	Spiked Amount (ng)	RT (min.)	Ratio	Qualifier
Extraction Standards				
$^{13}C_{12}$-2,3,7,8-TCDF	2.00	20.80	0.78	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-24		Weight / Volume:	10.22	g
			Solids / Lipids:	91.19	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14383	
Project ID:	G383-583		Instrument:	hrms3	
Sample ID:	G383-583-17B		Filename:	c11aug07a-9	
Collection Date/Time:	07/19/07	8:10	Retchk:	c11aug07a-2	
Receipt Date:	07/21/07	10:35	Begin ConCal:	c11aug07a-1	
Extraction Date:	07/29/07		End ConCal:	c11aug07a-25	
Analysis Date/Time:	08/11/07	13:31	Initial Cal:	mcf-c041807a	

Analyzed by: JWP
Date: 08/13/07

Reviewed by: [signature]
Date: 8/13/07

Form I Corr

SGS Environmental Services

Method 8290
F51154-25
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.198					
1,2,3,7,8-PeCDD	ND	0.553					
1,2,3,4,7,8-HxCDD	0.588 J			37:06	1.13		A
1,2,3,6,7,8-HxCDD	1.60 J			37:12	1.25		A
1,2,3,7,8,9-HxCDD	1.32 J			37:27	1.18		A
1,2,3,4,6,7,8-HpCDD	80.0			40:39	1.04		
OCDD	4540 J			45:09	0.90		E
2,3,7,8-TCDF	0.413 B			31:07	0.81		A
1,2,3,7,8-PeCDF	0.168 J			33:37	1.75		A
2,3,4,7,8-PeCDF	EMPC	~~0.553~~	0.252 B	34:15	1.19	*	A
1,2,3,4,7,8-HxCDF	0.791 J			36:22	1.30		A
1,2,3,6,7,8-HxCDF	0.343 J			36:28	1.20		A
2,3,4,6,7,8-HxCDF	0.422 J			36:58	1.34		A
1,2,3,7,8,9-HxCDF	ND	0.553					
1,2,3,4,6,7,8-HpCDF	10.4			39:21	1.02		
1,2,3,4,7,8,9-HpCDF	0.718 J			41:21	1.05		A
OCDF	30.2			45:27	0.90		
Total TCDDs	~~ND~~	~~0.198~~	1.20 J				
Total PeCDDs	1.13						
Total HxCDDs	~~10.8~~		11.1 J				
Total HpCDDs	147						
Total TCDFs	~~1.45~~		1.59 J				
Total PeCDFs	~~2.68~~		2.94 J				
Total HxCDFs	8.87						
Total HpCDFs	28.9						
WHO-2005 TEQ (ND=0)	2.83		2.91				
WHO-2005 TEQ (ND=½)	3.32		3.31				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-25		Weight / Volume:	10.40 g	
			Solids / Lipids:	87.0	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-18B		Filename:	a30jul07a_4-2	
Collection Date/Time:	07/19/07	8:25	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	2:21	Initial Cal:	m8290-071007a	

Form I Cdn

SGS Environmental Services

Method 8290
F51154-25
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.52	76.2	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.54	77.2	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.57	78.5	37:10	1.25	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.67	83.7	40:37	1.06	
13C12-OCDD	4.0	3.36	84.0	45:07	0.90	
13C12-2,3,7,8-TCDF	2.0	1.78	89.0	31:06	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.46	73.1	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.44	71.8	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.50	75.0	39:19	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.354	88.5	31:39	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.303	75.7	34:13	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.325	81.4	37:04	1.26	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.318	79.5	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.291	72.8	41:19	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-25		Weight / Volume:	10.40 g	
			Solids / Lipids:	87.0	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-18B		Filename:	a30jul07a_4-2	
Collection Date/Time:	07/19/07	8:25	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	2:21	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 8/9/07

Reviewed by: _____
Date: 8/9/07

Form I corr

SGS Environmental Services

Method 8290
F51154-26
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.161~~	0.333 J	31:40	0.57	*	A
1,2,3,7,8-PeCDD	2.89 J			34:25	1.49		A
1,2,3,4,7,8-HxCDD	9.00			37:06	1.25		
1,2,3,6,7,8-HxCDD	26.5			37:10	1.27		
1,2,3,7,8,9-HxCDD	21.0			37:27	1.27		
1,2,3,4,6,7,8-HpCDD	946			40:39	1.04		
OCDD	9640 J			45:09	0.89		E
2,3,7,8-TCDF	0.938 J			31:07	0.74		A
1,2,3,7,8-PeCDF	0.567 J			33:37	1.54		A
2,3,4,7,8-PeCDF	1.04 J			34:15	1.55		A
1,2,3,4,7,8-HxCDF	4.61 J			36:22	1.34		A
1,2,3,6,7,8-HxCDF	3.71 J			36:28	1.18		A
2,3,4,6,7,8-HxCDF	6.00			36:58	1.23		
1,2,3,7,8,9-HxCDF	0.839 J			37:48	1.20		A
1,2,3,4,6,7,8-HpCDF	138			39:21	1.05		
1,2,3,4,7,8,9-HpCDF	10.2			41:21	1.01		
OCDF	367			45:27	0.89		
Total TCDDs	~~3.56~~		4.08 J				
Total PeCDDs	~~13.0~~		13.2 J				
Total HxCDDs	137						
Total HpCDDs	1400						
Total TCDFs	~~7.08~~		8.68 J				
Total PeCDFs	~~24.9~~		25.3 J				
Total HxCDFs	138						
Total HpCDFs	418						
WHO-2005 TEQ (ND=0)	24.4		24.8				
WHO-2005 TEQ (ND=½)	24.5		24.8				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-26		Weight / Volume:	10.48 g	
			Solids / Lipids:	86.5	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-19B		Filename:	a30jul07a_4-3	
Collection Date/Time:	07/19/07	8:40	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	3:09	Initial Cal:	m8290-071007a	

Form 1 Copy

SGS Environmental Services

Method 8290
F51154-26
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.77	88.3	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.77	88.5	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.85	92.3	37:10	1.25	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	2.02	101	40:37	1.05	
13C12-OCDD	4.0	4.23	106	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.99	99.5	31:06	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.64	82.0	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.66	83.2	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.76	88.1	39:19	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.410	102	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.351	87.7	34:13	1.58	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.392	98.0	37:06	1.28	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.357	89.3	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.360	90.0	41:19	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.77	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.25	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-26		Weight / Volume:	10.48 g
			Solids / Lipids:	86.5 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-19B		Filename:	a30jul07a_4-3
Collection Date/Time:	07/19/07	8:40	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	3:09	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 8/8/07

Reviewed by: _____
Date: 8/9/07

Form I Corr

SGS Environmental Services

Method 8290
F51154-27
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.178~~	0.236 J	31:39	0.52	*	A
1,2,3,7,8-PeCDD	1.09 J			34:25	1.61		A
1,2,3,4,7,8-HxCDD	2.05 J			37:04	1.28		A
1,2,3,6,7,8-HxCDD	5.92			37:10	1.24		
1,2,3,7,8,9-HxCDD	5.30			37:27	1.20		
1,2,3,4,6,7,8-HpCDD	274			40:39	1.04		
OCDD	17400 J			45:09	0.89		E
2,3,7,8-TCDF	0.424 B			31:07	0.77		A
1,2,3,7,8-PeCDF	0.302 J			33:37	1.53		A
2,3,4,7,8-PeCDF	0.473 J			34:15	1.47		A
1,2,3,4,7,8-HxCDF	2.03 J			36:22	1.14		A
1,2,3,6,7,8-HxCDF	0.963 J			36:28	1.31		A
2,3,4,6,7,8-HxCDF	1.40 J			36:58	1.30		A
1,2,3,7,8,9-HxCDF	0.581 J			37:48	1.23		A
1,2,3,4,6,7,8-HpCDF	46.1			39:21	1.03		
1,2,3,4,7,8,9-HpCDF	2.02 J			41:21	1.03		A
OCDF	150			45:27	0.89		
Total TCDDs	~~1.60~~		1.84 J				
Total PeCDDs	~~4.35~~		5.00 J				
Total HxCDDs	41.5						
Total HpCDDs	490						
Total TCDFs	~~2.21~~		2.42 J				
Total PeCDFs	~~6.76~~		7.31 J				
Total HxCDFs	49.4						
Total HpCDFs	154						
WHO-2005 TEQ (ND=0)	11.6		11.8				
WHO-2005 TEQ (ND=½)	11.7		11.8				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-27		Weight / Volume:	10.67 g	
			Solids / Lipids:	90.7	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-20B		Filename:	a30jul07a_4-4	
Collection Date/Time:	07/19/07	9:40	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	3:58	Initial Cal:	m8290-071007a	

Form I Corp

SGS Environmental Services

Method 8290
F51154-27
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.59	79.6	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.60	79.9	34:25	1.59	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.68	83.8	37:10	1.25	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.77	88.5	40:37	1.05	
13C12-OCDD	4.0	3.76	94.1	45:07	0.90	
13C12-2,3,7,8-TCDF	2.0	1.80	90.2	31:06	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.51	75.5	33:37	1.57	
13C12-1,2,3,6,7.8-HxCDF	2.0	1.50	75.2	36:28	0.52	
13C12-1,2.3,4,6,7,8-HpCDF	2.0	1.56	78.1	39:19	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.371	92.6	31:39	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.286	71.4	34:13	1.59	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.316	78.9	37:04	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.327	81.7	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.313	78.3	41:19	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-27		Weight / Volume:	10.67 g	
			Solids / Lipids:	90.7	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-20B		Filename:	a30jul07a_4-4	
Collection Date/Time:	07/19/07	9:40	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	3:58	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: JWO
Date: 080907

Reviewed by:
Date: 8/9/07

Form I Cont

Method 8290
F51154-28
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.210					
1,2,3,7,8-PeCDD	1.23 J			34:25	1.55		A
1,2,3,4,7,8-HxCDD	1.95 J			37:06	1.24		A
1,2,3,6,7,8-HxCDD	5.26			37:12	1.20		
1,2,3,7,8,9-HxCDD	5.44			37:27	1.24		
1,2,3,4,6,7,8-HpCDD	204			40:39	1.04		
OCDD	7200 J			45:07	0.89		E
2,3,7,8-TCDF	0.413 B			31:07	0.68		A
1,2,3,7,8-PeCDF	EMPC	~~0.496~~	0.254 J	33:37	1.95	*	A
2,3,4,7,8-PeCDF	0.437 J			34:15	1.55		A
1,2,3,4,7,8-HxCDF	2.11 J			36:22	1.27		A
1,2,3,6,7,8-HxCDF	0.840 J			36:28	1.24		A
2,3,4,6,7,8-HxCDF	1.11 J			36:58	1.12		A
1,2,3,7,8,9-HxCDF	0.391 J			37:48	1.21		A
1,2,3,4,6,7,8-HpCDF	33.2			39:21	1.04		
1,2,3,4,7,8,9-HpCDF	1.39 J			41:21	0.96		A
OCDF	79.3			45:25	0.89		
Total TCDDs	1.26						
Total PeCDDs	~~3.87~~		5.17 J				
Total HxCDDs	~~40.0~~		41.3 J				
Total HpCDDs	385						
Total TCDFs	~~2.02~~		2.52 J				
Total PeCDFs	~~5.87~~		6.13 J				
Total HxCDFs	36.2						
Total HpCDFs	~~93.3~~		93.8 J				
WHO-2005 TEQ (ND=0)	7.68		7.69				
WHO-2005 TEQ (ND=½)	7.79		7.79				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-28		Weight / Volume:	11.03 g
			Solids / Lipids:	91.4 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-21B		Filename:	a30jul07a_4-5
Collection Date/Time:	07/19/07	9:25	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	4:46	Initial Cal:	m8290-071007a

From I Corp

SGS Environmental Services

Method 8290
F51154-28
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.58	79.2	31:37	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.64	81.8	34:25	1.58	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.66	82.9	37:10	1.23	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.77	88.4	40:37	1.05	
13C12-OCDD	4.0	3.73	93.3	45:07	0.90	
13C12-2,3,7,8-TCDF	2.0	1.82	91.2	31:06	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.52	75.9	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.52	76.0	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.58	78.9	39:19	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.366	91.4	31:39	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.283	70.6	34:13	1.60	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.336	84.0	37:04	1.38	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.321	80.3	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.316	79.1	41:19	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.25	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-28		Weight / Volume:	11.03 g
			Solids / Lipids:	91.4 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-21B		Filename:	a30jul07a_4-5
Collection Date/Time:	07/19/07	9:25	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	4:46	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2 14]Report

Analyzed by: JMP
Date: 080907

Reviewed by: [signature]
Date: 8/8/07

Form I Corp

Method 8290
F51154-29
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	0.231 J			31:40	0.77		A
1,2,3,7,8-PeCDD	2.03 J			34:25	1.58		A
1,2,3,4,7,8-HxCDD	3.47 J			37:06	1.41		A
1,2,3,6,7,8-HxCDD	8.25			37:12	1.28		
1,2,3,7,8,9-HxCDD	9.49			37:27	1.25		
1,2,3,4,6,7,8-HpCDD	269			40:39	1.05		
OCDD	9970 J			45:07	0.90		E
2,3,7,8-TCDF	0.566 B			31:07	0.84		A
1,2,3,7,8-PeCDF	EMPC	~~0.560~~	0.275 J	33:37	1.26	*	A
2,3,4,7,8-PeCDF	0.537 J			34:15	1.52		A
1,2,3,4,7,8-HxCDF	2.10 J			36:22	1.20		A
1,2,3,6,7,8-HxCDF	1.38 J			36:28	1.17		A
2,3,4,6,7,8-HxCDF	1.95 J			36:58	1.27		A
1,2,3,7,8,9-HxCDF	ND	0.560					
1,2,3,4,6,7,8-HpCDF	49.2			39:21	1.04		
1,2,3,4,7,8,9-HpCDF	2.09 J			41:21	1.11		A
OCDF	136			45:25	0.89		
Total TCDDs	1.67						
Total PeCDDs	7.45						
Total HxCDDs	55.3						
Total HpCDDs	461						
Total TCDFs	~~3.62~~		3.91 J				
Total PeCDFs	~~8.05~~		8.48 J				
Total HxCDFs	~~48.3~~		48.5 J				
Total HpCDFs	143						
WHO-2005 TEQ (ND=0)	11.4		11.4				
WHO-2005 TEQ (ND=½)	11.4		11.4				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-29		Weight / Volume:	10.07 g
			Solids / Lipids:	88.7 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-22B		Filename:	a30jul07a_4-6
Collection Date/Time:	07/19/07	8:55	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	5:35	Initial Cal:	m8290-071007a

Form I Cont

SGS Environmental Services

Method 8290
F51154-29
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.59	79.4	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.56	78.1	34:25	1.58	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.63	81.7	37:10	1.27	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.76	88.1	40:37	1.06	
13C12-OCDD	4.0	3.68	92.1	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.80	89.9	31:06	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.47	73.6	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.49	74.7	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.56	78.0	39:19	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.355	88.9	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.271	67.8	34:13	1.59	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.329	82.2	37:04	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.326	81.5	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.301	75.2	41:19	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.24	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-29		Weight / Volume:	10.07 g	
			Solids / Lipids:	88.7	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-22B		Filename:	a30jul07a_4-6	
Collection Date/Time:	07/19/07	8:55	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	5:35	Initial Cal:	m8290-071007a	

Form Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 8/8/07

Reviewed by: _____
Date: 8/9/07

Form I copy

SGS Environmental Services

Method 8290
F51154-30
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.184~~	0.248 J	31:42	0.55	*	A
1,2,3,7,8-PeCDD	0.934 J			34:25	1.61		A
1,2,3,4,7,8-HxCDD	1.66 J			37:07	1.13		A
1,2,3,6,7,8-HxCDD	3.73 J			37:13	1.25		A
1,2,3,7,8,9-HxCDD	4.39 J			37:28	1.19		A
1,2,3,4,6,7,8-HpCDD	122			40:40	1.05		
OCDD	1410			45:10	0.89		
2,3,7,8-TCDF	0.424 B			31:10	0.78		A
1,2,3,7,8-PeCDF	EMPC	~~0.484~~	0.286 J	33:39	1.79	*	A
2,3,4,7,8-PeCDF	EMPC	~~0.484~~	0.292 B	34:15	1.83	*	A
1,2,3,4,7,8-HxCDF	1.04 J			36:24	1.20		A
1,2,3,6,7,8-HxCDF	0.619 J			36:30	1.14		A
2,3,4,6,7,8-HxCDF	0.745 J			37:00	1.21		A
1,2,3,7,8,9-HxCDF	ND	0.484					
1,2,3,4,6,7,8-HpCDF	21.5			39:22	1.04		
1,2,3,4,7,8,9-HpCDF	0.830 J			41:22	1.09		A
OCDF	57.6			45:28	0.90		
Total TCDDs	~~3.35~~		3.60 J				
Total PeCDDs	~~5.10~~		5.46 J				
Total HxCDDs	30.9						
Total HpCDDs	222						
Total TCDFs	~~5.14 J~~		5.30 J				Q
Total PeCDFs	~~4.05~~		4.74 J				
Total HxCDFs	~~17.5~~		17.8 J				
Total HpCDFs	57.9						
WHO-2005 TEQ (ND=0)	4.08		4.42				
WHO-2005 TEQ (ND=½)	4.27		4.45				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-30		Weight / Volume:	11.03 g	
			Solids / Lipids:	93.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-23B		Filename:	a30jul07a_4-7	
Collection Date/Time:	07/19/07	9:10	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	6:23	Initial Cal:	m8290-071007a	

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SGS Environmental Services

Method 8290
F51154-30
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.59	79.6	31:40	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.63	81.4	34:25	1.57	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.74	86.8	37:12	1.27	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.88	93.9	40:39	1.06	
13C12-OCDD	4.0	3.87	96.8	45:10	0.89	
13C12-2,3,7,8-TCDF	2.0	1.88	93.8	31:09	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.50	75.1	33:39	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.57	78.4	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.67	83.4	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.375	93.7	31:42	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.306	76.4	34:15	1.60	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.343	85.8	37:07	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.339	84.9	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.337	84.4	41:21	0.43	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:16	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-30		Weight / Volume:	11.03 g	
			Solids / Lipids:	93.8	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14385	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-23B		Filename:	a30jul07a_4-7	
Collection Date/Time:	07/19/07	9:10	Retchk:	a30jul07a_3-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14	
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12	
Analysis Date/Time:	08/01/07	6:23	Initial Cal:	m8290-071007a	

Form Version:[8290_DD_2.14]Report

Analyzed by: JWC
Date: 080907

Reviewed by: [illegible]
Date: 8/9/07

Form I Corr

SGS Environmental Services

Method 8290
F51154-31
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.204					
1,2,3,7,8-PeCDD	0.341 J			34:25	1.56		A
1,2,3,4,7,8-HxCDD	0.657 J			37:07	1.21		A
1,2,3,6,7,8-HxCDD	1.56 J			37:13	1.23		A
1,2,3,7,8,9-HxCDD	1.49 J			37:27	1.37		A
1,2,3,4,6,7,8-HpCDD	54.1			40:40	1.04		
OCDD	1030			45:10	0.89		
2,3,7,8-TCDF	EMPC	~~0.184~~	0.442 B	31:09	0.89	*	A
1,2,3,7,8-PeCDF	0.196 J			33:39	1.47		A
2,3,4,7,8-PeCDF	EMPC	~~0.517~~	0.184 B	34:15	1.93	*	A
1,2,3,4,7,8-HxCDF	0.810 J			36:22	1.18		A
1,2,3,6,7,8-HxCDF	0.358 J			36:28	1.14		A
2,3,4,6,7,8-HxCDF	0.335 J			36:58	1.23		A
1,2,3,7,8,9-HxCDF	ND	0.517					
1,2,3,4,6,7,8-HpCDF	10.6			39:22	1.02		
1,2,3,4,7,8,9-HpCDF	0.451 J			41:21	1.05		A
OCDF	26.0			45:28	0.89		
Total TCDDs	13.3						
Total PeCDDs	~~1.93~~		2.20 J				
Total HxCDDs	11.8						
Total HpCDDs	99.1						
Total TCDFs	~~1.70~~		2.82 J				
Total PeCDFs	~~2.11~~		2.57 J				
Total HxCDFs	~~7.58~~		7.80 J				
Total HpCDFs	26.4						
WHO-2005 TEQ (ND=0)	1.84		1.94				
WHO-2005 TEQ (ND=½)	2.05		2.06				

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-31		Weight / Volume:	10.26 g
			Solids / Lipids:	94.3 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-24B		Filename:	a30jul07a_4-8
Collection Date/Time:	07/19/07	9:55	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	7:11	Initial Cal:	m8290-071007a

Form I COMP

Method 8290
F51154-31
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.63	81.7	31:40	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.66	82.8	34:25	1.58	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.68	84.1	37:12	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.83	91.5	40:39	1.06	
13C12-OCDD	4.0	3.73	93.2	45:09	0.90	
13C12-2,3,7,8-TCDF	2.0	1.90	95.0	31:07	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.54	77.2	33:37	1.59	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.54	76.8	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.63	81.7	39:21	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.404	101	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.316	79.0	34:15	1.60	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.377	94.3	37:06	1.26	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.366	91.4	36:22	0.51	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.351	87.8	41:21	0.44	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:15	0.78	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.25	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-31		Weight / Volume:	10.26 g
			Solids / Lipids:	94.3 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14385
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-24B		Filename:	a30jul07a_4-8
Collection Date/Time:	07/19/07	9:55	Retchk:	a30jul07a_3-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_3-14
Extraction Date:	07/30/07		End ConCal:	a30jul07a_4-12
Analysis Date/Time:	08/01/07	7:11	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 08-Aug-07

Reviewed by: _____
Date: 8/9/07

Form I Corr

SGS Environmental Services

Method 8290
F51154-32
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.223~~	0.241 J	31:39	0.61	*	A
1,2,3,7,8-PeCDD	3.04 J			34:25	1.58		A
1,2,3,4,7,8-HxCDD	10.8			37:06	1.26		
1,2,3,6,7,8-HxCDD	27.8			37:10	1.30		
1,2,3,7,8,9-HxCDD	19.2			37:25	1.29		
1,2,3,4,6,7,8-HpCDD	950			40:39	1.04		
OCDD	10300 J			45:07	0.89		E
2,3,7,8-TCDF	0.917 J			31:06	0.87		A
1,2,3,7,8-PeCDF	0.593 J			33:37	1.35		A
2,3,4,7,8-PeCDF	0.996 J			34:13	1.71		A
1,2,3,4,7,8-HxCDF	6.93			36:22	1.21		
1,2,3,6,7,8-HxCDF	6.14			36:28	1.35		
2,3,4,6,7,8-HxCDF	5.34 J			36:58	1.30		A
1,2,3,7,8,9-HxCDF	0.635 J			37:46	1.19		A
1,2,3,4,6,7,8-HpCDF	132			39:21	1.05		
1,2,3,4,7,8,9-HpCDF	8.10			41:21	0.90		
OCDF	397			45:25	0.89		
Total TCDDs	~~5.50~~		6.23 J				
Total PeCDDs	15.9						
Total HxCDDs	~~130~~		134 J				
Total HpCDDs	1420						
Total TCDFs	~~7.80~~		10.4 J				
Total PeCDFs	~~21.6~~		22.0 J				
Total HxCDFs	129						
Total HpCDFs	420						
WHO-2005 TEQ (ND=0)	25.2		25.5				
WHO-2005 TEQ (ND=½)	25.4		25.5				

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51154-32		Weight / Volume:	10.19 g	
			Solids / Lipids:	85.4	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14389	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-25B		Filename:	a30jul07a_6-5	
Collection Date/Time:	07/19/07	8:40	Retchk:	a30jul07a_4-12	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_4-12	
Extraction Date:	07/31/07		End ConCal:	a30jul07a_6-14	
Analysis Date/Time:	08/01/07	18:39	Initial Cal:	m8290-071007a	

Form I Cont

SGS Environmental Services

Method 8290
F51154-32
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.54	76.8	31:39	0.78	
13C12-1,2,3,7,8-PeCDD	2.0	1.48	74.0	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.64	81.9	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.78	89.1	40:37	1.06	
13C12-OCDD	4.0	3.83	95.8	45:07	0.89	
13C12-2,3,7,8-TCDF	2.0	1.73	86.6	31:06	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.40	70.0	33:37	1.61	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.51	75.3	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.58	79.2	39:19	0.43	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.362	90.4	31:39	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.267	66.7	34:13	1.64	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.317	79.3	37:04	1.28	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.324	81.1	36:22	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.293	73.3	41:19	0.41	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.26	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51154-32		Weight / Volume:	10.19 g
			Solids / Lipids:	85.4 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14389
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-25B		Filename:	a30jul07a_6-5
Collection Date/Time:	07/19/07	8:40	Retchk:	a30jul07a_4-12
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a30jul07a_4-12
Extraction Date:	07/31/07		End ConCal:	a30jul07a_6-14
Analysis Date/Time:	08/01/07	18:39	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 08/07/07

Reviewed by: DLL
Date: 8/9/07

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SGS Environmental Services

Method 8290
F51154-12 RB071807
Accutest

Analytical Data Summary Sheet

Analyte	Amount (ng/L)	EDL (ng/L)	EMPC (ng/L)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00179				
1,2,3,7,8-PeCDD	ND	0.00551				
1,2,3,4,7,8-HxCDD	ND	0.00551				
1,2,3,6,7,8-HxCDD	ND	0.00551				
1,2,3,7,8,9-HxCDD	ND	0.00551				
1,2,3,4,6,7,8-HpCDD	ND	0.00551				
OCDD	ND	0.0110				
2,3,7,8-TCDF	ND	0.00126				
1,2,3,7,8-PeCDF	ND	0.00551				
2,3,4,7,8-PeCDF	ND	0.00551				
1,2,3,4,7,8-HxCDF	ND	0.00551				
1,2,3,6,7,8-HxCDF	ND	0.00551				
2,3,4,6,7,8-HxCDF	ND	0.00551				
1,2,3,7,8,9-HxCDF	ND	0.00551				
1,2,3,4,6,7,8-HpCDF	ND	0.00551				
1,2,3,4,7,8,9-HpCDF	ND	0.00551				
OCDF	ND	0.0110				
Total TCDDs	ND	0.00179				
Total PeCDDs	ND	0.00551				
Total HxCDDs	ND	0.00551				
Total HpCDDs	ND	0.00551				
Total TCDFs	ND	0.00126				
Total PeCDFs	ND	0.00551				
Total HxCDFs	ND	0.00551				
Total HpCDFs	ND	0.00551				
WHO-2005 TEQ (ND=0)	ND		ND			
WHO-2005 TEQ (ND=½)	0.00664		0.00664			

Client Information			**Sample Information**		
Project Name:	F51154		Report Basis:	Wet	
			Matrix:	Water	
Sample ID:	F51154-12		Weight / Volume:	907 mL	
			Solids / Lipids:	NA	%
			Original pH :	7	
Laboratory Information			Batch ID:	WG14381	
Project ID:	G383-583		Instrument:	HRMS1	
Sample ID:	G383-583-7C		Filename:	a27jul07a_3-11	
Collection Date/Time:	07/18/07	13:15	Retchk:	a27jul07a_2-14	
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14	
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12	
Analysis Date/Time:	07/28/07	22:40	Initial Cal:	m8290-071007a	

Form I Corr

Method 8290
F51154-12
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.59	79.7	31:39	0.79	
13C12-1,2,3,7,8-PeCDD	2.0	1.58	79.0	34:25	1.58	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.66	83.2	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.81	90.3	40:39	1.06	
13C12-OCDD	4.0	3.96	99.0	45:09	0.89	
13C12-2,3,7,8-TCDF	2.0	1.81	90.4	31:07	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.56	77.9	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.63	81.6	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.75	87.3	39:21	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.382	95.5	31:40	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.341	85.3	34:13	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.369	92.3	37:06	1.28	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.367	91.9	36:22	0.54	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.362	90.5	41:19	0.42	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:27	1.26	

Client Information			**Sample Information**	
Project Name:	F51154		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51154-12		Weight / Volume:	907 mL
			Solids / Lipids:	NA %
			Original pH :	7
Laboratory Information			Batch ID:	WG14381
Project ID:	G383-583		Instrument:	HRMS1
Sample ID:	G383-583-7C		Filename:	a27jul07a_3-11
Collection Date/Time:	07/18/07	13:15	Retchk:	a27jul07a_2-14
Receipt Date/Time:	07/21/07	10:35	Begin ConCal:	a27jul07a_2-14
Extraction Date:	07/26/07		End ConCal:	a27jul07a_3-12
Analysis Date/Time:	07/28/07	22:40	Initial Cal:	m8290-071007a

Report Version:[8290_DB_2.14]Report

Analyzed by: _____
Date: 08/08/07

Reviewed by: _____
Date: 8/9/07

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerin
Accutest Laboratories, Inc., SDG F51154

DATE: September 25, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. Aqueous samples were analyzed for explosives, nitroglycerin, and PETN using USEPA SW-846 3535A/8330A. Solid samples were analyzed for explosives, nitroglycerin, and PETN using USEPA SW-846 8330B/8330A. A total of five aqueous samples and seventeen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
41SW08	F51154-6	41SD11	F51154-22
41SW09	F51154-7	49SS02	F51154-23
41SW10	F51154-8	49SS03	F51154-24
41SD08	F51154-9	49SS04	F51154-25
41SD09	F51154-10	49SS05	F51154-26
41SD10	F51154-11	59SS06	F51154-27
LFSD01	F51154-15	59SS07	F51154-28
TMSD01	F51154-16	59SS08	F51154-29
LFSW01	F51154-17	59SS09	F51154-30
APSD01	F51154-18	59SS10	F51154-31
TMSW01	F51154-20	TMSS05	F51154-32

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
	X	Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable.

Eric Malarek

Eric Malarek, Chemist

9/25/07

Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F51154

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. For solid samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous and solid samples were collected on 07/18/07 and 07/19/07. For the aqueous samples collected 07/18/07 and 07/19/07, the explosives were extracted on 07/25/07 and analyzed on 07/27/07. For the solid samples collected 07/18/07 and 07/19/07, the explosives were extracted on 08/01/07 and analyzed on 08/03/07. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
07/27/07	OP21593-MB	All target explosives <½MRL	NA	NA	None
07/27/07	OP21593-MB	All target explosives <½MRL	NA	NA	None
07/27/07	OP21593-MB	PETN & NG <½MRL	NA	NA	None
07/27/07	OP21593-MB	PETN & NG <½MRL	NA	NA	None
09/11/07	RB083007	All target explosives <½MRL	NA	NA	None
09/07/07	RB083007	PETN & NG <½MRL	NA	NA	None
Analysis Date	**QC Blank ID**	**Compound**	**Max Conc. µg/kg**	**Action Level µg/kg**	**B qualified samples**
08/03/07	OP21693-MB	All target explosives <½MRL	NA	NA	None
08/03/07	OP21693-MB	PETN & NG <½MRL	NA	NA	None
07/27/07	RB071807	All target explosives <½MRL	NA	NA	None
07/27/07	RB071807	PETN & NG <½MRL	NA	NA	None
08/01/07	072407R	All target explosives <½MRL	NA	NA	None
08/01/07	072407R	PETN & NG <½MRL	NA	NA	None
08/01/07	072507R	All target explosives <½MRL	NA	NA	None
08/01/07	072507R	PETN & NG <½MRL	NA	NA	None

MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient must be ≥0.995 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For the explosives initial calibration performed on 10/18/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this initial calibration.

- For the explosives initial calibration performed on 10/20/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this initial calibration.

- For the PETN and nitroglycerine initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), TMSW01 (F51154-20), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For explosives initial calibration verification performed on 10/18/06 @17:39 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/19/06 @13:44 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/20/06 @14:03 on instrument G1315B, nitrobenzene (20.5%) was outside criteria. All samples were non-detect for this compound. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/20/06 @15:10 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 07/27/07 @10:31 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SW08 (F51154-6) and 41SW09 (F51154-7) apply to this continuing calibration.

- For explosives continuing calibration performed on 07/27/07 @14:11 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this continuing calibration.

- For explosives continuing calibration performed on 07/27/07 @16:57 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 07/27/07 @18:36 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this continuing calibration.

- For explosives continuing calibration performed on 07/27/07 @20:33 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples apply to this continuing calibration.

- For explosives continuing calibration performed on 08/02/07 @22:39 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), and APSD01 (F51154-18) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/03/07 @04:11 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/03/07 @09:41 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this continuing calibration.

- For explosives continuing calibration performed on 08/03/07 @15:37 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin initial calibration verification performed on 03/15/07 @12:35 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 07/27/07 @13:19 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 07/27/07 @15:29 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/03/07 @09:24 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), and APSD01 (F51154-18) apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/03/07 @10:59 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/03/07 @12:41 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/03/07 @13:33 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-System Monitoring Compound (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria: 3,4-dinitrotoluene (70-136%)
Solid Criteria: 3,4-dinitrotoluene (72-145%)

- All criteria were met for explosives, PETN, and nitroglycerin. No qualifiers were applied.

VI-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-12 of the DoD QSM (DoD, 2006). DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21593-BS was used as aqueous LCS for explosives analyzed on 07/27/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP21593-BS was used as aqueous LCS for explosives analyzed on 07/27/07. HMX (136%) was outside DoD QSM criteria and within laboratory criteria. All samples were non-detect HMX; therefore, no qualifiers were applied based upon this outlier. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP21693-BS was used as solid LCS for explosives analyzed on 08/02/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

- Sample OP21593-BS2 was used as aqueous LCS for PETN and nitroglycerin analyzed on 07/27/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP21693-BS2 was used as solid LCS for PETN and nitroglycerin analyzed on 08/03/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-12 of the DoD QSM (DoD, 2006). DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 41SW09 (F51154-7) was used as the aqueous MS/MSD for the explosive analysis on 07/27/07. HMX (121%, 118%) was outside DoD QSM criteria and within laboratory criteria. All samples were non-detect HMX; therefore, no qualifiers were applied based upon these outliers. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample APSD01 (F51154-18) was used as the solid MS/MSD for the explosive analysis on 08/03/07. 2,6-Dinitrotoluene (RPD=18%), 2,4-dinitrotoluene (131%, RPD=20%), 2-amino-4,6-dinitrotoluene (126%), and 4-amino-2,6-dinitrotoluene (RPD=19%) were outside DoD QSM criteria and/or laboratory criteria. All associated samples were non-detect for these compounds; therefore, no qualifiers were applied based upon these outliers. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used as the aqueous MS/MSD for the PETN and nitroglycerin analysis on 07/27/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample TMSD01 (F51154-16) was used as the solid MS/MSD for the PETN and nitroglycerin analysis on 07/02-03/07. Nitroglycerin (RPD=27%) was above lab criteria. For PETN, all criteria were met. All associated samples were non-detect for nitroglycerin; therefore, no qualifiers were applied based upon this outlier. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair LFSW01 (F51154-17) and TMSW01 (F51154-20) was collected for explosives, nitroglycerin, and PETN. All explosives, nitroglycerin, and PETN target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for explosives, nitroglycerin, and PETN. All explosives, nitroglycerin, and PETN target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for explosives, nitroglycerin, and PETN. All explosives, nitroglycerin, and PETN target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J".

- The %D between the primary and secondary columns was within criteria for all detected explosives, PETN, and nitroglycerin.

Sample: 41SW08 (F51154-6), 2-amino-4,6-dinitrotoluene

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (199179 * 10 * 1) / (7177 * 1010) = 0.27 µg/L (Signal #1)

Reported Value = 0.27 µg/L
% Difference = 0.0%
Values were within 10% difference

Sample: LFSW01MS (F51154-17MS), nitroglycerin

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (3198546 * 10 * 1) / (1228 * 430) = 60.6 µg/L (Signal #1)

Reported Value = 60.6 µg/L
% Difference = 0.0%
Values were within 10% difference

Sample: APSD01MS (F51154-18MS), nitrobenzene

Conc. mg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in mg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. mg/kg = (4241037 * 20 * 1) / (7223 * 2.45 * 1) = 4970 µg/kg (Signal #1)
Reported Value = 4970 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: TMSD01MS (F51154-16MS), nitroglycerin

Conc. mg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in mg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. mg/kg = (3248217 * 20 * 1) / (1228 * 2.68 * 1) = 19700 µg/kg (Signal #1)
Reported Value = 19700 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG022998.D PP021775.D GG023013.D

Form I Cmy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG022998.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021775.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751
Run #3 [b]	GG023013.D	1	07/27/07	MRE	07/25/07	OP21593	GGG988

	Initial Volume	Final Volume
Run #1	1010 ml	10.0 ml
Run #2	1010 ml	10.0 ml
Run #3	1010 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.20	0.059	ug/l	
121-82-4	RDX	ND	0.20	0.074	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.20	0.069	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.20	0.064	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	0.074	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	0.27	0.20	0.069	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	0.87	0.20	0.079	ug/l	
98-95-3	Nitrobenzene	ND	0.20	0.059	ug/l	
88-72-2	o-Nitrotoluene	ND	0.20	0.059	ug/l	
99-08-1	m-Nitrotoluene	ND	0.20	0.074	ug/l	
99-99-0	p-Nitrotoluene	ND	0.20	0.074	ug/l	
479-45-8	Tetryl	ND	0.20	0.074	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.20	0.094	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.20	0.079	ug/l	
55-63-0	Nitroglycerine	ND [c]	2.0	0.69	ug/l	
78-11-5	PETN	ND [c]	2.0	0.69	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	102%	103%	101%	70-136%

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG022999.D PP021776.D GG023014.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG022999.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021776.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751
Run #3 [b]	GG023014.D	1	07/27/07	MRE	07/25/07	OP21593	GGG988

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2	1000 ml	10.0 ml
Run #3	1000 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.20	0.060	ug/l	
121-82-4	RDX	ND	0.20	0.075	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.20	0.070	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.20	0.065	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	0.075	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	0.76	0.20	0.070	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	1.7	0.20	0.080	ug/l	
98-95-3	Nitrobenzene	ND	0.20	0.060	ug/l	
88-72-2	o-Nitrotoluene	ND	0.20	0.060	ug/l	
99-08-1	m-Nitrotoluene	ND	0.20	0.075	ug/l	
99-99-0	p-Nitrotoluene	ND	0.20	0.075	ug/l	
479-45-8	Tetryl	ND	0.20	0.075	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.20	0.095	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.20	0.080	ug/l	
55-63-0	Nitroglycerine	ND [c]	2.0	0.70	ug/l	
78-11-5	PETN	ND [c]	2.0	0.70	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	97%	96%	101%	70-136%

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023004.D PP021777.D GG023015.D

Form I Corr

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG023004.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021777.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751
Run #3 [b]	GG023015.D	1	07/27/07	MRE	07/25/07	OP21593	GGG988

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2	1000 ml	10.0 ml
Run #3	1000 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.20	0.060	ug/l	
121-82-4	RDX	ND	0.20	0.075	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.20	0.070	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.20	0.065	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	0.075	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	1.1	0.20	0.070	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	2.5	0.20	0.080	ug/l	
98-95-3	Nitrobenzene	ND	0.20	0.060	ug/l	
88-72-2	o-Nitrotoluene	ND	0.20	0.060	ug/l	
99-08-1	m-Nitrotoluene	ND	0.20	0.075	ug/l	
99-99-0	p-Nitrotoluene	ND	0.20	0.075	ug/l	
479-45-8	Tetryl	ND	0.20	0.075	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.20	0.095	ug/l	
118-96-7	2,4,6-Trinitrotoluene	1.3	0.20	0.080	ug/l	
55-63-0	Nitroglycerine	ND [c]	2.0	0.70	ug/l	
78-11-5	PETN	ND [c]	2.0	0.70	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	97%	102%	104%	70-136%

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023079.D PP021960.D

Form I Copy

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Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023079.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021960.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.37 g	20.0 ml
Run #2	2.37 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	75	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	46	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	65	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	87	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene		107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023080.D PP021961.D

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023080.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021961.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.45 g	20.0 ml
Run #2	2.45 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	102%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023081.D PP021962.D

Run I only

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023081.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021962.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.22 g	20.0 ml
Run #2	2.22 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	80	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	69	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	104%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023005.D PP021778.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023005.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021778.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751

	Initial Volume	Final Volume
Run #1	1040 ml	10.0 ml
Run #2	1040 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.19	0.058	ug/l	
121-82-4	RDX	ND	0.19	0.072	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.19	0.067	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.19	0.062	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.19	0.072	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.19	0.067	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.19	0.077	ug/l	
98-95-3	Nitrobenzene	ND	0.19	0.058	ug/l	
88-72-2	o-Nitrotoluene	ND	0.19	0.058	ug/l	
99-08-1	m-Nitrotoluene	ND	0.19	0.072	ug/l	
99-99-0	p-Nitrotoluene	ND	0.19	0.072	ug/l	
479-45-8	Tetryl	ND	0.19	0.072	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.19	0.091	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.19	0.077	ug/l	
55-63-0	Nitroglycerine	ND [a]	1.9	0.67	ug/l	
78-11-5	PETN	ND [a]	1.9	0.67	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	103%	113%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023082.D PP021963.D

Form I Corr

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023082.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021963.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.46 g	20.0 ml
Run #2	2.46 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	110%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023083.D PP021964.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023083.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021964.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.62 g	20.0 ml
Run #2	2.62 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	40	ug/kg	
121-82-4	RDX	ND	190	38	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	68	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	38	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	41	ug/kg	
98-95-3	Nitrobenzene	ND	190	54	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	59	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	79	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	53	ug/kg	
479-45-8	Tetryl	ND	380	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	45	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	38	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	570	ug/kg	
78-11-5	PETN	ND [a]	1500	570	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	105%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023006.D PP021779.D

Form I OV

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023006.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021779.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751

	Initial Volume	Final Volume
Run #1	860 ml	10.0 ml
Run #2	860 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.23	0.070	ug/l	
121-82-4	RDX	ND	0.23	0.087	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.23	0.081	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.23	0.076	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.23	0.087	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.23	0.081	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.23	0.093	ug/l	
98-95-3	Nitrobenzene	ND	0.23	0.070	ug/l	
88-72-2	o-Nitrotoluene	ND	0.23	0.070	ug/l	
99-08-1	m-Nitrotoluene	ND	0.23	0.087	ug/l	
99-99-0	p-Nitrotoluene	ND	0.23	0.087	ug/l	
479-45-8	Tetryl	ND	0.23	0.087	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.23	0.11	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.23	0.093	ug/l	
55-63-0	Nitroglycerine	ND [a]	2.3	0.81	ug/l	
78-11-5	PETN	ND [a]	2.3	0.81	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	100%	106%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023084.D PP021967.D

Form I COM

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023084.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021967.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.70 g	20.0 ml
Run #2	2.70 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	39	ug/kg	
121-82-4	RDX	ND	190	37	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	66	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	37	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	40	ug/kg	
98-95-3	Nitrobenzene	ND	190	53	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	57	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	76	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	51	ug/kg	
479-45-8	Tetryl	ND	370	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	44	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	37	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	560	ug/kg	
78-11-5	PETN	ND [a]	1500	560	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	104%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023007.D PP021782.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-20	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023007.D	1	07/27/07	MRE	07/25/07	OP21593	GGG987
Run #2	PP021782.D	1	07/27/07	MRE	07/25/07	OP21593	GPP751

	Initial Volume	Final Volume
Run #1	850 ml	10.0 ml
Run #2	850 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.24	0.071	ug/l	
121-82-4	RDX	ND	0.24	0.088	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.24	0.082	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.24	0.076	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.24	0.088	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.24	0.082	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.24	0.094	ug/l	
98-95-3	Nitrobenzene	ND	0.24	0.071	ug/l	
88-72-2	o-Nitrotoluene	ND	0.24	0.071	ug/l	
99-08-1	m-Nitrotoluene	ND	0.24	0.088	ug/l	
99-99-0	p-Nitrotoluene	ND	0.24	0.088	ug/l	
479-45-8	Tetryl	ND	0.24	0.088	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.24	0.11	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.24	0.094	ug/l	
55-63-0	Nitroglycerine	ND [a]	2.4	0.82	ug/l	
78-11-5	PETN	ND [a]	2.4	0.82	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	99%	110%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OBZ

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023089.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021970.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.43 g	20.0 ml
Run #2	2.43 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	43	ug/kg	
121-82-4	RDX	ND	210	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	44	ug/kg	
98-95-3	Nitrobenzene	ND	210	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	85	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	57	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	49	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	620	ug/kg	
78-11-5	PETN	ND [a]	1600	620	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	110%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I COA

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023090.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021971.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.39 g	20.0 ml
Run #2	2.39 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	74	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	59	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	64	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	86	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	49	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023091.D PP021972.D

Run 1 only

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023091.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021972.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.42 g	20.0 ml
Run #2	2.42 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	43	ug/kg	
121-82-4	RDX	ND	210	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	74	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	59	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	64	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	85	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	57	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	49	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	620	ug/kg	
78-11-5	PETN	ND [a]	1700	620	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	111%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023092.D PP021973.D

Form I Copy

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Report of Analysis

3.2.5

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023092.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021973.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.12 g	20.0 ml
Run #2	2.12 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	112%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023093.D PP021974.D

Run I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023093.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021974.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.27 g	20.0 ml
Run #2	2.27 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	91	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023094.D PP021975.D

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023094.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021975.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.25 g	20.0 ml
Run #2	2.25 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	92	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	670	ug/kg	
78-11-5	PETN	ND [a]	1800	670	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	114%	116%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023095.D PP021976.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023095.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021976.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.37 g	20.0 ml
Run #2	2.37 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	75	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	46	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	65	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	87	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	119%	118%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023096.D PP021977.D

Form I CVR

Accutest Laboratories

Report of Analysis

3.2.3

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023096.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021977.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.33 g	20.0 ml
Run #2	2.33 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	45	ug/kg	
121-82-4	RDX	ND	210	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	76	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	46	ug/kg	
98-95-3	Nitrobenzene	ND	210	61	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	66	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	88	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	59	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	640	ug/kg	
78-11-5	PETN	ND [a]	1700	640	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	102%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023097.D PP021978.D

Form I OV

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023097.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021978.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.16 g	20.0 ml
Run #2	2.16 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	48	ug/kg	
121-82-4	RDX	ND	230	46	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	46	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	82	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	46	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	46	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	71	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	95	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	460	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	46	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	690	ug/kg	
78-11-5	PETN	ND [a]	1900	690	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	111%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023098.D PP021979.D

Form I OP

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023098.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021979.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.30 g	20.0 ml
Run #2	2.30 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	650	ug/kg	
78-11-5	PETN	ND [a]	1700	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023101.D PP021982.D

Form I COA

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8330A SW846 8330B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023101.D	1	08/03/07	NAF	08/01/07	OP21693	GGG991
Run #2	PP021982.D	1	08/03/07	NAF	08/01/07	OP21693	GPP759

	Initial Weight	Final Volume
Run #1	2.38 g	20.0 ml
Run #2	2.38 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	75	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	65	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	87	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	116%	113%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I RFAAP Project Manager

FROM: Eric Malarek, Shaw E&I RFAAP Project Chemist

SUBJECT: Radford Army Ammunition Plant (RFAAP) Data Validation – Herbicides
Accutest Laboratories, Inc., SDG F51154

DATE: September 25, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. Aqueous samples were analyzed for chlorinated herbicides using USEPA SW846 Method 3510C/8151A. Solid samples were analyzed for chlorinated herbicides using USEPA SW846 Method 3550B/8151A. A total of five aqueous samples and seventeen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
41SW08	F51154-6	41SD11	F51154-22
41SW09	F51154-7	49SS02	F51154-23
41SW10	F51154-8	49SS03	F51154-24
41SD08	F51154-9	49SS04	F51154-25
41SD09	F51154-10	49SS05	F51154-26
41SD10	F51154-11	59SS06	F51154-27
LFSD01	F51154-15	59SS07	F51154-28
TMSD01	F51154-16	59SS08	F51154-29
LFSW01	F51154-17	59SS09	F51154-30
APSD01	F51154-18	59SS10	F51154-31
TMSW01	F51154-20	TMSS05	F51154-32

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

9/25/07
Date

RFAAP VALIDATION REPORT
CHLORINATED HERBICIDES REVIEW
SDG F51154

I-Holding Times

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, chlorinated herbicides compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. For solid samples, chlorinated herbicides compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous and solid samples were collected on 07/18/07 and 07/19/07. For aqueous samples collected 07/18/07 and 07/19/07, the herbicides were extracted on 07/24/07 and analyzed on 07/25/07. For solid samples collected 07/18/07 and 07/19/07, the herbicides were extracted on 07/24/07 and analyzed on 07/27/07 and 07/28/07. All criteria were met. No qualifiers were applied.

II-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The DoD QSM specifies that the percent relative standard deviation (%RSD) for a 5-point standard calibration should be ≤20% for each target compound.

- No initial calibration was provided for MCPP and MCPA on instrument GC-GG. During discussions with the laboratory, they indicated that they perform a daily single point calibration rather than a five point calibration. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), TMSW01 (F51154-20), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this single point calibration.

- For initial calibration performed on 07/25/07 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), TMSW01 (F51154-20), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this initial calibration.

III-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration establishes the response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The DoD QSM specifies that the percent difference (%D) between the initial calibration CF and the continuing calibration CF must be ≤20%.

- A single point calibration was provided for MCPP and MCPA on instrument GC-GG for 07/25/07 run. The calibration standard indicated adequate response for MCPP and MCPA. However, since a five point calibration was not performed, %D calculation could not be verified. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), TMSW01 (F51154-20), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this single point calibration.

- For continuing calibration performed on 07/25/07 @11:38 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this continuing calibration.

- For continuing calibration performed on 07/25/07 @17:37 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 07/25/07 @19:25 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 07/27/07 @12:05 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), and 49SS04 (F51154-25) apply to this continuing calibration.

- For continuing calibration performed on 07/27/07 @18:56 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this continuing calibration.

- For continuing calibration performed on 07/27/07 @23:27 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 49SS02 (F51154-23), 49SS03 (F51154-24) apply to this continuing calibration.

- For continuing calibration performed on 07/28/07 @02:08 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

IV-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field or laboratory activities. No contaminants should be detected in any of the associated blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are qualified "B" if the concentration of the analyte is ≤ five times (5x) the absolute maximum blank concentration. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
07/25/07	OP7755-MB	All target compounds <½MRL	NA	NA	None
09/10/07	RB083007	All target compounds <½MRL	NA	NA	None
Analysis Date	**QC Blank ID**	**Compound**	**Max Conc. µg/kg**	**Action Level µg/kg**	**B qualified samples**
07/27/07	OP7756-MB	All target compounds <½MRL	NA	NA	None
07/25/07	RB071807	All target compounds <½MRL	NA	NA	None
08/03/07	072407R	All target compounds <½MRL	NA	NA	None
08/03/07	072507R	All target compounds <½MRL	NA	NA	None

V-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. Spike recoveries must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Control Limit: 2,4-DCAA (34-179%)
Solid Control Limit: 2,4-DCAA (34-179%)

- For sample 49SS02 (F51154-23), surrogate 2,4-DCAA was above criteria limits due to double spiking (lab error). The surrogate adjusted (145%) and within criteria. No qualifiers were applied based upon this outlier.

- For sample 49SS03 (F51154-24), surrogate 2,4-DCAA was above criteria limits due to double spiking (lab error). The surrogate adjusted (137%) and within criteria. No qualifiers were applied based upon this outlier.

- For sample 59SS10 (F51154-31), surrogate 2,4-DCAA (338%) was above criteria limits. The sample was non-detect for all target compounds; therefore, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met.

VI-Laboratory Control Samples
Data for laboratory control samples (LCS) are generated to determine long-term precision and accuracy of the analytical method. Percent recoveries must be within the specified control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-8 of the DoD QSM (DoD, 2006). DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP7755-BS was used as the aqueous LCS for the 07/25/07 run. Dinoseb (98%) was above DoD QSM criteria and within laboratory criteria. All samples were non-detect for dinoseb; therefore, no qualifiers were applied based upon this outlier. All other herbicides were within criteria. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP7756-BS was used as the solid LCS for the 07/27/07 run. Dicamba (150%) and dinoseb (55%) were above DoD QSM criteria and/or laboratory criteria. All samples were non-detect for dinoseb; therefore, no qualifiers were applied based upon this outlier. Dicamba was qualified estimated bias high "K" for detects and no qualifier for non-detects based upon the high recovery. All other herbicides were within criteria. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-8 of the DoD QSM (DoD, 2006). DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample LFSW01 (F51154-17) was used for the aqueous MS/MSD analysis on 07/25/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample TMSS05 (F51154-32) was used as the solid MS/MSD for the 07/27/07 run. 2,4-D (142%), 2,4,5-TP (149%; RPD=30%), dinoseb (RPD=40%), and dalapon (147%) were above DoD QSM criteria and/or laboratory criteria. All samples were non-detect for 2,4-D, 2,4,5-TP, dinoseb, and dalapon; therefore, no qualifiers were applied based upon these outliers. All other herbicides were within criteria. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were qualified because of blank contamination (B-qualified) or were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair LFSW01 (F51154-17) and TMSW01 (F51154-20) was collected for chlorinated herbicides. All chlorinated herbicides target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for chlorinated herbicides. All chlorinated herbicides target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for chlorinated herbicides. All chlorinated herbicides target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. Percent difference (%D) between the calculated value and the reported value must be within 10%. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL is qualified as estimated, "J." All criteria were met. No qualifiers were applied.

- The %D between the primary and secondary columns was within criteria for all detected chlorinated herbicides.

Sample: LFSW01MS (F51154-17MS), 2,4-DB

Conc. µg/L = (Amt * DF * Vt) / (CF * Vo)

where: Amt = the response on column (ng/mL) of the sample
CF = Calibration Factor (from initial calibration)
Vt = volume of final extract (mL)
DF = dilution factor
Vo = volume of the sample extracted (mL)

Conc. µg/L = (1734556 ng/mL * 1 * 10 mL) / (4558* 1000 mL)
= 3.8 ng/mL = 3.8 µg/L

Reported Conc. = 3.8 µg/L
%D = 0.0%
Values were within 10% difference

Sample: 49SS03 (F51154-24), 2,4-DB

Conc. µg/kg = (Amt * Ve * DF) / (CF * Ws * D)

where: Amt = the response on column (µg/mL) of the sample
CF = Calibration Factor (from initial calibration)
Ve = Final Volume of extract (mL)
DF = Dilution factor
W(s) = Weight of sample in grams.
D = Percent dry weight (100 - % moisture in sample)/100

Conc. µg/kg = (1158430 * 10 * 1) / (4558* 30.0 * 0.920) = 92.1 µg/kg

Reported value = 92.1 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

A (Dioxins) = MDL is based upon the signal-to-noise measurement.

B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics and Dioxins) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

D (Organics) = Indicates sample was analyzed at a dilution.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

E (Dioxins) = Reported value is estimated because of the presence of ether interferences.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/F ions is outside accepted ranges. The detected PCDD/F is reported as an estimated maximum possible concentration (EMPC).

I (Dioxins) = Reported value is estimated because of the incorrect isotope rations were obtained.

J (All) = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, (2) estimating a concentration <MRL and ≥ MDL, or estimating a concentration below the calibration range.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

U (All) = ND = BQL = Not detected. The associated number indicates the compound reporting limit for the sample.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG36347.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36347.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND UJ	50		ug/l	
94-74-6	MCPA	ND UJ	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GC36348.D

For I Op

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36348.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND UJ	50		ug/l	
94-74-6	MCPA	ND UJ	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	109%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36349.D

Form I Cy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36349.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND VT	50		ug/l	
94-74-6	MCPA	ND VT	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	104%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36366.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36366.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	90	36	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	36	32	ug/kg	
93-76-5	2,4,5-T	ND	18	9.0	ug/kg	
1918-00-9	Dicamba	ND	18	14	ug/kg	
88-85-7	Dinoseb	ND	18	12	ug/kg	
75-99-0	Dalapon	ND	90	63	ug/kg	
120-36-5	Dichloroprop	ND	90	24	ug/kg	
94-82-6	2,4-DB	ND	180	150	ug/kg	
93-65-2	MCPP	ND UJ	450		ug/kg	
94-74-6	MCPA	ND UJ	450		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	87%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36367.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36367.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.1	4.0	ug/kg	
1918-00-9	Dicamba	ND	8.1	6.1	ug/kg	
88-85-7	Dinoseb	ND	8.1	5.3	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	81	66	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	85%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36368.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36368.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	42	17	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	17	15	ug/kg	
93-76-5	2,4,5-T	ND	8.4	4.2	ug/kg	
1918-00-9	Dicamba	ND	8.4	6.3	ug/kg	
88-85-7	Dinoseb	ND	8.4	5.5	ug/kg	
75-99-0	Dalapon	ND	42	29	ug/kg	
120-36-5	Dichloroprop	ND	42	11	ug/kg	
94-82-6	2,4-DB	ND	84	69	ug/kg	
93-65-2	MCPP	ND UJ	210		ug/kg	
94-74-6	MCPA	ND UJ	210		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36369.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36369.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	58	23	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	23	20	ug/kg	
93-76-5	2,4,5-T	ND	12	5.8	ug/kg	
1918-00-9	Dicamba	ND	12	8.6	ug/kg	
88-85-7	Dinoseb	ND	12	7.5	ug/kg	
75-99-0	Dalapon	ND	58	40	ug/kg	
120-36-5	Dichloroprop	ND	58	16	ug/kg	
94-82-6	2,4-DB	ND	120	94	ug/kg	
93-65-2	MCPP	ND VJ	290		ug/kg	
94-74-6	MCPA	ND VJ	290		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36370.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36370.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	51	21	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	21	18	ug/kg	
93-76-5	2,4,5-T	ND	10	5.1	ug/kg	
1918-00-9	Dicamba	ND	10	7.7	ug/kg	
88-85-7	Dinoseb	ND	10	6.7	ug/kg	
75-99-0	Dalapon	ND	51	36	ug/kg	
120-36-5	Dichloroprop	ND	51	14	ug/kg	
94-82-6	2,4-DB	ND	100	84	ug/kg	
93-65-2	MCPP	ND UJ	260		ug/kg	
94-74-6	MCPA	ND UJ	260		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	62%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36351.D

For I Cor

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36351.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND UJ	50		ug/l	
94-74-6	MCPA	ND UJ	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	108%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36371.D

Form I OR4

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36371.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	14.5 K	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	113%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36352.D

Form I GC

Accutest Laboratories

Report of Analysis

3.20

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-20	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36352.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND VJ	50		ug/l	
94-74-6	MCPA	ND VJ	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	146%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36372.D

Run I 08

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36372.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	111%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36387.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36387.D	1	07/28/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.4	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	10	ug/kg	
94-82-6	2,4-DB	ND	74	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	145% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36388.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36388.D	1	07/28/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	92.1	72	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	137% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36373.D

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Report of Analysis

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Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36373.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	109%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36376.D

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Accutest Laboratories

Report of Analysis

3.2.6 3

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36376.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.8	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	78	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	91%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36377.D

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Report of Analysis

3.2.7

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36377.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	151%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36378.D

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Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36378.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	143%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36379.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.5	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.5	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.5	4.9	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	10	ug/kg	
94-82-6	2,4-DB	ND	75	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	79%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36380.D

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Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36380.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	35	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.0	3.5	ug/kg	
1918-00-9	Dicamba	ND	7.0	5.3	ug/kg	
88-85-7	Dinoseb	ND	7.0	4.6	ug/kg	
75-99-0	Dalapon	ND	35	25	ug/kg	
120-36-5	Dichloroprop	ND	35	9.5	ug/kg	
94-82-6	2,4-DB	ND	70	57	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	134%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36381.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36381.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	35	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.0	3.5	ug/kg	
1918-00-9	Dicamba	ND	7.0	5.2	ug/kg	
88-85-7	Dinoseb	ND	7.0	4.5	ug/kg	
75-99-0	Dalapon	ND	35	24	ug/kg	
120-36-5	Dichloroprop	ND	35	9.4	ug/kg	
94-82-6	2,4-DB	ND	70	57	ug/kg	
93-65-2	MCPP	ND UJ	170		ug/kg	
94-74-6	MCPA	ND UJ	170		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	338% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36382.D

Form I Copy

Accutest Laboratories

Report of Analysis

3.23

3

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36382.D	1	07/27/07	ATX	07/24/07	T:OP7756	T:GGG1136
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result		RL	MDL	Units	Q
94-75-7	2,4-D	ND		38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND		15	13	ug/kg	
93-76-5	2,4,5-T	ND		7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND		7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND		7.7	5.0	ug/kg	
75-99-0	Dalapon	ND		38	27	ug/kg	
120-36-5	Dichloroprop	ND		38	10	ug/kg	
94-82-6	2,4-DB	ND		77	63	ug/kg	
93-65-2	MCPP	ND	UJ	190		ug/kg	
94-74-6	MCPA	ND	UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	174%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36350.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8151 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36350.D	1	07/25/07	ATX	07/24/07	T:OP7755	T:GGG1135
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND	50		ug/l	
94-74-6	MCPA	ND	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	92%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals
Accutest Laboratories, Inc., SDG F51154

DATE: September 25, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. Aqueous samples were analyzed for target analyte list (TAL) metals using USEPA SW-846 3010A/6010B for ICP metals and SW-846 7470A for mercury. Solid samples were analyzed for target analyte list (TAL) metals using USEPA SW-846 3050B/6010B for ICP metals and SW-846 7471A for mercury. A total of five aqueous samples and seventeen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
41SW08	F51154-6	41SD11	F51154-22
41SW09	F51154-7	49SS02	F51154-23
41SW10	F51154-8	49SS03	F51154-24
41SD08	F51154-9	49SS04	F51154-25
41SD09	F51154-10	49SS05	F51154-26
41SD10	F51154-11	59SS06	F51154-27
LFSD01	F51154-15	59SS07	F51154-28
TMSD01	F51154-16	59SS08	F51154-29
LFSW01	F51154-17	59SS09	F51154-30
APSD01	F51154-18	59SS10	F51154-31
TMSW01	F51154-20	TMSS05	F51154-32

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
	X	ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
	X	Laboratory Sample Duplicate
X		Matrix Spike and Spike Duplicate
X		ICP Serial Dilution
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

9/25/07
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F51154

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: For aqueous matrices, the samples are shipped cool @4°C±2°C and preserved to pH<2 with HNO_3 with a maximum holding time is 180 days for ICP metals and 28 days for mercury. For solid matrices, the samples are shipped cool @4°C±2°C with a maximum holding time is 180 days for ICP metals and 28 days for mercury.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: Samples were collected 07/18/07 and 07/19/07 for metals analysis. For aqueous samples collected 07/18/07 and 07/19/07, they were digested on 07/26/07 and analyzed on 07/27/07 for ICP metals. For solid samples collected 07/18/07 and 07/19/07, they were digested on 07/25/07 and 07/26/07 and analyzed on 07/25/07, 07/26/07, and 07/27/07 (Mn & Zn) for ICP metals. For aqueous samples collected 07/18/07 and 07/19/07, they were digested on 07/25/07 and analyzed on 07/25/07 for mercury. For solid samples collected 07/18/07 and 07/19/07, they were digested on 07/26/07 and analyzed on 07/26/07 for mercury (two runs). All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL) 3 – standards (r≥0.995) ICV/CCV (90-110%) (DoD QSM 90-110%) MRL (70-130%) (DoD QSM 80-120%) High Std. (95-105%)	Hg:	1 – blank (DoD QSM <½ MRL) 5 – standards (r≥0.995) ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%) MRL (80-120%) (DoD QSM 80-120%) High Std. (95-105%)

- The aqueous samples were analyzed for ICP metals on 07/27/07. The solid samples were analyzed for ICP metals on 07/25/07, 07/26/07, and 07/27/07 (Mn & Zn). Mercury was analyzed for the aqueous samples on 07/25/07 with a correlation coefficient of 0.9998. Mercury was analyzed for the solid samples on 07/26/07 with a correlation coefficient of 0.9998. Mercury was analyzed for the solid samples on 07/26/07 (second run) with a correlation coefficient of 0.9991. For 07/26/07 ICP run, zinc (CCV5=110.5%) was outside criteria; however, no samples were bracketed by this CCV for zinc. No qualifiers were applied based upon this outlier. For 07/27/07 ICP run, zinc (CCV14=88.5% and CCV18=89.5%) were outside criteria; however, no samples were bracketed by these CCVs for zinc. No qualifiers were applied based upon these outliers. All other ICV/CCV/High Standard criteria were met for all other metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL (µg/L)	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
07/25/07	Hg	1.0	65.0%	41SW08, 41SW09, 41SW10, LFSW01, TMSW01	L, UL
07/26/07	ICP-Al	200	71.0%	41SW08, 41SW09, 41SW10, TMSW01	L, UL
07/26/07	ICP-As	10	121%	None	K
07/26/07	ICP-Pb	10	126%	TMSW01	K
07/26/07	ICP-Se	10	126%	None	K
Analysis Date	**Analysis**	**MRL (mg/kg)**	**MRL %Recovery**	**Qualified samples @ <2xMRL**	**Validation Qualifiers**
07/25/07	ICP-Sb	3.0	32.0%	41SD08, 41SD09, 41SD10, 41SD11, 49SS02, 49SS03, 49SS04, 49SS05, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10, APSD01, LFSD01, TMSD01, TMSS05	L, UL
07/25/07	ICP-As	0.4	123%	None	K
07/25/07	ICP-Pb	5.0	130%	41SD08, 41SD09, 41SD10, 49SS04, 49SS05, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10, TMSS05	K
07/25/07	ICP-Se	5.0	130%; 122%	41SD08, 41SD09, 41SD10, 41SD11, 49SS02, 49SS03, 49SS04, 49SS05, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10, APSD01, LFSD01, TMSD01, TMSS05	K
07/25/07	ICP-Tl	0.50	79.0%	41SD08, 41SD09, 41SD10, 49SS02, 49SS03, 49SS04, 49SS05, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10, APSD01, LFSD01, TMSD01, TMSS05	L, UL
07/27/07	Mn & Zn	0.74 & 1.0	All within criteria	None	None
07/26/07	Hg	0.083	48.0%	41SD08, 41SD09, 41SD10, 41SD11, 49SS02, 49SS04, 49SS05, 59SS06, 59SS07, APSD01, LFSD01, TMSD01	L, UL
07/26/07	Hg	0.083	All within criteria	None	None

III-Blanks

Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10 for ICP and Hg = 12) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. µg/L	Action Level µg/L	B qualified samples
07/26/07	Aluminum	ICB/CCBs	39.0J	195	41SW09, TMSW01
07/26/07	Antimony	ICB/CCBs	7.3	36.5	None
07/26/07	Copper	ICB/CCBs	1.9J	9.5	41SW10
07/26/07	Iron	ICB/CCBs	30.7J	154	41SW08, 41SW10
07/26/07	Magnesium	ICB/CCBs	10.5J	52.5	None
07/26/07	Nickel	ICB/CCBs	4.2J	21.0	41SW08, 41SW10
07/26/07	Potassium	ICB/CCBs	1740J	8700	41SW08, 41SW09, 41SW10, LFSW01, TMSW01
07/26/07	Selenium	ICB/CCBs	5.4J	27.0	None
07/26/07	Sodium	ICB/CCBs	2080J	10400	None
07/26/07	Thallium	ICB/CCBs	9.2J	46.0	None
07/25/07	Mercury	ICB/CCBs	0.19J	0.95	None
07/25/07	Mercury	MP12560-MB	<2*MDL	NA	None
07/27/07	Iron	MP12581-MB	25.7J	129	41SW08, 41SW10
07/27/07	Potassium	MP12581-MB	1700J	8500	41SW08, 41SW09, 41SW10, LFSW01, TMSW01
07/27/07	Sodium	MP12581-MB	2020J	10100	None
09/17/07	Potassium	RB083007	1740J	8700	41SW08, 41SW09, 41SW10, LFSW01, TMSW01
09/17/07	Sodium	RB083007	1860J	9300	None
09/05/07	Mercury	RB083007	<2*MDL	NA	None
Analysis Date	**Analysis**	**QC Blank ID**	**Max Conc. mg/kg**	**Action Level mg/kg**	**B qualified samples**
07/25/07	Antimony	ICB/CCBs	0.62	3.1	41SD09, 41SD10, 41SD11, 49SS02, 49SS03, 49SS04, 49SS05, 59SS06, 59SS07, 59SS08, 59SS09, 59SS10, APSD01, LFSD01, TMSD01, TMSS05
07/25/07	Copper	ICB/CCBs	0.22J	1.1	None
07/25/07	Lead	ICB/CCBs	0.43J	2.2	None
07/25/07	Nickel	ICB/CCBs	0.76J	3.8	None
07/25/07	Potassium	ICB/CCBs	171J	855	41SD08, 41SD09, 41SD10, 49SS02, 49SS03, 49SS05, 59SS06, 59SS07, 59SS09, 59SS10, LFSD01, TMSD01, TMSS05
07/25/07	Selenium	ICB/CCBs	0.52J	2.6	41SD08, 41SD10, 59SS09
07/25/07	Sodium	ICB/CCBs	190J	950	41SD08, 41SD09, 41SD10, 49SS02, 49SS03, 59SS06, 59SS07, 59SS08, 59SS10, APSD01, LFSD01, TMSD01
07/25/07	Thallium	ICB/CCBs	0.59J	3.0	41SD11
07/25/07	Zinc	ICB/CCBs	0.27J	1.4	None
07/27/07	Mn & Zn	ICB/CCBs	<2*MDL	NA	None
07/26/07	Mercury	ICB/CCBs	<2*MDL	NA	None
07/26/07	Mercury	ICB/CCBs	0.0208J	0.10	41SD08, 41SD09, 41SD10, 41SD11, 49SS04, 49SS05, 59SS06, 59SS07, APSD01, LFSD01, TMSD01
07/25/07	Lead	MP12567-MB	0.25J	1.3	None
07/25/07	Potassium	MP12567-MB	85.1J	426	59SS09
07/25/07	Sodium	MP12567-MB	112	560	41SD08, 41SD09, 41SD10, 49SS02, 49SS03, 59SS06, 59SS07, 59SS08, APSD01, LFSD01, TMSD01
07/25/07	Thallium	MP12567-MB	0.61J	3.1	41SD11
07/26/07	Mercury	MP12573-MB	0.016	0.080	41SD08, 41SD09, 41SD10, 41SD11, 49SS04, 49SS05, 59SS06, 59SS07, APSD01, LFSD01, TMSD01
07/26/07	Mercury	MP12574-MB	<2*MDL	NA	None
07/26/07	Copper	MP12577-MB	0.14J	0.70	None
07/26/07	Potassium	MP12577-MB	83.8J	419	59SS10
07/26/07	Sodium	MP12577-MB	113J	565	59SS10
07/26/07	Thallium	MP12577-MB	0.51J	2.6	None

Table 3 Blank Contamination Analysis Summary, Continued

Analysis Date	Analysis	QC Blank ID	Max Conc. mg/kg	Action Level mg/kg	B qualified samples
07/27/07	Potassium	RB071807	177J	885	41SD08, 41SD09, 41SD10, 41SD11, LFSD01, TMSD01
07/27/07	Sodium	RB071807	206J	1030	41SD08, 41SD09, 41SD10, APSD01, LFSD01, TMSD01
07/27/07	Zinc	RB071807	0.19J	0.95	None
07/25/07	Mercury	RB071807	<2*MDL	NA	None
07/31/07	Lead	072407R	0.21J	1.1	None
07/31/07	Magnesium	072407R	0.53J	2.7	None
07/31/07	Potassium	072407R	176J	880	49SS02, 49SS03, 49SS05, 59SS06, 59SS07, 59SS09, 59SS10, TMSS05
07/28/07	Sodium	072407R	192J	960	49SS02, 49SS03, 59SS06, 59SS07, 59SS08, 59SS10
07/28/07	Mercury	072407R	<2*MDL	NA	None
07/28/07	Potassium	072507R	177J	885	49SS02, 49SS03, 49SS05, 59SS06, 59SS07, 59SS09, 59SS10, TMSS05
07/28/07	Sodium	072507R	213J	1065	49SS02, 49SS03, 59SS06, 59SS07, 59SS08, 59SS10
07/28/07	Mercury	072507R	<2*MDL	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".

IV-ICP Interference Check Sample (ICS)

The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- All criteria were met. No qualifiers were applied.

V-Laboratory Control Samples (LCS)

The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS results must fall within the control limits. The DoD QSM aqueous LCS recovery limits are specified in Table D-18 of the DoD QSM (DoD, 2006). The DoD QSM solid LCS recovery limits are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12581-BS was used as aqueous LCS for ICP metals analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample MP12567-BS was used as solid LCS for ICP metals analysis on 07/25/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), and 59SS09 (F51154-30) apply to this LCS.

- Sample MP12577-BS was used as solid LCS for ICP metals analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 59SS10 (F51154-31) and TMSS05 (F51154-32) apply to this LCS.

- Sample MP12560-BS was used as aqueous LCS for mercury analysis performed on 07/25/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample MP12573-BS was used as solid LCS for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), and 59SS07 (F51154-28) apply to this LCS.

- Sample MP12574-BS was used as solid LCS for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

VI-Laboratory Duplicate Sample Analysis

Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Sample LFSW01 (F51154-17) was used as aqueous laboratory duplicate for ICP metals analysis on 07/27/07. Chromium (200%), manganese (23.7%), nickel (200%), and vanadium (200%) were above criteria. Chromium, manganese, nickel, and vanadium were outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon this outlier. All other metals were within criteria. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this laboratory duplicate.

- Sample F51150-6 was used as soil laboratory duplicate for ICP metals analysis on 07/25/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), and 59SS09 (F51154-30) apply to this laboratory duplicate.

- Sample 59SS10 (F51154-31) was used as solid laboratory duplicate for ICP metals analysis on 07/26/07. Silver (200%) was above criteria. Silver was outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon this outlier. All other metals were within criteria. No qualifiers were applied. Samples 59SS10 (F51154-31) and TMSS05 (F51154-32) apply to this laboratory duplicate.

- Sample LFSW01 (F51154-17) was used as aqueous laboratory duplicate for mercury analysis on 06/25/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this laboratory duplicate.

- Sample F51240-2 was used as soil laboratory duplicate for mercury analysis on 07/26/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), and 59SS07 (F51154-28) apply to this laboratory duplicate.

- Sample 59SS08 (F51154-29) was used as solid laboratory duplicate for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this laboratory duplicate.

VII-Matrix Spike/Spike Duplicate

MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-18 of the DoD QSM (DoD, 2006). DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Sample LFSW01 (F51154-17) was used as aqueous laboratory MS/MSD for ICP metals analysis on 07/27/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample F51150-6 was used as laboratory solid MS/MSD for ICP metals analysis on 07/25/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), and 59SS09 (F51154-30) apply to this MS/MSD.

- Sample 59SS10 (F51154-31) was used as solid laboratory MS/MSD for ICP metals analysis on 07/26/07. Aluminum (138%), antimony (17.5%, 12.5%; RPD=31.0%), arsenic (78.4%, 74.5%), cadmium (78.9%), calcium (79.6%), chromium (55.5%, 64.1%), iron (33.9%), manganese (-23%, 1064%; RPD=57.1%), nickel (79.3%), potassium (78.8%, 79.6%), selenium (77.3%, 71.8%), silver (78.9%), sodium (79.7%), thallium (75.9%), and vanadium (75.0%, 75.3%) were outside criteria. The sample concentration was >4 times the spike added for iron and manganese; therefore, no qualifiers were applied based upon these outliers. Antimony, arsenic, cadmium, calcium, chromium, nickel, potassium, selenium, silver, sodium, thallium, and vanadium were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Aluminum was qualified bias high "K" for detects and no qualifier for non-detects based upon the high recovery. All other metals were within criteria. Samples 59SS10 (F51154-31) and TMSS05 (F51154-32) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used as laboratory aqueous MS/MSD for mercury analysis on 06/25/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample F51240-2 was used as solid MS/MSD for mercury analysis on 07/26/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), and 59SS07 (F51154-28) apply to this MS/MSD.

- Sample 59SS08 (F51154-29) was used as solid MS/MSD for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

VIII-ICP Serial Dilution
An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- The serial dilution for ICP metals was analyzed on 07/27/07 using aqueous sample LFSW01 (F51154-17). Lead (100%), potassium (147%), sodium (29.7%), and zinc (100%) were outside of criteria limits. Sample concentrations were <50 times MDL for lead, sodium, and zinc; therefore, no qualifiers were applied based upon these outliers. For potassium, all detects were qualified estimated "J" and non-detects no qualifier based upon this outlier. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this serial dilution.

- The serial dilution for total ICP metals was analyzed using solid sample F51150-6 on 07/25/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), and 59SS09 (F51154-30) apply to this serial dilution.

- The serial dilution for ICP metals was analyzed on 07/26/07 using solid sample 59SS10 (F51154-31). Antimony (100%), arsenic (15.2%), beryllium (17.9%), calcium (15.4%), chromium (13.5%), cobalt (16.4%), iron (14.5%), lead (19.0%), magnesium (14.3%), manganese (16.5%), nickel (13.5%), potassium (83.6%), selenium (24.4%), sodium (532%), vanadium (11.8%), and zinc (15.6%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, beryllium, selenium, and sodium; therefore, no qualifiers were applied based upon these outliers. For arsenic, calcium, chromium, cobalt, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples 59SS10 (F51154-31) and TMSS05 (F51154-32) apply to this serial dilution.

- The serial dilution for mercury was analyzed using aqueous sample LFSW01 (F51154-17) on 07/25/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample F51240-2 on 07/26/07. This sample is not a RFAAP site sample; therefore, it was not evaluated. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), and 59SS07 (F51154-28) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample 59SS08 (F51154-29) on 07/26/07. Mercury (34.5%) was above criteria. Sample concentration was <50 times MDL for mercury; therefore, no qualifiers were applied based upon this outlier. Samples 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this serial dilution.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair LFSW01 (F51154-17) and TMSW01 (F51154-20) was collected for TAL metals. All detected TAL metals found in the sample and its duplicate pair and associated %RPD are noted in **Table 4**. All other TAL metals target compounds were non-detect. Manganese (86.2%) and zinc (69.5%) were above criteria due to low concentration levels detected below the MRL. Manganese and zinc were qualified estimated "J" for the original and duplicate pair samples based upon these outliers. For all other metals, all criteria were met.

Table 4 Field Precision Hits Analysis Summary for TAL Metals for Duplicate Pair LFSW01 (F51154-17) and TMSW01 (F51154-20)

Compound	Original Sample (µg/L)	Duplicate Pair (µg/L)	%RPD
Aluminum	18.0U	50.7J	NA
Lead	3.4U	3.4J	NA
Magnesium	30100	30900	2.6
Manganese	3.3J	8.3J	86.2
Potassium	4320J	4450J	3.0
Sodium	24100	24800	2.9
Barium	103J	108J	4.7
Chromium	0.6U	0.99J	NA
Zinc	7.6J	15.7J	69.5
Calcium	79600	81600	2.5

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
U = Non-detect as <MDL.
NA = Not Applicable

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for TAL metals. All detected TAL metals found in the sample and its duplicate pair and associated %RPD are noted in **Table 5**. All other TAL metals target compounds were non-detect. Barium (49.3%) was above criteria probably due to sample non-homogeneity. Mercury (51.2%) was above criteria due to low concentration levels detected below the MRL. Barium and mercury were qualified estimated "J" for the original and duplicate pair samples based upon these outliers. For all other metals, all criteria were met.

Table 5 Field Precision Hits Analysis Summary for TAL Metals for Duplicate Pair LFSD01 (F51154-15) and TMSD01 (F51154-16)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	10100	8710	14.8
Iron	29000	23200	22.2
Lead	195	143	30.8
Magnesium	2970	2910	2.0
Nickel	11.7	9.7	18.7
Potassium	1180	996	16.9
Silver	0.076U	0.081J	NA
Sodium	222J	200J	10.4
Antimony	1.8J	1.3J	32.3
Arsenic	3.4	2.9	15.9
Barium	167	101	49.3
Beryllium	1.1	0.94	15.7
Chromium	24.9	18.5	29.5
Cobalt	11.8	9.1	25.8
Copper	22.1	19.9	10.5
Vanadium	28	22	24.0
Calcium	2480	3100	22.2
Selenium	9.6	7.5	24.6
Manganese	1600	1190	29.4
Zinc	682	512	28.5
Mercury	0.076J	0.045J	51.2

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
U = Non-detect as <MDL.
NA = Not Applicable

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for TAL metals. All detected TAL metals found in the sample and its duplicate pair and associated %RPD are noted in **Table 6**. All other TAL metals target compounds were non-detect. All criteria were met. No qualifiers were applied.

Table 6 Field Precision Hits Analysis Summary for TAL Metals for Duplicate Pair 49SS05 (F51154-26) and TMSS05 (F51154-32)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	15500	15900	2.6
Iron	17900	18300	2.2
Lead	20.5	20.3	1.0
Magnesium	863	872	1.0
Nickel	7.4	7.9	6.5
Potassium	776	791	1.9
Antimony	0.73J	0.89J	19.8
Arsenic	3.2	3.5	9.0
Barium	69.8	67.0	4.1
Beryllium	0.61	0.59	3.3
Chromium	14.9	17.6	16.6
Cobalt	3.7	4.0	7.8
Copper	12.8	13.0	1.6
Vanadium	37.7	37.6	0.3
Zinc	44.5	46.2	3.8
Calcium	1450	1420	2.1
Selenium	6.4	6.6	3.1
Manganese	358	356	0.6
Mercury	0.072J	0.093J	25.5

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".

X-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

ICP Sample: 41SW08 (F51154-6), Barium

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (64.9 µg/L)*(50 mL)*(1) / (50 mL) = 64.9 µg/L

Reported concentration = 64.9 µg/L
%D = 0.0%
Values were within 10% difference.

CVAA Sample: LFSW01MS (F51154-17MS), Mercury

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (2.95 µg/L)*(50 mL)*(1) / (50 mL) = 3.0 µg/L

Reported concentration = 3.0 µg/L
%D = 0.0%.
Values were within 10% difference.

ICP Sample: 41SD08 (F51154-9), Barium

Conc. (mg/kg) = {(conc. µg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(985.6 µg/L)*(0.050 L)*(1)} / {(1.00 g)*(0.3690)} = 134 µg/g = 134 mg/kg

Reported concentration = 134 mg/kg
%D = 0.0%
Values were within 10% difference.

Hg Sample: 41SD08 (F51154-9), Mercury

Conc. (mg/kg) = {(conc. µg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(0.471 µg/L)*(0.050 L)*(1)} / {(0.63 g)*(0.3690)} = 0.10 µg/g = 0.10 mg/kg

Reported concentration = 0.10 mg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	208 L	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	64.9 J J	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	50100	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.60 U	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	88.1 J B	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 U	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	23800	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	61.9	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U UL	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.2 J B	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	4300 J B	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	14300	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.1 J J	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	5.5 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	170 J B	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	62.6 J J	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	52700	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.60 U	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	15 U	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 U	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	28100	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	21.1	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U UL	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.0 U	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	4020 J B	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	15900	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.4 J J	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	6.7 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Only

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Report of Analysis

3.8
3

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	235 L	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	63.3 J J	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	53000	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.60 U	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.2 J B	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	52.7 J B	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 U	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	30200	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	39.5	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U UL	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.1 J B	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	4060 J B	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	16600	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.3 J J	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	2.6 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

3.3

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13300	27	3.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Antimony	0.72 U VL	8.1	0.72	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Arsenic	5.2	1.1	0.53	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Barium	134	27	0.68	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Beryllium	0.88	0.68	0.14	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cadmium	0.14 U	0.54	0.14	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Calcium	25600	680	7.7	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Chromium	15.5	1.4	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cobalt	10.4	6.8	0.14	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Copper	24.8	3.4	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Iron	18200	14	1.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Lead	20.1 K	14	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Magnesium	6440	680	1.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Manganese	299	2.0	0.081	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Mercury	0.10 J B	0.22	0.017	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [4]
Nickel	17.7	5.4	0.14	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Potassium	1890 B	1400	14	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Selenium	3.3 J B	14	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Silver	0.12 U	1.4	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Sodium	475 J B	1400	110	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Thallium [a]	1.2 U VL	5.6	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Vanadium	23.3	6.8	0.081	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Zinc	89.5	2.7	0.18	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Prep QC Batch: MP12567
(4) Prep QC Batch: MP12573

(a) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

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Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10000	12	1.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	1.4 J B	3.5	0.31	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	5.9	0.46	0.23	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	102	12	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.76	0.29	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.58 U	1.2	0.58	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	5590	290	3.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	13.6	0.58	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	13.4	2.9	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	20.0	1.4	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	24900	5.8	0.69	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	10.4 K	5.8	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	4900	290	0.43	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	854	4.3	0.17	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.030 J B	0.091	0.0072	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	24.0	2.3	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	939 B	580	5.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	7.7 K	5.8	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.052 U	0.58	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	173 J B	580	48	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [b]	0.52 U VL	2.3	0.52	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	15.4	2.9	0.035	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	81.5	1.2	0.075	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6170	13	1.4	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.50 J B	3.8	0.33	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	3.7	0.51	0.25	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	63.0	13	0.32	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.54	0.32	0.063	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium	0.063 U	0.25	0.063	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	10200	320	3.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	9.6	0.63	0.057	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	6.9	3.2	0.063	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	12.7	1.6	0.057	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	12500	6.3	0.76	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	15.4 K	6.3	0.13	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	3680	320	0.47	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	547	4.7	0.19	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.027 J B	0.093	0.0074	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	10.0	2.5	0.063	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	731 B	630	6.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	2.9 J B	6.3	0.13	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.072 J J	0.63	0.057	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	199 J B	630	52	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	0.60 U VL	2.5	0.60	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	12.1	3.2	0.038	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	57.9	1.3	0.082	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

for I only

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10100	17	1.9	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Antimony	1.8 J B	5.1	0.45	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Arsenic	3.4	0.68	0.33	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Barium	167 J	17	0.42	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Beryllium	1.1	0.42	0.085	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cadmium	0.085 U	0.34	0.085	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Calcium	2480	420	4.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Chromium	24.9	0.85	0.076	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cobalt	11.8	4.2	0.085	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Copper	22.1	2.1	0.076	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Iron	29000	8.5	1.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Lead	195	8.5	0.17	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Magnesium	2970	420	0.63	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Manganese	1600	6.3	0.25	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.076 J B	0.14	0.012	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [6]
Nickel	11.7	3.4	0.085	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Potassium	1180 B	850	8.5	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Selenium	9.6 K	8.5	0.17	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Silver	0.076 U	0.85	0.076	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Sodium	222 J B	850	70	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Thallium [a]	7.6 U VL	17	7.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Vanadium	28.0	4.2	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Zinc	682	8.5	0.55	mg/kg	5	07/25/07	07/27/07	RS	SW846 6010B [4]	SW846 3050B [5]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Instrument QC Batch: MA5883
(5) Prep QC Batch: MP12567
(6) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Form I only

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8710	15	1.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Antimony	1.3 J B	4.4	0.39	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Arsenic	2.9	0.59	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Barium	101 J	15	0.37	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Beryllium	0.94	0.37	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cadmium	0.073 U	0.29	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Calcium	3100	370	4.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Chromium	18.5	0.73	0.066	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cobalt	9.1	3.7	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Copper	19.9	1.8	0.066	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Iron	23200	7.3	0.88	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Lead	143	7.3	0.15	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Magnesium	2910	370	0.54	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Manganese	1190	5.5	0.22	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.045 J B	0.13	0.010	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [6]
Nickel	9.7	2.9	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Potassium	996 B	730	7.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Selenium	7.5 K	7.3	0.15	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Silver	0.081 J J	0.73	0.066	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Sodium	200 J B	730	60	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Thallium [a]	6.8 U VL	15	6.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Vanadium	22.0	3.7	0.044	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Zinc	512	7.3	0.48	mg/kg	5	07/25/07	07/27/07	RS	SW846 6010B [4]	SW846 3050B [5]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Instrument QC Batch: MA5883
(5) Prep QC Batch: MP12567
(6) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18 U	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	103 J J	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	79600	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.60 U	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	15 U	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 U	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	30100	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	3.3 J J	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U VL	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.0 U	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	4320 J B	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	24100	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.1 U	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	7.6 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
		Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8300	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Antimony	0.88 J B	3.3	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Arsenic	1.5	0.44	0.22	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Barium	132	11	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Beryllium	0.84	0.28	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cadmium	0.064 J J	0.22	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Calcium	1260	280	3.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Chromium	13.4	0.55	0.050	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Cobalt	10.1	2.8	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Copper	9.8	1.4	0.050	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Iron	19500	5.5	0.66	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Lead	125	5.5	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Magnesium	1810	280	0.41	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Manganese	1470	8.3	0.33	mg/kg	10	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.038 J B	0.093	0.0074	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [6]
Nickel	9.0	2.2	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Potassium	1060	550	5.5	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Selenium	6.4 K	5.5	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Silver	0.050 U	0.55	0.050	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Sodium	111 J B	550	46	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Thallium [a]	6.5 U VL	11	6.5	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Vanadium	19.1	2.8	0.033	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [5]
Zinc	504	11	0.72	mg/kg	10	07/25/07	07/27/07	RS	SW846 6010B [4]	SW846 3050B [5]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Instrument QC Batch: MA5883
(5) Prep QC Batch: MP12567
(6) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Corp

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-20	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	50.7 J B	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	108 J J	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	81600	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.99 J J	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	15 U	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 J K	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	30900	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	8.3 J J	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U VL	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.0 U	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	4450 J B	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	24800	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.1 U	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	15.7 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14300	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	1.1 J B	3.4	0.30	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	16.6	0.45	0.22	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	219	11	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	1.0	0.28	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium	0.056 U	0.23	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	20100	280	3.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	20.4	0.56	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	13.4	2.8	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	38.4	1.4	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	25900	5.6	0.68	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	59.3	5.6	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	12500	280	0.42	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	2800	17	0.68	mg/kg	20	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.056 J B	0.083	0.0067	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	13.4	2.3	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	1010 B	560	5.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	5.4 J K	5.6	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.051 U	0.56	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	2150	560	47	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	1.1 J B	2.2	0.52	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	33.0	2.8	0.034	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	108	1.1	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Form I Corr

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10300	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.86 J B	3.3	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	6.2	0.44	0.21	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	80.8	11	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.52	0.27	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium	0.055 U	0.22	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	997	270	3.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	13.5	0.55	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	3.2	2.7	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	17.6	1.4	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	13800	5.5	0.66	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	71.6	5.5	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	706	270	0.40	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	299	4.1	0.16	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.17 L	0.089	0.0071	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	5.8	2.2	0.055	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	597 B	550	5.5	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	5.2 J K	5.5	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.049 U	0.55	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	78.4 J B	550	45	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	5.2 U VL	11	5.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	25.6	2.7	0.033	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	56.5	1.1	0.071	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Bmw I Copy

Accutest Laboratories

Report of Analysis

3.2.4 3

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9220	10	1.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.63 J B	3.1	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	8.2	0.42	0.20	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	67.7	10	0.26	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.55	0.26	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.26 U	0.42	0.26	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	524	260	3.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	11.8	0.52	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	3.1	2.6	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	14.4	1.3	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	13800	5.2	0.63	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	50.3	5.2	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	518	260	0.39	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	293	3.9	0.16	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.31	0.086	0.0069	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	5.9	2.1	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	538 B	520	5.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	5.4 K	5.2	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.047 U	0.52	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	73.4 J B	520	43	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	4.8 U VL	10	4.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	24.3	2.6	0.031	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	45.8	1.0	0.068	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Cpy

Accutest Laboratories

Report of Analysis

3.2.5

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22700	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Antimony	1.5 J B	3.3	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Arsenic	2.3	0.44	0.21	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Barium	57.5	11	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Beryllium	0.69	0.27	0.054	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cadmium [a]	0.54 U	0.88	0.54	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Calcium	770	270	3.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Chromium	20.7	0.54	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cobalt	4.0	2.7	0.054	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Copper	15.9	1.4	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Iron	26900	5.4	0.65	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Lead	13.4 K	5.4	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Magnesium	1120	270	0.40	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Manganese	165	0.82	0.033	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Mercury	0.058 J B	0.092	0.0074	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [4]
Nickel	9.6	2.2	0.054	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Potassium	1060	540	5.4	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Selenium	9.4 K	5.4	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Silver	0.049 U	0.54	0.049	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Sodium	45 U	540	45	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Thallium [a]	13 U VL	22	13	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Vanadium	56.3	2.7	0.033	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Zinc	49.1	1.1	0.071	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Prep QC Batch: MP12567
(4) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I 03

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15500	12	1.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.73 J B	3.5	0.31	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	3.2	0.47	0.23	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	69.8	12	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.61	0.29	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.29 U	0.46	0.29	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	1450	290	3.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	14.9	0.58	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	3.7	2.9	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	12.8	1.5	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	17900	5.8	0.70	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	20.5 K	5.8	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	863	290	0.43	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	358	4.4	0.17	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.072 J B	0.087	0.0070	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	7.4	2.3	0.058	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	776 B	580	5.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	6.4 K	5.8	0.12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.052 U	0.58	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	48 U	580	48	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	5.2 U UL	12	5.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	37.7	2.9	0.035	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	44.5	1.2	0.076	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I rev

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13100	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	1.2 J B	3.2	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	2.9	0.43	0.21	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	62.8	11	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.61	0.27	0.053	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.53 U	0.84	0.53	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	2550	270	3.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	21.1	0.53	0.048	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	5.1	2.7	0.053	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	7.5	1.3	0.048	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	18500	5.3	0.64	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	17.0 K	5.3	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	1910	270	0.39	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	367	4.0	0.16	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.047 J B	0.082	0.0066	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	5.8	2.1	0.053	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	693 B	530	5.3	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	6.3 K	5.3	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.048 U	0.53	0.048	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	76.5 J B	530	44	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	4.8 U VL	11	4.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	35.8	2.7	0.032	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	34.3	1.1	0.069	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Corr

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300	10	1.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.73 J B	3.1	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	2.8	0.42	0.20	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	67.5	10	0.26	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.63	0.26	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.26 U	0.42	0.26	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	2270	260	3.0	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	14.3	0.52	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	5.5	2.6	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	7.7	1.3	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	15000	5.2	0.62	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	17.3 K	5.2	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	1640	260	0.38	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	473	3.9	0.16	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.027 J B	0.091	0.0073	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	6.2	2.1	0.052	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	735 B	520	5.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	5.0 J K	5.2	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.047 U	0.52	0.047	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	74.5 J B	520	43	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	4.8 U VL	10	4.8	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	30.5	2.6	0.031	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	33.2	1.0	0.068	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5877
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12573

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16200	11	1.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Antimony	0.98 J B	3.4	0.30	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Arsenic	4.4	0.45	0.22	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Barium	71.9	11	0.28	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Beryllium	0.63	0.28	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cadmium [a]	0.56 U	0.88	0.56	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Calcium	1100	280	3.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Chromium	18.8	0.56	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Cobalt	5.0	2.8	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Copper	10.5	1.4	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Iron	19700	5.6	0.67	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Lead	17.1 K	5.6	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Magnesium	1230	280	0.42	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Manganese	276	4.2	0.17	mg/kg	5	07/25/07	07/26/07	RS	SW846 6010B [3]	SW846 3050B [4]
Mercury	0.068 J J	0.081	0.0065	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [5]
Nickel	7.7	2.2	0.056	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Potassium	1070	560	5.6	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Selenium	7.0 K	5.6	0.11	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Silver	0.051 U	0.56	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Sodium	56.8 J B	560	46	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Thallium [a]	5.2 U VL	11	5.2	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Vanadium	39.3	2.8	0.034	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]
Zinc	44.9	1.1	0.073	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5876
(3) Instrument QC Batch: MA5878
(4) Prep QC Batch: MP12567
(5) Prep QC Batch: MP12574

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Area I Corp

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4430	10	1.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Antimony	0.39 J B	3.1	0.27	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Arsenic	5.6	0.41	0.20	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Barium	160	10	0.26	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Beryllium	0.85	0.26	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cadmium	0.051 U	0.20	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Calcium	718	260	2.9	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Chromium	7.5	0.51	0.046	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Cobalt	4.8	2.6	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Copper	15.3	1.3	0.046	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Iron	6660	5.1	0.61	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Lead	5.9 K	5.1	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Magnesium	410	260	0.38	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Manganese	104	0.77	0.031	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Mercury	0.40	0.086	0.0069	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [2]	SW846 7471A [4]
Nickel	8.5	2.0	0.051	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Potassium	441 J B	510	5.1	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Selenium	2.7 J B	5.1	0.10	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Silver	0.046 U	0.51	0.046	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Sodium	42 U	510	42	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Thallium [a]	12 U VL	20	12	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Vanadium	17.6	2.6	0.031	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]
Zinc	15.9	1.0	0.066	mg/kg	1	07/25/07	07/25/07	RS	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA5875
(2) Instrument QC Batch: MA5876
(3) Prep QC Batch: MP12567
(4) Prep QC Batch: MP12574

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5020 K	10	1.1	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.64 J B	3.1	0.27	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	24.1 J	0.41	0.20	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	99.7	10	0.26	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.85	0.26	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.051 U VL	0.20	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	730 J	260	2.9	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	9.5 J	0.51	0.046	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	3.6 J	2.6	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.6	1.3	0.046	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	9530 J	5.1	0.61	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	9.2 J	5.1	0.10	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	334 J	260	0.38	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	414 J	3.8	0.15	mg/kg	5	07/26/07	07/27/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.34	0.083	0.0066	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.6 J	2.0	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	431 J B	510	5.1	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	4.8 J K	5.1	0.10	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.046 U VL	0.51	0.046	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	69.8 J B	510	42	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	4.8 U VL	10	4.8	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	18.3 J	2.6	0.031	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	13.0 J	1.0	0.067	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5876
(2) Instrument QC Batch: MA5878
(3) Instrument QC Batch: MA5883
(4) Prep QC Batch: MP12574
(5) Prep QC Batch: MP12577

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
		Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15900 K	11	1.2	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.89 J B	3.4	0.30	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	3.5 J	0.45	0.22	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	67.0	11	0.28	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.59	0.28	0.057	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.057 U VL	0.23	0.057	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1420 J	280	3.2	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.6 J	0.57	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	4.0 J	2.8	0.057	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	13.0	1.4	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18300 J	5.7	0.68	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	20.3 J	5.7	0.11	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	872 J	280	0.42	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	356 J	4.2	0.17	mg/kg	5	07/26/07	07/27/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.093 J J	0.095	0.0076	mg/kg	1	07/26/07	07/26/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	7.9 J	2.3	0.057	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	791 B	570	5.7	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.6 K	5.7	0.11	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U VL	0.57	0.051	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	47 U VL	570	47	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	5.2 U VL	11	5.2	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	37.6 J	2.8	0.034	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	46.2 J	1.1	0.074	mg/kg	1	07/26/07	07/26/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5876
(2) Instrument QC Batch: MA5878
(3) Instrument QC Batch: MA5883
(4) Prep QC Batch: MP12574
(5) Prep QC Batch: MP12577

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Only

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18 U	200	18	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Antimony	3.4 U	6.0	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Arsenic	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Barium	5.0 U	200	5.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Calcium	42 U	1000	42	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Chromium	0.60 U	10	0.60	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Cobalt	1.0 U	50	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Iron	15 U	300	15	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Lead [a]	3.4 U	10	3.4	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Magnesium	4.3 U	5000	4.3	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Manganese	1.5 U	15	1.5	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Mercury	0.10 U	1.0	0.10	ug/l	1	07/25/07	07/25/07	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.0 U	40	1.0	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Potassium	1770 J J	10000	100	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Selenium	2.8 U	10	2.8	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Silver	0.90 U	10	0.90	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Sodium	2060 J J	10000	500	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Thallium	2.9 U	10	2.9	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Vanadium	1.1 U	50	1.1	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]
Zinc	1.9 J J	20	1.6	ug/l	1	07/26/07	07/27/07	RS	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5873
(2) Instrument QC Batch: MA5878
(3) Prep QC Batch: MP12560
(4) Prep QC Batch: MP12581

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F51154

DATE: September 26, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. Aqueous samples were analyzed for pesticides and PCBs using USEPA Method 3510C/8081A and 3510C/8082, respectively. Solid samples were analyzed for pesticides and PCBs using USEPA Method 3550B/8081A and 3550B/8082, respectively. A total of five aqueous samples and seventeen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
41SW08	F51154-6	41SD11	F51154-22
41SW09	F51154-7	49SS02	F51154-23
41SW10	F51154-8	49SS03	F51154-24
41SD08	F51154-9	49SS04	F51154-25
41SD09	F51154-10	49SS05	F51154-26
41SD10	F51154-11	59SS06	F51154-27
LFSD01	F51154-15	59SS07	F51154-28
TMSD01	F51154-16	59SS08	F51154-29
LFSW01	F51154-17	59SS09	F51154-30
APSD01	F5 1154-18	59SS10	F51154-31
TMSW01	F51154-20	TMSS05	F51154-32

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
X		System Monitoring Compounds
X		Laboratory Control Samples
X		Matrix Spike/Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

9/26/07
Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F51154

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. For solid samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous samples were collected on 07/18/07 and 07/19/07. For aqueous samples collected 07/18/07 and 07/19/07, the pesticides and PCBs were extracted on 07/24/07 and analyzed on 07/26/07. For solid samples collected 07/18/07 and 07/19/07, the pesticides were extracted on 07/27/07 and analyzed on 07/31/07, 08/02/07, 08/06/07, and 08/08/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)

Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- For analysis performed on 07/24/07 @14:31, endrin and 4,4'-DDT percent breakdowns were 10.3% and 9.0% on signal #1 and 10.8% and 7.8% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 07/26/07 @11:10, endrin and 4,4'-DDT percent breakdowns were 12.4% and 4.2% on signal #1 and 13.8% and 3.7% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/01/07 @12:02, endrin and 4,4'-DDT percent breakdowns were 13.7% and 8.0% on signal #1 and 14.5% and 7.7% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/02/07 @11:19, endrin and 4,4'-DDT percent breakdowns were 13.3% and 7.7% on signal #1 and 14.5% and 7.2% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/04/07 @09:09, endrin and 4,4'-DDT percent breakdowns were 14.1% and 5.0% on signal #1 and 13.8% and 4.5% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 07/13/07 @13:24, endrin and 4,4'-DDT percent breakdowns were 11.8% and 6.5% on signal #1 and 12.0% and 5.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 07/31/07 @13:54, endrin and 4,4'-DDT percent breakdowns were 10.9% and 11.4% on signal #1 and 10.1% and 9.2% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/06/07 @09:25, endrin and 4,4'-DDT percent breakdowns were 11.2% and 7.1% on signal #1 and 10.7% and 5.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.995. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- For the pesticide initial calibration performed on 07/24/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/01/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), and TMSS05 (F51154-32) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/04/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples TMSD01 (F51154-16), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 07/13/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS05 (F51154-26), and TMSS05 (F51154-32) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/06/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), 49SS04 (F51154-25), 59SS06 (F51154-27), 59SS07 (F51154-28), and 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 07/28/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 07/26/07 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 08/02/07 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 49SS02 (F51154-23) was analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the initial calibration should be no greater than ±20%.

- For pesticide initial calibration verification performed on 07/24/07 @17:08 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 07/26/07 @15:31 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 07/26/07 @19:00 on instrument ECD5, endrin (25.4%) was outside criteria for the signal #1. Endrin (24.4%) was outside criteria for the signal #2. Endrin was non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/01/07 @15:15 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/02/07 @14:21 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), and TMSS05 (F51154-32) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/02/07 @17:22 on instrument ECD5, 4,4'-DDT (23.5%) was outside criteria for the signal #1. 4,4'-DDT (24.1%) was outside criteria for the signal #2. 4,4'-DDT was non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/04/07 @12:47 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/08/07 @13:34 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Sample TMSD01 (F51154-16) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/08/07 @14:59 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples TMSD01 (F51154-16), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/08/07 @17:30 on instrument ECD5, heptachlor (30.4%), 4,4'-DDD (22.4%), 4,4'-DDT (87.0%; grossly exceeding), methoxychlor (82.0%; grossly exceeding), and endrin ketone (29.8%) were outside criteria for the signal #1. Heptachlor (31.3%), 4,4'-DDD (26.7%), 4,4'-DDT (88.2%; grossly exceeding), methoxychlor (83.0%; grossly exceeding), and endrin ketone (33.5%) were outside criteria for the signal #2. No samples reported was analyzed using this continuing calibration; therefore, no qualifiers were applied based upon these outliers.

- For pesticide initial calibration verification performed on 07/13/07 @15:47 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 07/31/07 @14:52 on instrument ECD6, all criteria were met for signal #1. 4,4'-DDT (25.4%) was outside criteria for the signal #2. 4,4'-DDT was non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. Samples LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), and 49SS02 (F51154-23) were analyzed using this continuing calibration.

- For toxaphene pesticide continuing calibration performed on 07/31/07 @15:08 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For chlordane pesticide continuing calibration performed on 07/31/07 @15:24 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 07/31/07 @18:23 on instrument ECD6, 4,4'-DDT (65.7%; grossly exceeding) and methoxychlor (53.6%; grossly exceeding) were outside criteria for the signal #1. 4,4'-DDT (69.1%; grossly exceeding) and methoxychlor (57.7%; grossly exceeding) were outside criteria for the signal #2. 4,4'-DDT and methoxychlor were qualified estimated "UJ" for non-detects based upon the very high %Ds. Samples 49SS03 (F51154-24), 49SS05 (F51154-26), and TMSS05 (F51154-32) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 07/31/07 @19:42 on instrument ECD6, 4,4'-DDT (64.5%; grossly exceeding) and methoxychlor (53.9%; grossly exceeding) were outside criteria for the signal #1. 4,4'-DDT (67.9%; grossly exceeding) and methoxychlor (56.8%; grossly exceeding) were outside criteria for the signal #2. 4,4'-DDT and methoxychlor were qualified estimated "UJ" for non-detects based upon the very high %Ds. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/06/07 @12:29 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/06/07 @15:35 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), 49SS04 (F51154-25), 59SS06 (F51154-27), 59SS07 (F51154-28), and 59SS08 (F51154-29) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/06/07 @18:29 on instrument ECD6, 4,4'-DDT (47.6%; grossly exceeding) and methoxychlor (43.5%; grossly exceeding) were outside criteria for the signal #1. 4,4'-DDT (45.2%; grossly exceeding) and methoxychlor (43.0%; grossly exceeding) were outside criteria for the signal #2. 4,4'-DDT and methoxychlor were qualified estimated "UJ" for non-detects based upon the very high %Ds. Samples 59SS09 (F51154-30) and 59SS10 (F51154-31) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/06/07 @19:32 on instrument ECD6, 4,4'-DDD (20.6%), 4,4'-DDT (51.2%; grossly exceeding), and methoxychlor (43.4%; grossly exceeding) were outside criteria for the signal #1. 4,4'-DDD (21.0%), 4,4'-DDT (67.9%; grossly exceeding), and methoxychlor (56.8%; grossly exceeding) were outside criteria for the signal #2. 4,4'-DDT and methoxychlor were qualified estimated "UJ" for non-detects based upon the very high %Ds. 4,4'-DDD was non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), and 49SS04 (F51154-25) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/06/07 @22:42 on instrument ECD6, heptachlor (37.9%), 4,4'-DDD (30.8%), 4,4'-DDT (95.2%; grossly exceeding), methoxychlor (89.2%; grossly exceeding), and endrin ketone (50.6%; grossly exceeding) were outside criteria for the signal #1. Heptachlor (36.0%), 4,4'-DDE (21.1%), 4,4'-DDD (56.2%; grossly exceeding), 4,4'-DDT (88.8%; grossly exceeding), methoxychlor (80.5%; grossly exceeding), and endrin ketone (47.3%; grossly exceeding) were outside criteria for the signal #2. 4,4'-DDD, 4,4'-DDT, methoxychlor, and endrin ketone were qualified estimated "J" for detects and "UJ" for non-detects based upon the very high %Ds. Heptachlor and 4,4'-DDE were non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 07/28/07 @14:59 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 07/31/07 @09:51 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), and 41SD11 (F51154-22) were analyzed using this continuing calibration.

- For PCB 1248 continuing calibration performed on 07/31/07 @10:13 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1242 continuing calibration performed on 07/31/07 @10:30 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1232/1268 continuing calibration performed on 07/31/07 @10:47 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1221/1254 continuing calibration performed on 07/31/07 @11:04 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 07/31/07 @14:29 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 07/31/07 @17:54 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample TMSS05 (F51154-32) was analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 07/31/07 @18:45 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/01/07 @09:49 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample 49SS03 (F51154-24) was analyzed using this continuing calibration.

- For PCB 1248 continuing calibration performed on 08/01/07 @10:06 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1242 continuing calibration performed on 08/01/07 @10:23 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1232/1268 continuing calibration performed on 08/01/07 @10:44 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1221/1254 continuing calibration performed on 08/01/07 @11:01 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/01/07 @13:56 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 07/26/07 @13:51 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 07/26/07 @18:39 on instrument ECD7, PCB1016-A (28.0%) was outside criteria for signal #1; however, the average %D for PCB1016 was 12.4%. PCB1016-A (40.6%), PCB1016-B (29.9%), and PCB1016-F (22.8%) were outside criteria for signal #2. The average %D for PCB1016 was 20.9% for signal #2. PCB 1016 was non-detect for all associated samples and was qualified estimated "UJ" for non-detects based upon the high %D. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 07/26/07 @21:45 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 08/02/07 @13:41 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 49SS02 (F51154-23) was analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 08/02/07 @16:48 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
Pesticides	07/26/07	OP21578-MB	All target <½MRL	NA	NA	None
Pesticides	09/24/07	RB083007	All target <½MRL	NA	NA	None
PCBs	06/27/07	OP21577-MB	All target <½MRL	NA	NA	None
PCBs	09/14/07	RB083007	All target <½MRL	NA	NA	None
Parameter	**Analysis Date**	**QC Blank ID**	**Compound**	**Max Conc. µg/kg**	**Action Level µg/kg**	**B qualified samples**
Pesticides	07/31/07	OP21640-MB	All target <½MRL	NA	NA	None
Pesticides	08/02/07	OP21640-MB	All target <½MRL	NA	NA	None
Pesticides	08/06/07	OP21640-MB	All target <½MRL	NA	NA	None
Pesticides	08/08/07	OP21640-MB	All target <½MRL	NA	NA	None
Pesticides	07/02/07	RB071807	All target <½MRL	NA	NA	None
Pesticides	07/02/07	072407R	All target <½MRL	NA	NA	None
Pesticides	07/02/07	072507R	All target <½MRL	NA	NA	None
PCBs	07/26/07	OP21641-MB	All target <½MRL	NA	NA	None
PCBs	07/27/07	OP21641-MB	All target <½MRL	NA	NA	None
PCBs	07/27/07	OP21641-MB	All target <½MRL	NA	NA	None
PCBs	06/27/07	RB071807	All target <½MRL	NA	NA	None
PCBs	06/27/07	072407R	All target <½MRL	NA	NA	None
PCBs	06/27/07	072507R	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:	Tetrachloro-m-xylene:	Pesticides: 42-127% (DoD QSM 25-140%)
	Decachlorobiphenyl:	Pesticides: 27-127% (DoD QSM 30-135%)
Aqueous Criteria:	Tetrachloro-m-xylene:	PCBs: 38-127% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 25-137% (DoD QSM 40-135%)
Solid Criteria:	Tetrachloro-m-xylene:	Pesticides: 46-122% (DoD QSM 70-125%)
	Decachlorobiphenyl:	Pesticides: 50-133% (DoD QSM 55-130%)
Solid Criteria:	Tetrachloro-m-xylene:	PCBs: 44-126% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 39-157% (DoD QSM 60-125%)

- For pesticides sample 41SD10 (F51154-11), all criteria were met for the original run. For the confirmation, tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample TMSD01 (F51154-16), tetrachloro-m-xylene (50.0%) and decachlorobiphenyl (37.0%) were outside criteria. All detects were qualified "L" and non-detects "UL" based upon the low recoveries. Sample was re-analyzed for confirmation (run #2). For the confirmation, tetrachloro-m-xylene (62.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample 41SD11 (F51154-22), tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier. Sample was re-analyzed for confirmation (run #2). For the confirmation, tetrachloro-m-xylene (65.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample 49SS02 (F51154-23), tetrachloro-m-xylene (53.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier. Sample was re-analyzed for confirmation (run #2). For the confirmation, tetrachloro-m-xylene (51.0%) and decachlorobiphenyl (48.0%) were outside criteria. All detects were qualified "L" and non-detects "UL" based upon the low recoveries for run #2.

- For pesticides sample 49SS03 (F51154-24), tetrachloro-m-xylene (64.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier. For the confirmation, tetrachloro-m-xylene (62.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample 59SS07 (F51154-28), all criteria were met for the original run. For the confirmation, tetrachloro-m-xylene (67.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample 59SS09 (F51154-30), tetrachloro-m-xylene (66.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier. Sample was re-analyzed for confirmation (run #2). For the confirmation, tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For pesticides sample 59SS10 (F51154-31), tetrachloro-m-xylene (55.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier. Sample was re-analyzed for confirmation (run #2). For the confirmation, all criteria were met.

- For pesticides sample TMSS05 (F51154-32), all criteria were met for the original run. For the confirmation, tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier for run #2.

- For PCBs sample 41SD08 (F51154-9), decachlorobiphenyl (57.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For PCBs sample 41SD10 (F51154-11), decachlorobiphenyl (56.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For PCBs sample LFSD01 (F51154-15), decachlorobiphenyl (48.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For PCBs sample TMSD01 (F51154-16), decachlorobiphenyl (59.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For PCBs sample 59SS06 (F51154-27), decachlorobiphenyl (59.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For PCBs sample 59SS07 (F51154-28), decachlorobiphenyl (59.0%) was below DoD QSM criteria and within laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met for pesticides and PCBs analysis.

VII-Laboratory Control Samples
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). DoD QSM solid LCS recovery limits are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21578-BS was used as the aqueous LCS for the pesticide analysis on 07/26/07. Compound endrin aldehyde (12%) was outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon very low recovery. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP21640-BS was used as the solid LCS for the pesticide analysis on 07/31/07. Compound endrin aldehyde (8%) was outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon very low recovery. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

- Sample OP21577-BS was used as the aqueous LCS for the PCB analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this LCS.

- Sample OP21641-BS was used as the solid LCS for the PCB analysis on 07/31/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

VIII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample LFSW01 (F51154-17) was used as the MS/MSD for the pesticide analysis on 07/26/07. Compound endrin aldehyde (21%, 15%) was outside DoD QSM criteria, however within laboratory criteria. The LCS was also low in recovery (See Section VII). Compound endrin aldehyde was non-detect for all samples and qualified estimated bias low "UL" for non-detects for the spiked sample based upon very low recoveries. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used as the MS/MSD for the PCB analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), LFSW01 (F51154-17), and TMSW01 (F51154-20) apply to this MS/MSD.

- Sample 49SS04 (F51154-25) was used as the MS/MSD for the pesticide analysis on 08/06/07. Compounds delta-BHC (RPD=56%), alpha chlordane (72%), gamma chlordane (74%), dieldrin (70%), 4,4'-DDE (72%), 4,4'-DDT (48%, 0%; RPD=200%), endrin (70%), endosulfan sulfate (0%, RPD=200%), endrin aldehyde (0%, 0%), endrin ketone (62%), endosulfan II (70%), and methoxychlor (60%, 44%, RPD=29%) were outside DoD QSM criteria and/or laboratory criteria. The LCS was also low in recovery (See Section VII). Compounds 4,4'-DDT, endosulfan sulfate, and endrin aldehyde were rejected for the spiked sample based upon no recovery found. Compounds alpha chlordane, gamma chlordane, dieldrin, 4,4'-DDE, endrin, endrin ketone, endosulfan II, and methoxychlor were non-detect for the spiked sample and qualified estimated bias low "UL" for non-detects based upon low recoveries. Delta-BHC was qualified "UJ" for the spiked sample based upon the high RPD. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

- Sample 59SS06 (F51154-27) was used as the MS/MSD for the PCB analysis on 07/31/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair LFSW01 (F51154-17) and TMSW01 (F51154-20) was collected for chlorinated pesticides and PCBs. All chlorinated pesticides and PCBs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for chlorinated pesticides and PCBs. All chlorinated pesticides and PCBs target compounds were non-detect, except for Aroclor 1254. PCB 1254 was detected at 41.1 µg/kg in the original sample and 75.6 µg/kg in the duplicate pair resulting in a RPD of 59.1%. PCB 1254 was qualified estimated "J" for the duplicate pair based upon the high RPD.

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for chlorinated pesticides and PCBs. All detected chlorinated pesticides and PCBs target compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. All other chlorinated pesticides and PCBs target compounds were non-detect. alpha-Chlordane (88.4%), gamma-Chlordane (70.7%), and Aroclor 1260 (58.1%) were above criteria due to low concentration levels detected below the MRL and/or matrix effects. alpha-Chlordane, gamma-chlordane, and aroclor 1260 were qualified estimated "J" for the original and duplicate pair samples based upon these outliers. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for Chlorinated Pesticides and PCBs for Duplicate Pair LFSD01 (F51154-15) and TMSD01 (F51154-16)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Heptachlor epoxide	14U	1.7J	NA
alpha-Chlordane	13.7J	5.3	88.4
gamma-Chlordane	13.6J	6.5	70.7
Aroclor 1260	135	74.2	58.1

J = Estimated value <MRL and >MDL.
U = Non-detect as <MRL.
NA = Not Applicable

X-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- For sample 59SS07 (F51154-28), dieldrin (86.8%) and heptachlor epoxide (57.4%) were outside criteria. All other target compounds were within criteria. Dieldrin and heptachlor epoxide were qualified estimated "J" based upon the high %Ds.

- For sample 59SS08 (F51154-29), dieldrin (114%) and 4,4'-DDD (82.4%) were outside criteria. All other target compounds were within criteria. Dieldrin and 4,4'-DDD were qualified estimated "J" based upon the high %Ds.

- For all other samples with detected chlorinated pesticides and PCBs, the %D (average %D for multi-peak compounds) between the primary and secondary columns was within criteria.

Sample: LFSW01MS (F51154-17MS), alpha-chlordane

Conc. µg/L = (Amt * DF * Vt) / (CF * Vo)

where: Amt is the response on column (ng/mL) of the sample
CF = Calibration Factor (from initial calibration)
Vt is the volume of final extract (mL)
DF is the dilution factor
Vo is the volume of the sample extracted (mL)

Conc. µg/L = (9068815 ng/mL * 1 * 10 mL) / (212100 * 430 mL)
= 0.99 ng/mL = 0.99 µg/L

Reported Conc. = 0.99 µg/L
%D = 0.0%
Values were within 10% difference

Sample: **LFSW01MS (F51154-17MS), Aroclor 1260**

Conc. µg/L = (Ax * Vt * DF) / (CF * Vi * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
Vs = Volume of sample extracted (L).
DF = Dilution factor

Signal #1
Conc1 µg/L = (1118429 * 10000* 1) / (3120 *(1000000) * 1 * 0.44) = 8.15 µg/L
Conc2 µg/L = (1273241 * 10000* 1) / (3552 *(1000000) * 1 * 0.44) = 8.15 µg/L
Conc3 µg/L = (1179335 * 10000* 1) / (3200 *(1000000) * 1 * 0.44) = 8.38 µg/L
Conc4 µg/L = (944050 * 10000* 1) / (2782 *(1000000) * 1 * 0.44) = 8.07 µg/L
Conc5 µg/L = (2049224 * 10000* 1) / (5769 *(1000000) * 1 * 0.44) = 7.66 µg/L
Conc6 µg/L = (772955 * 10000* 1) / (2276 *(1000000) * 1 * 0.44) = 7.72 µg/L
Average concentration = 8.0 µg/L

Signal #2
Conc1 µg/L = (689475 * 10000* 1) / (1917 *(1000000) * 1 * 0.44) = 8.17 µg/L
Conc2 µg/L = (800449 * 10000* 1) / (2172 *(1000000) * 1 * 0.44) = 8.38 µg/L
Conc3 µg/L = (772763 * 10000* 1) / (2088 *(1000000) * 1 * 0.44) = 8.41 µg/L
Conc4 µg/L = (589063 * 10000* 1) / (1698 *(1000000) * 1 * 0.44) = 7.88 µg/L
Conc5 µg/L = (1340728 * 10000* 1) / (3820 *(1000000) * 1 * 0.44) = 7.98 µg/L
Conc6 µg/L = (504915 * 10000* 1) / (1482 *(1000000) * 1 * 0.44) = 7.74 µg/L
Average concentration = 8.1 µg/L

Reported Value = 8.0 µg/L (from signal #1)
% Difference = 0.0%
Values were within 10% difference.

Sample: LFSD01 (F51154-15), alpha-chlordane

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (mL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Conc. µg/kg = (166174 Area*10000µL*5) / (34180 Area/pg*(1000 pg/ng)*1 µL*30.7g*0.5790) = 13.7 µg/kg

Reported Value = 13.7 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 49SS03 (F51154-24), Aroclor 1260

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Signal #1
Conc1 µg/kg = (0*10000*2) / (8040*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc2 µg/kg = (0*10000*2) / (9920*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc3 µg/kg = (0*10000*2) / (9980*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc4 µg/kg = (685577*10000*2) / (7129*(1000)*1*29.9*0.9200) = 69.92 µg/kg
Conc5 µg/kg = (1484623*10000*2) / (16390*(1000)*1*29.9*0.9200) = 65.86 µg/kg
Conc6 µg/kg = (1094850*10000*2) / (9500*(1000)*1*29.9*0.9200) = 83.79 µg/kg
Average concentration = 73.2 µg/kg (Peaks 4 → 6)

Signal #2
Conc1 µg/kg = (0*10000*2) / (1276*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc2 µg/kg = (0*10000*2) / (1547*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc3 µg/kg = (0*10000*2) / (1420*(1000)*1*29.9*0.9200) = 0.00 µg/kg
Conc4 µg/kg = (171305*10000*2) / (1103*(1000)*1*29.9*0.9200) = 112.92 µg/kg
Conc5 µg/kg = (238470*10000*2) / (2556*(1000)*1*29.9*0.9200) = 67.83 µg/kg
Conc6 µg/kg = (141537*10000*2) / (1028*(1000)*1*29.9*0.9200) = 100.10 µg/kg
Average concentration = 93.6 µg/kg (Peaks 4 → 6)

Reported Value = 73.2 µg/kg (signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: KK20472.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20472.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.050	0.020	ug/l	
319-84-6	alpha-BHC	ND	0.050	0.015	ug/l	
319-85-7	beta-BHC	ND	0.050	0.020	ug/l	
319-86-8	delta-BHC	ND	0.050	0.020	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.050	0.015	ug/l	
5103-71-9	alpha-Chlordane	ND	0.050	0.015	ug/l	
5103-74-2	gamma-Chlordane	ND	0.050	0.015	ug/l	
60-57-1	Dieldrin	ND	0.050	0.015	ug/l	
72-54-8	4,4'-DDD	ND	0.10	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.10	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.10	0.020	ug/l	
72-20-8	Endrin	ND	0.10	0.040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	0.020	ug/l	
7421-93-4	Endrin aldehyde	ND VL	0.10	0.040	ug/l	
53494-70-5	Endrin ketone	ND	0.10	0.020	ug/l	
959-98-8	Endosulfan-I	ND	0.050	0.015	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	0.020	ug/l	
76-44-8	Heptachlor	ND	0.050	0.020	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.050	0.015	ug/l	
72-43-5	Methoxychlor	ND	0.10	0.040	ug/l	
8001-35-2	Toxaphene	ND	2.5	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		42-127%
2051-24-3	Decachlorobiphenyl	74%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022300.D

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Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022300.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND UJ	0.50	0.25	ug/l	
11104-28-2	Aroclor 1221	ND	0.50	0.40	ug/l	
11141-16-5	Aroclor 1232	ND	0.50	0.40	ug/l	
53469-21-9	Aroclor 1242	ND	0.50	0.25	ug/l	
12672-29-6	Aroclor 1248	ND	0.50	0.25	ug/l	
11097-69-1	Aroclor 1254	ND	0.50	0.25	ug/l	
11096-82-5	Aroclor 1260	ND	0.50	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		38-127%
2051-24-3	Decachlorobiphenyl	78%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20473.D

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Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20473.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.053	0.021	ug/l	
319-84-6	alpha-BHC	ND	0.053	0.016	ug/l	
319-85-7	beta-BHC	ND	0.053	0.021	ug/l	
319-86-8	delta-BHC	ND	0.053	0.021	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.053	0.016	ug/l	
5103-71-9	alpha-Chlordane	ND	0.053	0.016	ug/l	
5103-74-2	gamma-Chlordane	ND	0.053	0.016	ug/l	
60-57-1	Dieldrin	ND	0.053	0.016	ug/l	
72-54-8	4,4'-DDD	ND	0.11	0.021	ug/l	
72-55-9	4,4'-DDE	ND	0.11	0.021	ug/l	
50-29-3	4,4'-DDT	ND	0.11	0.021	ug/l	
72-20-8	Endrin	ND	0.11	0.043	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.11	0.021	ug/l	
7421-93-4	Endrin aldehyde	ND VL	0.11	0.043	ug/l	
53494-70-5	Endrin ketone	ND	0.11	0.021	ug/l	
959-98-8	Endosulfan-I	ND	0.053	0.016	ug/l	
33213-65-9	Endosulfan-II	ND	0.11	0.021	ug/l	
76-44-8	Heptachlor	ND	0.053	0.021	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.053	0.016	ug/l	
72-43-5	Methoxychlor	ND	0.11	0.043	ug/l	
8001-35-2	Toxaphene	ND	2.7	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		42-127%
2051-24-3	Decachlorobiphenyl	76%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022301.D

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Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022301.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND VJ	0.53	0.27	ug/l	
11104-28-2	Aroclor 1221	ND	0.53	0.43	ug/l	
11141-16-5	Aroclor 1232	ND	0.53	0.43	ug/l	
53469-21-9	Aroclor 1242	ND	0.53	0.27	ug/l	
12672-29-6	Aroclor 1248	ND	0.53	0.27	ug/l	
11097-69-1	Aroclor 1254	ND	0.53	0.27	ug/l	
11096-82-5	Aroclor 1260	ND	0.53	0.27	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		38-127%
2051-24-3	Decachlorobiphenyl	81%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20474.D

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Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20474.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.049	0.020	ug/l	
319-84-6	alpha-BHC	ND	0.049	0.015	ug/l	
319-85-7	beta-BHC	ND	0.049	0.020	ug/l	
319-86-8	delta-BHC	ND	0.049	0.020	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.049	0.015	ug/l	
5103-71-9	alpha-Chlordane	ND	0.049	0.015	ug/l	
5103-74-2	gamma-Chlordane	ND	0.049	0.015	ug/l	
60-57-1	Dieldrin	ND	0.049	0.015	ug/l	
72-54-8	4,4'-DDD	ND	0.098	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.098	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.098	0.020	ug/l	
72-20-8	Endrin	ND	0.098	0.039	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.098	0.020	ug/l	
7421-93-4	Endrin aldehyde	ND VL	0.098	0.039	ug/l	
53494-70-5	Endrin ketone	ND	0.098	0.020	ug/l	
959-98-8	Endosulfan-I	ND	0.049	0.015	ug/l	
33213-65-9	Endosulfan-II	ND	0.098	0.020	ug/l	
76-44-8	Heptachlor	ND	0.049	0.020	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.049	0.015	ug/l	
72-43-5	Methoxychlor	ND	0.098	0.039	ug/l	
8001-35-2	Toxaphene	ND	2.5	1.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		42-127%
2051-24-3	Decachlorobiphenyl	76%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022302.D

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Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022302.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND UT	0.49	0.25	ug/l	
11104-28-2	Aroclor 1221	ND	0.49	0.39	ug/l	
11141-16-5	Aroclor 1232	ND	0.49	0.39	ug/l	
53469-21-9	Aroclor 1242	ND	0.49	0.25	ug/l	
12672-29-6	Aroclor 1248	ND	0.49	0.25	ug/l	
11097-69-1	Aroclor 1254	ND	0.49	0.25	ug/l	
11096-82-5	Aroclor 1260	ND	0.49	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		38-127%
2051-24-3	Decachlorobiphenyl	80%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08193.D	1	08/06/07	FS	07/27/07	OP21640	GTT278
Run #2	TT08178.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2	30.7 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	4.4	1.1	ug/kg	
319-84-6	alpha-BHC	ND	4.4	1.2	ug/kg	
319-85-7	beta-BHC	ND	4.4	1.1	ug/kg	
319-86-8	delta-BHC	ND	4.4	1.9	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	4.4	1.5	ug/kg	
5103-71-9	alpha-Chlordane	ND	4.4	0.88	ug/kg	
5103-74-2	gamma-Chlordane	ND	4.4	0.97	ug/kg	
60-57-1	Dieldrin	ND	4.4	0.97	ug/kg	
72-54-8	4,4'-DDD	ND	8.8	1.8	ug/kg	
72-55-9	4,4'-DDE	ND	8.8	1.8	ug/kg	
50-29-3	4,4'-DDT	ND [a] UJ	88	20	ug/kg	
72-20-8	Endrin	ND	8.8	1.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	8.8	2.9	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	8.8	2.6	ug/kg	
53494-70-5	Endrin ketone	ND	8.8	1.8	ug/kg	
959-98-8	Endosulfan-I	ND	4.4	0.97	ug/kg	
33213-65-9	Endosulfan-II	ND	8.8	1.3	ug/kg	
76-44-8	Heptachlor	ND [a]	44	12	ug/kg	
1024-57-3	Heptachlor epoxide	ND	4.4	0.88	ug/kg	
72-43-5	Methoxychlor	ND [a] UJ	88	18	ug/kg	
8001-35-2	Toxaphene	ND	220	110	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%	76%	46-122%
2051-24-3	Decachlorobiphenyl	78%	87%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64232.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64232.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	44	22	ug/kg	
11104-28-2	Aroclor 1221	ND	44	35	ug/kg	
11141-16-5	Aroclor 1232	ND	44	35	ug/kg	
53469-21-9	Aroclor 1242	ND	44	22	ug/kg	
12672-29-6	Aroclor 1248	ND	44	22	ug/kg	
11097-69-1	Aroclor 1254	ND	44	22	ug/kg	
11096-82-5	Aroclor 1260	ND	44	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		44-126%
2051-24-3	Decachlorobiphenyl	57%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08194.D TT08179.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08194.D	1	08/06/07	FS	07/27/07	OP21640	GTT278
Run #2	TT08179.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2	30.3 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.48	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg	
50-29-3	4,4'-DDT	ND [a] VJ	40	9.2	ug/kg	
72-20-8	Endrin	ND	4.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	4.0	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg	
76-44-8	Heptachlor	ND [a]	20	5.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
72-43-5	Methoxychlor	ND [a] VJ	40	8.0	ug/kg	
8001-35-2	Toxaphene	ND	100	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%	70%	46-122%
2051-24-3	Decachlorobiphenyl	79%	77%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64233.D

For I Carey

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64233.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	10	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	10	ug/kg	
12672-29-6	Aroclor 1248	ND	20	10	ug/kg	
11097-69-1	Aroclor 1254	ND	20	10	ug/kg	
11096-82-5	Aroclor 1260	ND	20	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		44-126%
2051-24-3	Decachlorobiphenyl	66%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08195.D TT08180.D

Run I Opy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08195.D	1	08/06/07	FS	07/27/07	OP21640	GTT278
Run #2	TT08180.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2	30.2 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.1	0.50	ug/kg	
319-84-6	alpha-BHC	ND	2.1	0.59	ug/kg	
319-85-7	beta-BHC	ND	2.1	0.54	ug/kg	
319-86-8	delta-BHC	ND	2.1	0.92	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.1	0.71	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.1	0.42	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.1	0.46	ug/kg	
60-57-1	Dieldrin	ND	2.1	0.46	ug/kg	
72-54-8	4,4'-DDD	ND	4.2	0.84	ug/kg	
72-55-9	4,4'-DDE	ND	4.2	0.84	ug/kg	
50-29-3	4,4'-DDT	ND [a] UJ	42	9.6	ug/kg	
72-20-8	Endrin	ND	4.2	0.84	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.2	1.4	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	4.2	1.3	ug/kg	
53494-70-5	Endrin ketone	ND	4.2	0.84	ug/kg	
959-98-8	Endosulfan-I	ND	2.1	0.46	ug/kg	
33213-65-9	Endosulfan-II	ND	4.2	0.63	ug/kg	
76-44-8	Heptachlor	ND [a]	21	5.9	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.1	0.42	ug/kg	
72-43-5	Methoxychlor	ND [a] UJ	42	8.4	ug/kg	
8001-35-2	Toxaphene	ND	100	52	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%	69%	46-122%
2051-24-3	Decachlorobiphenyl	78%	78%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64234.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64234.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	21	10	ug/kg	
11104-28-2	Aroclor 1221	ND	21	17	ug/kg	
11141-16-5	Aroclor 1232	ND	21	17	ug/kg	
53469-21-9	Aroclor 1242	ND	21	10	ug/kg	
12672-29-6	Aroclor 1248	ND	21	10	ug/kg	
11097-69-1	Aroclor 1254	ND	21	10	ug/kg	
11096-82-5	Aroclor 1260	ND	21	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		44-126%
2051-24-3	Decachlorobiphenyl	56%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08068.D KK20593.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08068.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20593.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2	30.7 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	14	3.4	ug/kg	
319-84-6	alpha-BHC	ND	14	3.9	ug/kg	
319-85-7	beta-BHC	ND	14	3.7	ug/kg	
319-86-8	delta-BHC	ND	14	6.2	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	14	4.8	ug/kg	
5103-71-9	alpha-Chlordane	13.7 J	14	2.8	ug/kg	J
5103-74-2	gamma-Chlordane	13.6 J	14	3.1	ug/kg	J
60-57-1	Dieldrin	ND	14	3.1	ug/kg	
72-54-8	4,4'-DDD	ND	28	5.6	ug/kg	
72-55-9	4,4'-DDE	ND	28	5.6	ug/kg	
50-29-3	4,4'-DDT	ND [b]	56	13	ug/kg	
72-20-8	Endrin	ND	28	5.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	28	9.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	28	8.4	ug/kg	
53494-70-5	Endrin ketone	ND	28	5.6	ug/kg	
959-98-8	Endosulfan-I	ND	14	3.1	ug/kg	
33213-65-9	Endosulfan-II	ND	28	4.2	ug/kg	
76-44-8	Heptachlor	ND	14	3.9	ug/kg	
1024-57-3	Heptachlor epoxide	ND	14	2.8	ug/kg	
72-43-5	Methoxychlor	ND [b]	56	11	ug/kg	
8001-35-2	Toxaphene	ND	700	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%	70%	46-122%
2051-24-3	Decachlorobiphenyl	76%	57%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64235.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64235.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	28	14	ug/kg	
11104-28-2	Aroclor 1221	ND	28	23	ug/kg	
11141-16-5	Aroclor 1232	ND	28	23	ug/kg	
53469-21-9	Aroclor 1242	ND	28	14	ug/kg	
12672-29-6	Aroclor 1248	ND	28	14	ug/kg	
11097-69-1	Aroclor 1254	ND	28	14	ug/kg	
11096-82-5	Aroclor 1260	135 J	28	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		44-126%
2051-24-3	Decachlorobiphenyl	48%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20783.D KK20775.D

Form I OCs

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK20783.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	KK20775.D	10	08/08/07	FS	07/27/07	OP21640	GKK761

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2	30.3 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND UL	2.5	0.61	ug/kg	
319-84-6	alpha-BHC	ND UL	2.5	0.71	ug/kg	
319-85-7	beta-BHC	ND UL	2.5	0.66	ug/kg	
319-86-8	delta-BHC	ND UL	2.5	1.1	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND UL	2.5	0.86	ug/kg	
5103-71-9	alpha-Chlordane	5.3 J	2.5	0.50	ug/kg	
5103-74-2	gamma-Chlordane	6.5 J	2.5	0.55	ug/kg	
60-57-1	Dieldrin	ND UL	2.5	0.55	ug/kg	
72-54-8	4,4'-DDD	ND UL	5.0	1.0	ug/kg	
72-55-9	4,4'-DDE	ND UL	5.0	1.0	ug/kg	
50-29-3	4,4'-DDT	ND [b]	51	12	ug/kg	
72-20-8	Endrin	ND UL	5.0	1.0	ug/kg	
1031-07-8	Endosulfan sulfate	ND UL	5.0	1.7	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	5.0	1.5	ug/kg	
53494-70-5	Endrin ketone	ND UL	5.0	1.0	ug/kg	
959-98-8	Endosulfan-I	ND UL	2.5	0.55	ug/kg	
33213-65-9	Endosulfan-II	ND UL	5.0	0.76	ug/kg	
76-44-8	Heptachlor	ND [b]	25	7.1	ug/kg	
1024-57-3	Heptachlor epoxide	1.7 L	2.5	0.50	ug/kg	J
72-43-5	Methoxychlor	ND [b]	51	10	ug/kg	
8001-35-2	Toxaphene	ND UL	130	63	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	50%	62%	46-122%
2051-24-3	Decachlorobiphenyl	37% [c]	61%	50-133%

(a) All hits confirmed by dual column analysis.
(b) Result is from Run# 2
(c) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64236.D

Final Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64236.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	25	13	ug/kg	
11104-28-2	Aroclor 1221	ND	25	20	ug/kg	
11141-16-5	Aroclor 1232	ND	25	20	ug/kg	
53469-21-9	Aroclor 1242	ND	25	13	ug/kg	
12672-29-6	Aroclor 1248	ND	25	13	ug/kg	
11097-69-1	Aroclor 1254	ND	25	13	ug/kg	
11096-82-5	Aroclor 1260	74.2 J	25	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		44-126%
2051-24-3	Decachlorobiphenyl	59%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20476.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20476.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.048	0.019	ug/l	
319-84-6	alpha-BHC	ND	0.048	0.014	ug/l	
319-85-7	beta-BHC	ND	0.048	0.019	ug/l	
319-86-8	delta-BHC	ND	0.048	0.019	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.048	0.014	ug/l	
5103-71-9	alpha-Chlordane	ND	0.048	0.014	ug/l	
5103-74-2	gamma-Chlordane	ND	0.048	0.014	ug/l	
60-57-1	Dieldrin	ND	0.048	0.014	ug/l	
72-54-8	4,4'-DDD	ND	0.096	0.019	ug/l	
72-55-9	4,4'-DDE	ND	0.096	0.019	ug/l	
50-29-3	4,4'-DDT	ND	0.096	0.019	ug/l	
72-20-8	Endrin	ND	0.096	0.038	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.096	0.019	ug/l	
7421-93-4	Endrin aldehyde	ND VL	0.096	0.038	ug/l	
53494-70-5	Endrin ketone	ND	0.096	0.019	ug/l	
959-98-8	Endosulfan-I	ND	0.048	0.014	ug/l	
33213-65-9	Endosulfan-II	ND	0.096	0.019	ug/l	
76-44-8	Heptachlor	ND	0.048	0.019	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.048	0.014	ug/l	
72-43-5	Methoxychlor	ND	0.096	0.038	ug/l	
8001-35-2	Toxaphene	ND	2.4	1.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		42-127%
2051-24-3	Decachlorobiphenyl	78%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022304.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022304.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND UJ	0.48	0.24	ug/l	
11104-28-2	Aroclor 1221	ND	0.48	0.38	ug/l	
11141-16-5	Aroclor 1232	ND	0.48	0.38	ug/l	
53469-21-9	Aroclor 1242	ND	0.48	0.24	ug/l	
12672-29-6	Aroclor 1248	ND	0.48	0.24	ug/l	
11097-69-1	Aroclor 1254	ND	0.48	0.24	ug/l	
11096-82-5	Aroclor 1260	ND	0.48	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		38-127%
2051-24-3	Decachlorobiphenyl	82%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08066.D KK20586.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08066.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20586.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2	30.8 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.4	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.4	2.6	ug/kg	
319-85-7	beta-BHC	ND	9.4	2.4	ug/kg	
319-86-8	delta-BHC	ND	9.4	4.1	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.4	3.2	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.4	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.4	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.4	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.8	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.8	ug/kg	
50-29-3	4,4'-DDT	ND [b]	37	8.6	ug/kg	
72-20-8	Endrin	ND	19	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	19	5.6	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.8	ug/kg	
959-98-8	Endosulfan-I	ND	9.4	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.8	ug/kg	
76-44-8	Heptachlor	ND	9.4	2.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.4	1.9	ug/kg	
72-43-5	Methoxychlor	ND [b]	37	7.5	ug/kg	
8001-35-2	Toxaphene	ND	470	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%	70%	46-122%
2051-24-3	Decachlorobiphenyl	80%	72%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64237.D

Form I Cpkg

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64237.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254 [b]	42.0 J	19	9.4	ug/kg	J
11096-82-5	Aroclor 1260 [b]	41.8 J	19	9.4	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	79%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20479.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-20	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20479.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	880 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.057	0.023	ug/l	
319-84-6	alpha-BHC	ND	0.057	0.017	ug/l	
319-85-7	beta-BHC	ND	0.057	0.023	ug/l	
319-86-8	delta-BHC	ND	0.057	0.023	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.057	0.017	ug/l	
5103-71-9	alpha-Chlordane	ND	0.057	0.017	ug/l	
5103-74-2	gamma-Chlordane	ND	0.057	0.017	ug/l	
60-57-1	Dieldrin	ND	0.057	0.017	ug/l	
72-54-8	4,4'-DDD	ND	0.11	0.023	ug/l	
72-55-9	4,4'-DDE	ND	0.11	0.023	ug/l	
50-29-3	4,4'-DDT	ND	0.11	0.023	ug/l	
72-20-8	Endrin	ND	0.11	0.045	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.11	0.023	ug/l	
7421-93-4	Endrin aldehyde	ND VL	0.11	0.045	ug/l	
53494-70-5	Endrin ketone	ND	0.11	0.023	ug/l	
959-98-8	Endosulfan-I	ND	0.057	0.017	ug/l	
33213-65-9	Endosulfan-II	ND	0.11	0.023	ug/l	
76-44-8	Heptachlor	ND	0.057	0.023	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.057	0.017	ug/l	
72-43-5	Methoxychlor	ND	0.11	0.045	ug/l	
8001-35-2	Toxaphene	ND	2.8	1.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		42-127%
2051-24-3	Decachlorobiphenyl	82%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022307.D

Run I Cal

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-20	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022307.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	880 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND UJ	0.57	0.28	ug/l	
11104-28-2	Aroclor 1221	ND	0.57	0.45	ug/l	
11141-16-5	Aroclor 1232	ND	0.57	0.45	ug/l	
53469-21-9	Aroclor 1242	ND	0.57	0.28	ug/l	
12672-29-6	Aroclor 1248	ND	0.57	0.28	ug/l	
11097-69-1	Aroclor 1254	ND	0.57	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.57	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		38-127%
2051-24-3	Decachlorobiphenyl	87%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08070.D KK20587.D

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08070.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20587.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2	29.9 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.6	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.6	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.6	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.6	4.2	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.6	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.6	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.6	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.6	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.9	ug/kg	
50-29-3	4,4'-DDT	ND [b]	39	8.9	ug/kg	
72-20-8	Endrin	ND	19	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.4	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	19	5.8	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.6	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.9	ug/kg	
76-44-8	Heptachlor	ND	9.6	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.6	1.9	ug/kg	
72-43-5	Methoxychlor	ND [b]	39	7.7	ug/kg	
8001-35-2	Toxaphene	ND	480	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%	65%	46-122%
2051-24-3	Decachlorobiphenyl	80%	72%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64238.D

Run I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64238.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	90.2	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		44-126%
2051-24-3	Decachlorobiphenyl	76%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08071.D KK20588.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08071.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20588.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2	29.9 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.3	2.2	ug/kg	
319-84-6	alpha-BHC	ND	9.3	2.6	ug/kg	
319-85-7	beta-BHC	ND	9.3	2.4	ug/kg	
319-86-8	delta-BHC	ND	9.3	4.1	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.3	3.2	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.3	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.3	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.3	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.7	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.7	ug/kg	
50-29-3	4,4'-DDT	ND [b] VL	37	8.6	ug/kg	
72-20-8	Endrin	ND	19	3.7	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	19	5.6	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.7	ug/kg	
959-98-8	Endosulfan-I	ND	9.3	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.8	ug/kg	
76-44-8	Heptachlor	ND	9.3	2.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.3	1.9	ug/kg	
72-43-5	Methoxychlor	ND [b] VL	37	7.5	ug/kg	
8001-35-2	Toxaphene	ND	470	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	53%	51%	46-122%
2051-24-3	Decachlorobiphenyl	59%	48% [c]	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2
(c) Outside control limits due to dilution.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022594.D

Form I OV

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX022594.D	2	08/02/07	AC	07/27/07	OP21641	GXX189
Run #2							

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	19	ug/kg	
11104-28-2	Aroclor 1221	ND	37	30	ug/kg	
11141-16-5	Aroclor 1232	ND	37	30	ug/kg	
53469-21-9	Aroclor 1242	ND	37	19	ug/kg	
12672-29-6	Aroclor 1248	ND	37	19	ug/kg	
11097-69-1	Aroclor 1254	ND	37	37	ug/kg	
11096-82-5	Aroclor 1260	152	37	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	47%		44-126%
2051-24-3	Decachlorobiphenyl	59%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08076.D KK20589.D

Form I Cpy

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08076.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20589.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2	29.9 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.1	2.2	ug/kg	
319-84-6	alpha-BHC	ND	9.1	2.5	ug/kg	
319-85-7	beta-BHC	ND	9.1	2.4	ug/kg	
319-86-8	delta-BHC	ND	9.1	4.0	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.1	3.1	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.1	1.8	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.1	2.0	ug/kg	
60-57-1	Dieldrin	ND	9.1	2.0	ug/kg	
72-54-8	4,4'-DDD	ND	18	3.6	ug/kg	
72-55-9	4,4'-DDE	ND	18	3.6	ug/kg	
50-29-3	4,4'-DDT	ND [b] UJ	36	8.4	ug/kg	
72-20-8	Endrin	ND	18	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	18	6.0	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	18	5.5	ug/kg	
53494-70-5	Endrin ketone	ND	18	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	9.1	2.0	ug/kg	
33213-65-9	Endosulfan-II	ND	18	2.7	ug/kg	
76-44-8	Heptachlor	ND [b]	18	5.1	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.1	1.8	ug/kg	
72-43-5	Methoxychlor	ND [b] UJ	36	7.3	ug/kg	
8001-35-2	Toxaphene	ND	450	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%	62%	46-122%
2051-24-3	Decachlorobiphenyl	67%	55%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64296.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64296.D	2	08/01/07	JB	07/27/07	OP21641	GST1698
Run #2							

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	36	18	ug/kg	
11104-28-2	Aroclor 1221	ND	36	29	ug/kg	
11141-16-5	Aroclor 1232	ND	36	29	ug/kg	
53469-21-9	Aroclor 1242	ND	36	18	ug/kg	
12672-29-6	Aroclor 1248	ND	36	18	ug/kg	
11097-69-1	Aroclor 1254 [b]	124 J	36	18	ug/kg	J
11096-82-5	Aroclor 1260 [b]	73.2 J	36	18	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%		44-126%
2051-24-3	Decachlorobiphenyl	62%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08196.D TT08182.D

Form I copy

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Report of Analysis

3.2.5

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08196.D	1	08/06/07	FS	07/27/07	OP21640	GTT278
Run #2	TT08182.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2	30.6 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND VJ	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND VL	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND VL	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND VL	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.75	ug/kg	
72-55-9	4,4'-DDE	ND VL	3.7	0.75	ug/kg	
50-29-3	4,4'-DDT	ND [a] VJ	37	8.6	ug/kg	
72-20-8	Endrin	ND VL	3.7	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND VL	3.7	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND VL	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND [a]	19	5.2	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND [a] VJ	37	7.5	ug/kg	
8001-35-2	Toxaphene	ND	93	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%	70%	46-122%
2051-24-3	Decachlorobiphenyl	68%	77%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64243.D

Form I GC

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64243.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	10.9 J	19	9.3	ug/kg	J
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	67%		44-126%
2051-24-3	Decachlorobiphenyl	65%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08075.D KK20590.D

For L Coq

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08075.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20590.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2	30.3 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.6	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.6	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.6	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.6	4.2	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.6	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.6	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.6	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.6	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.8	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.8	ug/kg	
50-29-3	4,4'-DDT	ND [b] VJ	38	8.8	ug/kg	
72-20-8	Endrin	ND	19	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	19	5.8	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.8	ug/kg	
959-98-8	Endosulfan-I	ND	9.6	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.9	ug/kg	
76-44-8	Heptachlor	ND [b]	19	5.4	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.6	1.9	ug/kg	
72-43-5	Methoxychlor	ND [b] VJ	38	7.7	ug/kg	
8001-35-2	Toxaphene	ND	480	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%	72%	46-122%
2051-24-3	Decachlorobiphenyl	87%	72%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64244.D

Form I copy

Accutest Laboratories

Report of Analysis

3.2.6

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64244.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	41.1 J	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		44-126%
2051-24-3	Decachlorobiphenyl	68%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20778.D TT08181.D

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Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20778.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	TT08181.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2	30.8 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.42	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.49	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.60	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.5	0.71	ug/kg	
72-55-9	4,4'-DDE	ND	3.5	0.71	ug/kg	
50-29-3	4,4'-DDT	ND [a]	35	8.1	ug/kg	
72-20-8	Endrin	ND	3.5	0.71	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.5	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND vL	3.5	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.5	0.71	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.5	0.53	ug/kg	
76-44-8	Heptachlor	ND [a]	18	4.9	ug/kg	
1024-57-3	Heptachlor epoxide	0.48 J	1.8	0.35	ug/kg	J
72-43-5	Methoxychlor	ND [a]	35	7.1	ug/kg	
8001-35-2	Toxaphene	ND	88	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	110%	70%	46-122%
2051-24-3	Decachlorobiphenyl	88%	78%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64245.D

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Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64245.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.8	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.8	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.8	ug/kg	
11097-69-1	Aroclor 1254	11.1 J	18	8.8	ug/kg	J
11096-82-5	Aroclor 1260	ND	18	8.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	66%		44-126%
2051-24-3	Decachlorobiphenyl	59%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20779.D TT08185.D

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Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK20779.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	TT08185.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2	30.8 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.60	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	0.75 J	1.8	0.39	ug/kg	J
72-54-8	4,4'-DDD	ND	3.5	0.71	ug/kg	
72-55-9	4,4'-DDE	ND	3.5	0.71	ug/kg	
50-29-3	4,4'-DDT	ND [b]	35	8.2	ug/kg	
72-20-8	Endrin	ND	3.5	0.71	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.5	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.5	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.5	0.71	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.5	0.53	ug/kg	
76-44-8	Heptachlor	ND [b]	18	5.0	ug/kg	
1024-57-3	Heptachlor epoxide	0.46 J	1.8	0.35	ug/kg	J
72-43-5	Methoxychlor	ND [b]	35	7.1	ug/kg	
8001-35-2	Toxaphene	ND	89	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%	67%	46-122%
2051-24-3	Decachlorobiphenyl	62%	70%	50-133%

(a) All hits confirmed by dual column analysis.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64248.D

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Report of Analysis

3.2.3

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64248.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result		RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND		18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND		18	14	ug/kg	
11141-16-5	Aroclor 1232	ND		18	14	ug/kg	
53469-21-9	Aroclor 1242	ND		18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND		18	8.9	ug/kg	
11097-69-1	Aroclor 1254 [b]	21.0	J	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND		18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		44-126%
2051-24-3	Decachlorobiphenyl	59%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20780.D TT08186.D

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Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK20780.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	TT08186.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2	30.1 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	0.44 J	1.9	0.41	ug/kg	J
72-54-8	4,4'-DDD	1.0 J	3.7	0.75	ug/kg	J
72-55-9	4,4'-DDE	ND	3.7	0.75	ug/kg	
50-29-3	4,4'-DDT	ND [b]	37	8.6	ug/kg	
72-20-8	Endrin	ND	3.7	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND [b]	19	5.2	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND [b]	37	7.5	ug/kg	
8001-35-2	Toxaphene	ND	93	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	120%	77%	46-122%
2051-24-3	Decachlorobiphenyl	100%	78%	50-133%

(a) All hits confirmed by dual column analysis.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64249.D

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Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64249.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254 [b]	24.7 J	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		44-126%
2051-24-3	Decachlorobiphenyl	66%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20781.D TT08189.D

Form I Copy

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Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK20781.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	TT08189.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2	30.5 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.7	0.41	ug/kg	
319-84-6	alpha-BHC	ND	1.7	0.48	ug/kg	
319-85-7	beta-BHC	ND	1.7	0.45	ug/kg	
319-86-8	delta-BHC	ND	1.7	0.76	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.7	0.59	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.7	0.34	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.7	0.38	ug/kg	
60-57-1	Dieldrin	ND	1.7	0.38	ug/kg	
72-54-8	4,4'-DDD	ND	3.4	0.69	ug/kg	
72-55-9	4,4'-DDE	ND	3.4	0.69	ug/kg	
50-29-3	4,4'-DDT	ND [b] UJ	34	7.9	ug/kg	
72-20-8	Endrin	ND	3.4	0.69	ug/kg	
1031-07-8	Endosulfan sulfate	7.1	3.4	1.1	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.4	1.0	ug/kg	
53494-70-5	Endrin ketone	ND	3.4	0.69	ug/kg	
959-98-8	Endosulfan-I	ND	1.7	0.38	ug/kg	
33213-65-9	Endosulfan-II	ND	3.4	0.52	ug/kg	
76-44-8	Heptachlor	ND [b]	17	4.8	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.7	0.34	ug/kg	
72-43-5	Methoxychlor	ND [b] UJ	34	6.9	ug/kg	
8001-35-2	Toxaphene	ND	86	43	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	66%	69%	46-122%
2051-24-3	Decachlorobiphenyl	73%	80%	50-133%

(a) All hits confirmed by dual column analysis.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64250.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64250.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	17	8.6	ug/kg	
11104-28-2	Aroclor 1221	ND	17	14	ug/kg	
11141-16-5	Aroclor 1232	ND	17	14	ug/kg	
53469-21-9	Aroclor 1242	ND	17	8.6	ug/kg	
12672-29-6	Aroclor 1248	ND	17	8.6	ug/kg	
11097-69-1	Aroclor 1254	ND	17	8.6	ug/kg	
11096-82-5	Aroclor 1260	ND	17	8.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	63%		44-126%
2051-24-3	Decachlorobiphenyl	72%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK20782.D	1	08/08/07	FS	07/27/07	OP21640	GKK761
Run #2	TT08190.D	10	08/06/07	FS	07/27/07	OP21640	GTT278

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2	31.7 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.7	0.41	ug/kg	
319-84-6	alpha-BHC	ND	1.7	0.48	ug/kg	
319-85-7	beta-BHC	ND	1.7	0.44	ug/kg	
319-86-8	delta-BHC	ND	1.7	0.75	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.7	0.58	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.7	0.34	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.7	0.37	ug/kg	
60-57-1	Dieldrin	ND	1.7	0.37	ug/kg	
72-54-8	4,4'-DDD	ND	3.4	0.68	ug/kg	
72-55-9	4,4'-DDE	ND	3.4	0.68	ug/kg	
50-29-3	4,4'-DDT	ND [b] UJ	33	7.6	ug/kg	
72-20-8	Endrin	ND	3.4	0.68	ug/kg	
1031-07-8	Endosulfan sulfate	2.1 J	3.4	1.1	ug/kg	J
7421-93-4	Endrin aldehyde	ND UL	3.4	1.0	ug/kg	
53494-70-5	Endrin ketone	ND	3.4	0.68	ug/kg	
959-98-8	Endosulfan-I	ND	1.7	0.37	ug/kg	
33213-65-9	Endosulfan-II	ND	3.4	0.51	ug/kg	
76-44-8	Heptachlor	ND [b]	16	4.6	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.7	0.34	ug/kg	
72-43-5	Methoxychlor	ND [b] UJ	33	6.6	ug/kg	
8001-35-2	Toxaphene	ND	85	43	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	55%	80%	46-122%
2051-24-3	Decachlorobiphenyl	57%	81%	50-133%

(a) All hits confirmed by dual column analysis.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64251.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64251.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	17	8.5	ug/kg	
11104-28-2	Aroclor 1221	ND	17	14	ug/kg	
11141-16-5	Aroclor 1232	ND	17	14	ug/kg	
53469-21-9	Aroclor 1242	ND	17	8.5	ug/kg	
12672-29-6	Aroclor 1248	ND	17	8.5	ug/kg	
11097-69-1	Aroclor 1254	ND	17	8.5	ug/kg	
11096-82-5	Aroclor 1260	ND	17	8.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		44-126%
2051-24-3	Decachlorobiphenyl	80%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08074.D KK20592.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08074.D	5	07/31/07	FS	07/27/07	OP21640	GTT274
Run #2	KK20592.D	10	08/02/07	FS	07/27/07	OP21640	GKK756

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2	29.9 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.7	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.7	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.7	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.7	4.2	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.7	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.7	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.7	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.7	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.9	ug/kg	
50-29-3	4,4'-DDT	ND [b] UJ	39	8.9	ug/kg	
72-20-8	Endrin	ND	19	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.4	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	19	5.8	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.7	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.9	ug/kg	
76-44-8	Heptachlor	ND [b]	19	5.4	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.7	1.9	ug/kg	
72-43-5	Methoxychlor	ND [b] UJ	39	7.7	ug/kg	
8001-35-2	Toxaphene	ND	480	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%	69%	46-122%
2051-24-3	Decachlorobiphenyl	86%	75%	50-133%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64254.D

Form I OV

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64254.D	1	07/31/07	JB	07/27/07	OP21641	GST1697
Run #2							

	Initial Weight	Final Volume
Run #1	29.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	75.6	19	9.7	ug/kg	J
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		44-126%
2051-24-3	Decachlorobiphenyl	70%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20475.D

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20475.D	1	07/26/07	FS	07/24/07	OP21578	GKK752
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.054	0.022	ug/l	
319-84-6	alpha-BHC	ND	0.054	0.016	ug/l	
319-85-7	beta-BHC	ND	0.054	0.022	ug/l	
319-86-8	delta-BHC	ND	0.054	0.022	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.054	0.016	ug/l	
5103-71-9	alpha-Chlordane	ND	0.054	0.016	ug/l	
5103-74-2	gamma-Chlordane	ND	0.054	0.016	ug/l	
60-57-1	Dieldrin	ND	0.054	0.016	ug/l	
72-54-8	4,4'-DDD	ND	0.11	0.022	ug/l	
72-55-9	4,4'-DDE	ND	0.11	0.022	ug/l	
50-29-3	4,4'-DDT	ND	0.11	0.022	ug/l	
72-20-8	Endrin	ND	0.11	0.043	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.11	0.022	ug/l	
7421-93-4	Endrin aldehyde	ND	0.11	0.043	ug/l	
53494-70-5	Endrin ketone	ND	0.11	0.022	ug/l	
959-98-8	Endosulfan-I	ND	0.054	0.016	ug/l	
33213-65-9	Endosulfan-II	ND	0.11	0.022	ug/l	
76-44-8	Heptachlor	ND	0.054	0.022	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.054	0.016	ug/l	
72-43-5	Methoxychlor	ND	0.11	0.043	ug/l	
8001-35-2	Toxaphene	ND	2.7	1.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		42-127%
2051-24-3	Decachlorobiphenyl	71%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022303.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022303.D	1	07/26/07	AC	07/24/07	OP21577	GXX184
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.54	0.27	ug/l	
11104-28-2	Aroclor 1221	ND	0.54	0.43	ug/l	
11141-16-5	Aroclor 1232	ND	0.54	0.43	ug/l	
53469-21-9	Aroclor 1242	ND	0.54	0.27	ug/l	
12672-29-6	Aroclor 1248	ND	0.54	0.27	ug/l	
11097-69-1	Aroclor 1254	ND	0.54	0.27	ug/l	
11096-82-5	Aroclor 1260	ND	0.54	0.27	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		38-127%
2051-24-3	Decachlorobiphenyl	75%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F51154

DATE: September 25, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3510C/8270C for aqueous matrices and USEPA SW846 Methods 3550B/8270C for solid matrices. The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of seven aqueous samples and nineteen solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
AOSW01	F51154-1	LFSW01	F51154-17
AOSW02	F51154-2	APSD01	F51154-18
TMSW01	F51154-3	41SD11	F51154-22
AOSD01	F51154-4	49SS02	F51154-23
AOSD02	F51154-5	49SS03	F51154-24
41SW08	F51154-6	49SS04	F51154-25
41SW09	F51154-7	49SS05	F51154-26
41SW10	F51154-8	59SS06	F51154-27
41SD08	F51154-9	59SS07	F51154-28
41SD09	F51154-10	59SS08	F51154-29
41SD10	F51154-11	59SS09	F51154-30
LFSD01	F51154-15	59SS10	F51154-31
TMSD01	F51154-16	TMSS05	F51154-32

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications, except for the following. Benzoic acid was qualified rejected "R" for samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) based upon the grossly low (i.e. <10% recovery) found in the associated LCS (see Section VIII).

Eric Malarek, Chemist

9/25/07
Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F51154

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For semivolatile (SVOC) and polynuclear aromatic hydrocarbons (PAH) compounds , the samples are cooled @4°C ± 2°C for aqueous samples with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. For solid matrices, the samples are cooled @4°C ± 2°C with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous samples were collected on 07/18/07 and 07/19/07. For the surface water samples collected 07/18/07 and 07/19/07, the SVOCs were extracted on 07/24/07 and 07/26/07 and analyzed on 07/31/07. For the surface water samples collected 07/18/07 and 07/19/07, the PAHs by SIM were extracted on 07/24/07 and 07/26/07 and analyzed on 07/30/07 and 07/31/07. For the sediment and soil samples collected 07/18/07 and 07/19/07, the SVOCs were extracted on 07/25/07, 07/27/07, and 08/06/07 (49SS03 (F51154-24) confirmation) and analyzed on 07/26/07, 07/30/07, and 08/06/07 (49SS03 (F51154-24) confirmation). Sample 49SS03 (F51154-24) was re-extracted and re-analyzed for confirmation out of holding time for compound di-n-butylphthalate; however, the original sample was reported. No qualifiers were applied based upon this outlier. For the sediment and soil samples collected 07/18/07 and 07/19/07, the PAHs by SIM were extracted on 07/27/07 and analyzed on 07/27/07, 07/31/07, and 08/01/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 07/05/07 on instrument MSBNA02. Target compounds 2,4-dinitrophenol (19.7%) and 4,6-dinitro-2-methylphenol (25.9%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9950) and 4,6-dinitro-2-methylphenol (r=0.9975) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Sample LFSW01 (F51154-17) was analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 07/23/07 on instrument MSBNA03. Target compounds 2,4-dinitrophenol (49.6%; grossly exceeding) and 4,6-dinitro-2-methylphenol (32.7%; grossly exceeding) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9956) and 4,6-dinitro-2-methylphenol (r=0.9972) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) were analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 07/31/07 on instrument MSBNA03. Target compounds 2,4-dinitrophenol (43.8%; grossly exceeding) and 4,6-dinitro-2-methylphenol (22.8%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9962) and 4,6-dinitro-2-methylphenol (r=0.9982) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. No samples reported were analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 07/13/07 on instrument MSBNA04. Target compounds 2,4-dinitrophenol (42.0%; grossly exceeding) and 4,6-dinitro-2-methylphenol (24.0%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9988) and 4,6-dinitro-2-methylphenol (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) as well as the confirmation for sample 49SS03 (F51154-24) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 07/27/07 on instrument MSBNA01, all target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No qualifiers were applied. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), LFSW01 (F51154-17), AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), 41SW10 (F51154-8), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For SVOC initial calibration verification performed on 07/05/07 @15:27 on instrument MSBNA02, 3-nitroaniline (26.0%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 3-nitroaniline. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC initial calibration verification performed on 07/05/07 @15:55 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 07/31/07 @09:50 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this continuing calibration.

- For SVOC initial calibration verification performed on 07/23/07 @18:28 on instrument MSBNA03, 4-chloroaniline (44.6%; grossly exceeding) and 3-nitroaniline (27.8%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 07/23/07 @18:58 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 07/26/07 @09:59 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this continuing calibration.

- For SVOC continuing calibration performed on 07/30/07 @09:46 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this continuing calibration.

- For SVOC initial calibration verification performed on 07/31/07 @16:11 on instrument MSBNA03, 4-chloroaniline (43.4%; grossly exceeding) and 3-nitroaniline (35.4%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 07/31/07 @16:42 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/01/07 @12:32 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC initial calibration verification performed on 07/13/07 @13:48 on instrument MSBNA04, 4-chloroaniline (38.2%) and 3-nitroaniline (39.0%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 07/13/07 @14:19 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 07/31/07 @11:19 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/06/07 @11:28 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. Confirmation for sample 49SS03 (F51154-24) applies to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 07/27/07 @20:02 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this initial calibration verification.

- For PAH by SIM continuing calibration performed on 07/30/07 @11:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 07/30/07 @23:02 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this continuing calibration.

- For PAH by SIM continuing calibration performed on 07/30/07 @11:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 07/31/07 @09:58 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 41SD08 (F51154-9) and 41SD09 (F51154-10) apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/01/07 @13:31 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
07/31/07	OP21580-MB	All SVOC target <½MRL	NA	NA	None
08/01/07	OP21580-MB	All SVOC target <½MRL	NA	NA	None
07/31/07	OP21610-MB	All SVOC target <½MRL	NA	NA	None
07/30/07	OP21581-MB	All PAH SIM target <½MRL	NA	NA	None
07/30/07	OP21611-MB	All PAH SIM target <½MRL	NA	NA	None
07/05/07	OP21206-MB	All PAH SIM target <½MRL	NA	NA	None
09/15/07	RB083007	All SVOC target <½MRL	NA	NA	None
09/20/07	RB083007	All PAH SIM target <½MRL	NA	NA	None

Table 2 Blank Contamination Analysis Summary, Continued

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
07/26/07	OP21602-MB	All SVOC target <½MRL	NA	NA	None
07/30/07	OP21634-MB	All SVOC target <½MRL	NA	NA	None
07/27/07	OP21630-MB	All PAH SIM target <½MRL	NA	NA	None
07/31/07	OP21636-MB	All PAH SIM target <½MRL	NA	NA	None
08/01/07	OP21636-MB	All PAH SIM target <½MRL	NA	NA	None
07/31/07	RB071807	All SVOC target <½MRL	NA	NA	None
07/30/07	RB071807	All PAH SIM target <½MRL	NA	NA	None
08/02/07	072407R	All SVOC target <½MRL	NA	NA	None
08/02/07	072407R	All PAH SIM target <½MRL	NA	NA	None
08/02/07	072507R	All SVOC target <½MRL	NA	NA	None
08/02/07	072507R	All PAH SIM target <½MRL	NA	NA	None

NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:
2-Fluorophenol (14-62%) – (DoD QSM = 20-110%)
Phenol – d5 (10-40%) – (DoD QSM = 10-115%)
2,4,6-Tribromophenol (33-118%) – (DoD QSM = 40-125%)
Nitrobenzene-d5 (42-108%) – (DoD QSM = 40-110%)
2-Fluorobiphenyl (40-106%) – (DoD QSM = 50-110%)
p-Terphenyl – d14 (39-121%) – (DoD QSM = 50-135%)

Solid Criteria:
2-Fluorophenol (40-102%) – (DoD QSM = 35-105%)
Phenol – d5 (41-100%) – (DoD QSM = 40-100%)
2,4,6-Tribromophenol (42-108%) – (DoD QSM = 35-125%)
Nitrobenzene-d5 (40-105%) – (DoD QSM = 35-100%)
2-Fluorobiphenyl (43-107%) – (DoD QSM = 45-105%)
p-Terphenyl – d14 (45-119%) – (DoD QSM = 30-125%)

- For soil sample 49SS03 (F51154-24), 2,4,6-tribromophenol (41.0%) was outside lab criteria; however within DoD QSM criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 59.0% recovery.

- For all other field samples, all surrogates were within criteria limits. No qualifiers were applied.

VII-Internal Standards

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Sample

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD LCS aqueous recovery limits are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006). DoD LCS solid recovery limits are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21580-BS was used as the aqueous LCS for the SVOC analysis on 07/31/07. Benzoic acid (8%) was grossly below (i.e. <10%R) the laboratory and/or the DoD QSM criteria. Benzoic acid was qualified rejected "R" based upon the very low recovery. All other compounds were within criteria. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this LCS.

- Sample OP21610-BS was used as the aqueous LCS for the SVOC analysis on 07/31/07. All criteria were met. No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this LCS.

- Sample OP21602-BS was used as the solid LCS for the SVOC analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this LCS.

- Sample OP21634-BS was used as the solid LCS for the SVOC analysis on 07/30/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

- Sample OP21581-BS was used as the aqueous LCS for the PAH SIM analysis on 07/30/07. All criteria were met. No qualifiers were applied. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this LCS.

- Sample OP21611-BS was used as the aqueous LCS for the PAH SIM analysis on 07/30/07. 1-Methylnaphthalene (57%) and 2-methylnaphthalene (55%) were below laboratory criteria. The associated sample was non-detect for these compounds and was qualified bias low "UL" based upon the low recoveries. Sample LFSW01 (F51154-17) applies to this LCS.

- Sample OP21630-BS was used as the solid LCS for the PAH SIM analysis on 07/27/07. All criteria were met. No qualifiers were applied. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this LCS.

- Sample OP21636-BS was used as the solid LCS for the PAH SIM analysis on 07/31/07. All criteria were met. No qualifiers were applied. No samples reported were analyzed using this LCS.

- Sample OP21636-BS was used as the solid LCS for the PAH SIM analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006). DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample AOSW02 (F51154-2) was used for the aqueous MS/MSD for SVOC analysis on 07/31/07. All criteria were met. No qualifiers were applied. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used for the aqueous MS/MSD for SVOC analysis on 07/31/07. 4-Nitrophenol (56%) and phenol (56%, 56%) were above laboratory accuracy criteria; however, within DoD QSM criteria. All other target compounds were within criteria. The associated aqueous LCS was within criteria and all surface water samples were non-detect for these compounds. No qualifiers were applied for 4-nitrophenol and phenol based upon these outliers. Sample LFSW01 (F51154-17) applies to this MS/MSD.

- Sample F51123-5 was used for the MS/MSD for the solid SVOC analysis on 07/26/07. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this MS/MSD.

- Sample APSD01 (F51154-18) was used for the solid MS/MSD for SVOC analysis on 07/30/07. Benzoic acid (RPD=37%), 1,3-dichlorobenzene (43%), 1,4-dichlorobenzene (44%), 3,3'-dichlorobenzidine (25%, 24%), hexachlorocyclopentadiene (13%, 10%), and hexachloroethane (41%, 33%) were below laboratory and/or DoD QSM accuracy criteria. All other target compounds were within criteria. The associated solid LCS was within criteria and all solid samples were non-detect for these compounds. 1,3-Dichlorobenzene, 1,4-dichlorobenzene, 3,3'-dichlorobenzidine, hexachlorocyclopentadiene, and hexachloroethane were non-detect for the spiked sample and qualified "UL" based upon the low recoveries. No qualifiers were applied for benzoic acid based upon this outlier. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

- Sample AOSW02 (F51154-2) was used for the aqueous MS/MSD for PAH SIM analysis on 07/03/07. All criteria were met. No qualifiers were applied. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used for the aqueous MS/MSD for PAH SIM analysis on 07/03/07. All criteria were met. No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this MS/MSD.

- Sample F51296-22 was used for the MS/MSD for the solid PAH SIM analysis on 07/28/07. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Samples AOSD01 (F51154-4) and AOSD02 (F51154-5) apply to this MS/MSD.

- Sample 41SD09 (F51154-10) was used for the solid MS/MSD for PAH SIM analysis on 07/31/07. Benzo(g,h,i)perylene (53%), indeno(1,2,3-cd)pyrene (56%), benzo(b)fluoranthene (67%, 65%), benzo(k)fluoranthene (60%), chrysene (57%), benzo(a)pyrene (68%), and benzo(a)anthracene (61%) were below laboratory; however, within DoD QSM accuracy criteria. All other target compounds were within criteria. The associated solid LCS was within criteria. Benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, benzo(a)pyrene, and benzo(a)anthracene were detected for the spiked sample and qualified "L" based upon the low recoveries. Samples 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), TMSD01 (F51154-16), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), 49SS05 (F51154-26), 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) apply to this MS/MSD.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair AOSW01 (F51154-1) and TMSW01 (F51154-3) was collected for TCL SVOCs and PAHs. All detected TCL SVOCs and PAHs found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. All other TCL SVOC and PAH target compounds were non-detect. Phenanthrene (58.5%) was above criteria due to low concentration levels detected below the MRL. Phenanthrene was qualified estimated "J" for the original and duplicate pair samples based upon this outlier. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for TCL SVOCs and PAHs for Duplicate Pair AOSW01 (F51154-1) and TMSW01 (F51154-3)

Compound	Original Sample (µg/L)	Duplicate Pair (µg/L)	%RPD
Acenaphthene	0.91J	0.75J	19.3
Phenanthrene	0.95J	0.52J	58.5
Fluorene	1.7	1.3	26.7
1-Methylnaphthalene	4.8	3.4	34.2

J = Estimated value <MRL and >MDL.

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field sediment sample duplicate pair LFSD01 (F51154-15) and TMSD01 (F51154-16) was collected for TCL SVOCs and PAHs. All detected TCL SVOCs and PAHs found in the sample and its duplicate pair and associated %RPD are noted in **Table 4**. All other TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

Table 4 Field Precision Hits Analysis Summary for TCL SVOCs and PAHs for Duplicate Pair LFSD01 (F51154-15) and TMSD01 (F51154-16)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Benzo(g,h,i)perylene	92U	20.8J	NA
Indeno(1,2,3-cd)pyrene	92U	20.2J	NA
Benzo(b)fluoranthene	45.6J	37.5J	19.5
Benzo(k)fluoranthene	31.2J	26.9J	14.8
Chrysene	43.0J	32.8J	26.9
Benzo(a)pyrene	31.9J	27.9J	13.4
Benzo(a)anthracene	29.0J	26.2J	10.1

J = Estimated value <MRL and >MDL.
U = Non-detect as <MRL.
NA = Not Applicable

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: AOSW02MS (F51154-2MS), bis(2-ethylhexyl)phthalate

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:

	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (381474 * 40 * 1000 * 1) / (413841 * 0.892 * 480 * 1) = 86.1 ng/mL
= 86.1 µg/L

Reported Value = 86.2 µg/L
% Difference = 0.1%
Values were within 10% difference.

Sample: AOSW01 (F51154-1), fluorene

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (71366 * 4 * 1000 * 1) / (128124 * 1.333 * 980 * 1) = 1.7 ng/mL
= 1.7 µg/L

Reported Value = 1.7 µg/L
% Difference = 0.0%
Values were within 10% difference.

Sample: 49SS02 (F51154-23), di-n-butyl phthalate

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where:	Conc.	= Sample concentration in µg/kg
	Ax	= Area of characteristic ion for compound being measured.
	Is	= Amount of internal standard injected (ng).
	Vt	= Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
	Ais	= Area of characteristic ion for the internal standard.
	RRF	= Average relative response factor for compound being measured (from ICAL)
	Vi	= Volume of extract injected (uL).
	W(s)	= Weight of sample extracted or diluted in grams.
	D	= Percent dry weight (100 - % moisture in sample)/100
	DF	= Dilution factor

Conc. µg/kg = (47730 * 40 * 1000 * 1) / (452232 * 1.278 * 1 * 30.0 * 0.8960) = 123 µg/kg
Reported Value = 123 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 49SS02 (F51154-23), chrysene

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
Ais = Area of characteristic ion for the internal standard.
RRF = Average relative response factor for compound being measured (from ICAL)
Vi = Volume of extract injected (uL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (3895 * 4.0 * 1000 * 4) / (81063 * 1.670 * 1 * 30.0 * 0.8960) = 17.1 µg/kg
Reported Value = 17.1 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: U003663.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOSW01		
Lab Sample ID:	F51154-1	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003663.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	26	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.1	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.1	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	26	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.1	1.0	ug/l	
	3&4-Methylphenol	ND	5.1	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	26	10	ug/l	
87-86-5	Pentachlorophenol	ND	26	10	ug/l	
108-95-2	Phenol	ND	5.1	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.1	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	2.0	ug/l	
86-74-8	Carbazole	ND	5.1	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.1	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.1	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.1	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.1	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.1	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.1	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	AOSW01		
Lab Sample ID:	F51154-1	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.1	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.1	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.1	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.1	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.1	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.1	1.9	ug/l	
78-59-1	Isophorone	ND	5.1	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.1	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		14-62%
4165-62-2	Phenol-d5	28%		10-40%
118-79-6	2,4,6-Tribromophenol	84%		33-118%
4165-60-0	Nitrobenzene-d5	69%		42-108%
321-60-8	2-Fluorobiphenyl	73%		40-106%
1718-51-0	Terphenyl-d14	81%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035898.D

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Report of Analysis

Client Sample ID:	AOSW01		
Lab Sample ID:	F51154-1	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035898.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.91 J	1.0	0.51	ug/l	J
208-96-8	Acenaphthylene	ND	1.0	0.51	ug/l	
120-12-7	Anthracene	ND	1.0	0.51	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.051	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.051	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.051	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.26	ug/l	
86-73-7	Fluorene	1.7	1.0	0.26	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.051	ug/l	
90-12-0	1-Methylnaphthalene	4.8	1.0	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	1.0	0.26	ug/l	
85-01-8	Phenanthrene	0.95 J	1.0	0.51	ug/l	J
129-00-0	Pyrene	ND	1.0	0.26	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003664.D

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Report of Analysis

Client Sample ID:	AOSW02		
Lab Sample ID:	F51154-2	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003664.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	25	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.1	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.1	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.1	1.0	ug/l	
	3&4-Methylphenol	ND	5.1	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	10	ug/l	
87-86-5	Pentachlorophenol	ND	25	10	ug/l	
108-95-2	Phenol	ND	5.1	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.1	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	2.0	ug/l	
86-74-8	Carbazole	ND	5.1	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.1	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.1	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.1	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.1	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.1	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.1	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSW02		
Lab Sample ID:	F51154-2	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.1	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.1	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.1	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.1	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.1	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.1	1.9	ug/l	
78-59-1	Isophorone	ND	5.1	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.1	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-62%
4165-62-2	Phenol-d5	30%		10-40%
118-79-6	2,4,6-Tribromophenol	73%		33-118%
4165-60-0	Nitrobenzene-d5	71%		42-108%
321-60-8	2-Fluorobiphenyl	71%		40-106%
1718-51-0	Terphenyl-d14	72%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035899.D

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Report of Analysis

Client Sample ID:	AOSW02		
Lab Sample ID:	F51154-2	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035899.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	0.53	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.53	ug/l	
120-12-7	Anthracene	ND	1.1	0.53	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.21	0.053	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.21	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.21	0.053	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.21	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.21	0.11	ug/l	
218-01-9	Chrysene	ND	0.21	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.21	0.053	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.27	ug/l	
86-73-7	Fluorene	ND	1.1	0.27	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.21	0.053	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.27	ug/l	
91-20-3	Naphthalene	ND	1.1	0.27	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.53	ug/l	
129-00-0	Pyrene	ND	1.1	0.27	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003667.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-3	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003667.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	26	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.1	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.1	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	26	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.1	1.0	ug/l	
	3&4-Methylphenol	ND	5.1	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	26	10	ug/l	
87-86-5	Pentachlorophenol	ND	26	10	ug/l	
108-95-2	Phenol	ND	5.1	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.1	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	2.0	ug/l	
86-74-8	Carbazole	ND	5.1	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.1	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.1	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.1	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.1	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.1	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.1	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-3	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.1	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.1	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.1	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.1	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.1	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.1	1.9	ug/l	
78-59-1	Isophorone	ND	5.1	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.1	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		14-62%
4165-62-2	Phenol-d5	31%		10-40%
118-79-6	2,4,6-Tribromophenol	81%		33-118%
4165-60-0	Nitrobenzene-d5	74%		42-108%
321-60-8	2-Fluorobiphenyl	75%		40-106%
1718-51-0	Terphenyl-d14	77%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035902.D

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Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-3	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035902.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.75 J	1.0	0.51	ug/l	J
208-96-8	Acenaphthylene	ND	1.0	0.51	ug/l	
120-12-7	Anthracene	ND	1.0	0.51	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.051	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.051	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.051	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.26	ug/l	
86-73-7	Fluorene	1.3	1.0	0.26	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.051	ug/l	
90-12-0	1-Methylnaphthalene	3.4	1.0	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	1.0	0.26	ug/l	
85-01-8	Phenanthrene	0.52 J	1.0	0.51	ug/l	J
129-00-0	Pyrene	ND	1.0	0.26	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09439.D

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Report of Analysis

Client Sample ID:	AOSD01		
Lab Sample ID:	F51154-4	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	66.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09439.D	1	07/26/07	NJ	07/25/07	OP21602	SR446
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1300	500	ug/kg	
95-57-8	2-Chlorophenol	ND	250	50	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	250	50	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	50	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	250	50	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1300	500	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	500	100	ug/kg	
95-48-7	2-Methylphenol	ND	250	50	ug/kg	
	3&4-Methylphenol	ND	250	50	ug/kg	
88-75-5	2-Nitrophenol	ND	250	50	ug/kg	
100-02-7	4-Nitrophenol	ND	1300	500	ug/kg	
87-86-5	Pentachlorophenol	ND	1300	500	ug/kg	
108-95-2	Phenol	ND	250	50	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	50	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	50	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	250	50	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	500	130	ug/kg	
100-51-6	Benzyl Alcohol	ND	250	50	ug/kg	
91-58-7	2-Chloronaphthalene	ND	250	50	ug/kg	
106-47-8	4-Chloroaniline	ND	500	200	ug/kg	
86-74-8	Carbazole	ND	250	50	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	250	50	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	250	100	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	250	50	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	250	50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	250	50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	250	50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	250	50	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	100	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	100	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	500	250	ug/kg	
132-64-9	Dibenzofuran	ND	250	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSD01		
Lab Sample ID:	F51154-4	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	66.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	500	130	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	500	250	ug/kg	
84-66-2	Diethyl phthalate	ND	500	130	ug/kg	
131-11-3	Dimethyl phthalate	ND	500	130	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	500	250	ug/kg	
118-74-1	Hexachlorobenzene	ND	250	50	ug/kg	
87-68-3	Hexachlorobutadiene	ND	250	100	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	250	100	ug/kg	
67-72-1	Hexachloroethane	ND	250	100	ug/kg	
78-59-1	Isophorone	ND	250	50	ug/kg	
88-74-4	2-Nitroaniline	ND	500	130	ug/kg	
99-09-2	3-Nitroaniline	ND	500	130	ug/kg	
100-01-6	4-Nitroaniline	ND	500	180	ug/kg	
98-95-3	Nitrobenzene	ND	250	50	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	250	100	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	50	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	250	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	85%		42-108%
4165-60-0	Nitrobenzene-d5	65%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035879.D

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Report of Analysis

Client Sample ID:	AOSD01		
Lab Sample ID:	F51154-4	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	66.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035879.D	4	07/27/07	RB	07/27/07	OP21630	SW1858
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	400	100	ug/kg	
208-96-8	Acenaphthylene	ND	400	100	ug/kg	
120-12-7	Anthracene	ND	400	60	ug/kg	
56-55-3	Benzo(a)anthracene	ND	80	20	ug/kg	
50-32-8	Benzo(a)pyrene	ND	80	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	80	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	80	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	80	20	ug/kg	
218-01-9	Chrysene	ND	80	20	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	80	20	ug/kg	
206-44-0	Fluoranthene	ND	400	70	ug/kg	
86-73-7	Fluorene	ND	400	60	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	80	20	ug/kg	
90-12-0	1-Methylnaphthalene	ND	400	60	ug/kg	
91-57-6	2-Methylnaphthalene	ND	400	60	ug/kg	
91-20-3	Naphthalene	ND	400	60	ug/kg	
85-01-8	Phenanthrene	ND	400	60	ug/kg	
129-00-0	Pyrene	ND	400	70	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	78%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09440.D

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Report of Analysis

Client Sample ID:	AOSD02		
Lab Sample ID:	F51154-5	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	59.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09440.D	1	07/26/07	NJ	07/25/07	OP21602	SR446
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1400	560	ug/kg	
95-57-8	2-Chlorophenol	ND	280	56	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	56	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	56	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	280	56	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1400	560	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	560	110	ug/kg	
95-48-7	2-Methylphenol	ND	280	56	ug/kg	
	3&4-Methylphenol	ND	280	56	ug/kg	
88-75-5	2-Nitrophenol	ND	280	56	ug/kg	
100-02-7	4-Nitrophenol	ND	1400	560	ug/kg	
87-86-5	Pentachlorophenol	ND	1400	560	ug/kg	
108-95-2	Phenol	ND	280	56	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	56	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	56	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	280	56	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	560	140	ug/kg	
100-51-6	Benzyl Alcohol	ND	280	56	ug/kg	
91-58-7	2-Chloronaphthalene	ND	280	56	ug/kg	
106-47-8	4-Chloroaniline	ND	560	220	ug/kg	
86-74-8	Carbazole	ND	280	56	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	280	56	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	280	110	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	280	56	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	280	56	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	280	56	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	280	56	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	280	56	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	280	110	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	280	110	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	560	280	ug/kg	
132-64-9	Dibenzofuran	ND	280	56	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSD02		
Lab Sample ID:	F51154-5	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	59.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	560	140	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	560	280	ug/kg	
84-66-2	Diethyl phthalate	ND	560	140	ug/kg	
131-11-3	Dimethyl phthalate	ND	560	140	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	560	280	ug/kg	
118-74-1	Hexachlorobenzene	ND	280	56	ug/kg	
87-68-3	Hexachlorobutadiene	ND	280	110	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	280	110	ug/kg	
67-72-1	Hexachloroethane	ND	280	110	ug/kg	
78-59-1	Isophorone	ND	280	56	ug/kg	
88-74-4	2-Nitroaniline	ND	560	140	ug/kg	
99-09-2	3-Nitroaniline	ND	560	140	ug/kg	
100-01-6	4-Nitroaniline	ND	560	200	ug/kg	
98-95-3	Nitrobenzene	ND	280	56	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	280	110	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	56	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	280	56	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	73%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	66%		43-107%
1718-51-0	Terphenyl-d14	72%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035880.D

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Report of Analysis

Client Sample ID:	AOSD02		
Lab Sample ID:	F51154-5	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	59.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035880.D	4	07/27/07	RB	07/27/07	OP21630	SW1858
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	450	110	ug/kg	
208-96-8	Acenaphthylene	ND	450	110	ug/kg	
120-12-7	Anthracene	ND	450	67	ug/kg	
56-55-3	Benzo(a)anthracene	ND	90	22	ug/kg	
50-32-8	Benzo(a)pyrene	ND	90	22	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	90	22	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	90	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	90	22	ug/kg	
218-01-9	Chrysene	ND	90	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	90	22	ug/kg	
206-44-0	Fluoranthene	ND	450	78	ug/kg	
86-73-7	Fluorene	ND	450	67	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	90	22	ug/kg	
90-12-0	1-Methylnaphthalene	ND	450	67	ug/kg	
91-57-6	2-Methylnaphthalene	ND	450	67	ug/kg	
91-20-3	Naphthalene	ND	450	67	ug/kg	
85-01-8	Phenanthrene	ND	450	67	ug/kg	
129-00-0	Pyrene	ND	450	78	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	79%		43-107%
1718-51-0	Terphenyl-d14	81%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003668.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003668.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	24	9.7	ug/l	
95-57-8	2-Chlorophenol	ND	4.9	0.97	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.9	1.9	ug/l	
120-83-2	2,4-Dichlorophenol	ND	4.9	0.97	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.9	1.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	24	9.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.7	1.9	ug/l	
95-48-7	2-Methylphenol	ND	4.9	0.97	ug/l	
	3&4-Methylphenol	ND	4.9	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	4.9	0.97	ug/l	
100-02-7	4-Nitrophenol	ND	24	9.7	ug/l	
87-86-5	Pentachlorophenol	ND	24	9.7	ug/l	
108-95-2	Phenol	ND	4.9	1.9	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.9	0.97	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.9	0.97	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	4.9	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.9	1.9	ug/l	
100-51-6	Benzyl Alcohol	ND	4.9	0.97	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.9	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	4.9	1.9	ug/l	
86-74-8	Carbazole	ND	4.9	0.97	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.9	0.97	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.9	0.97	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.9	0.97	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.9	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	4.9	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	4.9	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	4.9	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	4.9	0.97	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	4.9	0.97	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	9.7	1.9	ug/l	
132-64-9	Dibenzofuran	ND	4.9	0.97	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	4.9	1.9	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.9	1.9	ug/l	
84-66-2	Diethyl phthalate	ND	4.9	1.9	ug/l	
131-11-3	Dimethyl phthalate	ND	4.9	1.9	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	4.9	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.9	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	4.9	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	4.9	1.5	ug/l	
67-72-1	Hexachloroethane	ND	4.9	1.8	ug/l	
78-59-1	Isophorone	ND	4.9	0.97	ug/l	
88-74-4	2-Nitroaniline	ND	9.7	1.9	ug/l	
99-09-2	3-Nitroaniline	ND	9.7	1.9	ug/l	
100-01-6	4-Nitroaniline	ND	9.7	1.9	ug/l	
98-95-3	Nitrobenzene	ND	4.9	0.97	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.9	0.97	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	0.97	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	4.9	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		14-62%
4165-62-2	Phenol-d5	28%		10-40%
118-79-6	2,4,6-Tribromophenol	78%		33-118%
4165-60-0	Nitrobenzene-d5	73%		42-108%
321-60-8	2-Fluorobiphenyl	75%		40-106%
1718-51-0	Terphenyl-d14	73%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035903.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.97	0.49	ug/l	
208-96-8	Acenaphthylene	ND	0.97	0.49	ug/l	
120-12-7	Anthracene	ND	0.97	0.49	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.19	0.049	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.19	0.097	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.19	0.049	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.19	0.097	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.19	0.097	ug/l	
218-01-9	Chrysene	ND	0.19	0.097	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.19	0.049	ug/l	
206-44-0	Fluoranthene	ND	0.97	0.24	ug/l	
86-73-7	Fluorene	ND	0.97	0.24	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.19	0.049	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.97	0.24	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.97	0.24	ug/l	
91-20-3	Naphthalene	ND	0.97	0.24	ug/l	
85-01-8	Phenanthrene	ND	0.97	0.49	ug/l	
129-00-0	Pyrene	ND	0.97	0.24	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003669.D

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Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003669.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	880 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	28	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.7	1.1	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.7	2.3	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.7	1.1	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.7	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	28	11	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	2.3	ug/l	
95-48-7	2-Methylphenol	ND	5.7	1.1	ug/l	
	3&4-Methylphenol	ND	5.7	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	5.7	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	28	11	ug/l	
87-86-5	Pentachlorophenol	ND	28	11	ug/l	
108-95-2	Phenol	ND	5.7	2.3	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.7	1.1	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.7	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.7	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.7	2.3	ug/l	
100-51-6	Benzyl Alcohol	ND	5.7	1.1	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.7	1.5	ug/l	
106-47-8	4-Chloroaniline	ND	5.7	2.3	ug/l	
86-74-8	Carbazole	ND	5.7	1.1	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.7	1.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.7	1.1	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.7	1.1	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.7	1.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.7	1.7	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.7	1.8	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.7	1.7	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.7	1.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.7	1.1	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	11	2.3	ug/l	
132-64-9	Dibenzofuran	ND	5.7	1.1	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.7	2.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.7	2.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.7	2.3	ug/l	
131-11-3	Dimethyl phthalate	ND	5.7	2.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.7	2.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.7	1.4	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.7	1.9	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.7	1.7	ug/l	
67-72-1	Hexachloroethane	ND	5.7	2.2	ug/l	
78-59-1	Isophorone	ND	5.7	1.1	ug/l	
88-74-4	2-Nitroaniline	ND	11	2.3	ug/l	
99-09-2	3-Nitroaniline	ND	11	2.3	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.3	ug/l	
98-95-3	Nitrobenzene	ND	5.7	1.1	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.7	1.1	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.7	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.7	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		14-62%
4165-62-2	Phenol-d5	32%		10-40%
118-79-6	2,4,6-Tribromophenol	76%		33-118%
4165-60-0	Nitrobenzene-d5	69%		42-108%
321-60-8	2-Fluorobiphenyl	70%		40-106%
1718-51-0	Terphenyl-d14	79%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035904.D

Form I OW7

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035904.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	880 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	0.57	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.57	ug/l	
120-12-7	Anthracene	ND	1.1	0.57	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.23	0.057	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.23	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.23	0.057	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.23	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.23	0.11	ug/l	
218-01-9	Chrysene	ND	0.23	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.23	0.057	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.28	ug/l	
86-73-7	Fluorene	ND	1.1	0.28	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.23	0.057	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-20-3	Naphthalene	ND	1.1	0.28	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.57	ug/l	
129-00-0	Pyrene	ND	1.1	0.28	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003670.D

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Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003670.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND R	25	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	1.0	ug/l	
	3&4-Methylphenol	ND	5.0	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	10	ug/l	
87-86-5	Pentachlorophenol	ND	25	10	ug/l	
108-95-2	Phenol	ND	5.0	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	2.0	ug/l	
86-74-8	Carbazole	ND	5.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.0	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.9	ug/l	
78-59-1	Isophorone	ND	5.0	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-62%
4165-62-2	Phenol-d5	28%		10-40%
118-79-6	2,4,6-Tribromophenol	80%		33-118%
4165-60-0	Nitrobenzene-d5	74%		42-108%
321-60-8	2-Fluorobiphenyl	75%		40-106%
1718-51-0	Terphenyl-d14	80%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035905.D

Form I Only

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035905.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	0.50	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.50	ug/l	
120-12-7	Anthracene	ND	1.0	0.50	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.050	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.25	ug/l	
86-73-7	Fluorene	ND	1.0	0.25	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-20-3	Naphthalene	ND	1.0	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.50	ug/l	
129-00-0	Pyrene	ND	1.0	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09468.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09468.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	2300	900	ug/kg	
95-57-8	2-Chlorophenol	ND	450	90	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	450	90	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	450	90	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	450	90	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	2300	900	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	900	180	ug/kg	
95-48-7	2-Methylphenol	ND	450	90	ug/kg	
	3&4-Methylphenol	ND	450	90	ug/kg	
88-75-5	2-Nitrophenol	ND	450	90	ug/kg	
100-02-7	4-Nitrophenol	ND	2300	900	ug/kg	
87-86-5	Pentachlorophenol	ND	2300	900	ug/kg	
108-95-2	Phenol	ND	450	90	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	450	90	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	450	90	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	450	90	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	900	230	ug/kg	
100-51-6	Benzyl Alcohol	ND	450	90	ug/kg	
91-58-7	2-Chloronaphthalene	ND	450	90	ug/kg	
106-47-8	4-Chloroaniline	ND	900	360	ug/kg	
86-74-8	Carbazole	ND	450	90	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	450	90	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	450	180	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	450	90	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	450	90	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	450	90	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	450	90	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	450	90	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	450	180	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	450	180	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	900	450	ug/kg	
132-64-9	Dibenzofuran	ND	450	90	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	900	230	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	900	450	ug/kg	
84-66-2	Diethyl phthalate	ND	900	230	ug/kg	
131-11-3	Dimethyl phthalate	ND	900	230	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	900	450	ug/kg	
118-74-1	Hexachlorobenzene	ND	450	90	ug/kg	
87-68-3	Hexachlorobutadiene	ND	450	180	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	450	180	ug/kg	
67-72-1	Hexachloroethane	ND	450	180	ug/kg	
78-59-1	Isophorone	ND	450	90	ug/kg	
88-74-4	2-Nitroaniline	ND	900	230	ug/kg	
99-09-2	3-Nitroaniline	ND	900	230	ug/kg	
100-01-6	4-Nitroaniline	ND	900	320	ug/kg	
98-95-3	Nitrobenzene	ND	450	90	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	450	180	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	450	90	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	450	90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		40-102%
4165-62-2	Phenol-d5	53%		41-100%
118-79-6	2,4,6-Tribromophenol	55%		42-108%
4165-60-0	Nitrobenzene-d5	44%		40-105%
321-60-8	2-Fluorobiphenyl	49%		43-107%
1718-51-0	Terphenyl-d14	57%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035942.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035942.D	4	07/31/07	RB	07/27/07	OP21636	SW1861
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	720	180	ug/kg	
208-96-8	Acenaphthylene	ND	720	180	ug/kg	
120-12-7	Anthracene	ND	720	110	ug/kg	
56-55-3	Benzo(a)anthracene	50.9 J	140	36	ug/kg	J
50-32-8	Benzo(a)pyrene	72.0 J	140	36	ug/kg	J
205-99-2	Benzo(b)fluoranthene	120 J	140	36	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	62.2 J	140	36	ug/kg	J
207-08-9	Benzo(k)fluoranthene	66.9 J	140	36	ug/kg	J
218-01-9	Chrysene	98.2 J	140	36	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	140	36	ug/kg	
206-44-0	Fluoranthene	174 J	720	130	ug/kg	J
86-73-7	Fluorene	ND	720	110	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	67.1 J	140	36	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	720	110	ug/kg	
91-57-6	2-Methylnaphthalene	ND	720	110	ug/kg	
91-20-3	Naphthalene	ND	720	110	ug/kg	
85-01-8	Phenanthrene	ND	720	110	ug/kg	
129-00-0	Pyrene	135 J	720	130	ug/kg	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09469.D

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Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09469.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1000	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	81	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	400	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	400	160	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	81	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	81	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	81	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	200	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	100	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	200	ug/kg	
84-66-2	Diethyl phthalate	ND	400	100	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	81	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	81	ug/kg	
67-72-1	Hexachloroethane	ND	200	81	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	100	ug/kg	
99-09-2	3-Nitroaniline	ND	400	100	ug/kg	
100-01-6	4-Nitroaniline	ND	400	140	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	81	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	73%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	60%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	76%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035943.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035943.D	4	07/31/07	RB	07/27/07	OP21636	SW1861
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	81	ug/kg	
208-96-8	Acenaphthylene	ND	320	81	ug/kg	
120-12-7	Anthracene	ND	320	49	ug/kg	
56-55-3	Benzo(a)anthracene	17.4 L	65	16	ug/kg	J
50-32-8	Benzo(a)pyrene	22.9 L	65	16	ug/kg	J
205-99-2	Benzo(b)fluoranthene	40.2 L	65	16	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.0 L	65	16	ug/kg	J
207-08-9	Benzo(k)fluoranthene	24.2 L	65	16	ug/kg	J
218-01-9	Chrysene	34.0 L	65	16	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	65	16	ug/kg	
206-44-0	Fluoranthene	ND	320	57	ug/kg	
86-73-7	Fluorene	ND	320	49	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	21.0 L	65	16	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	320	49	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	49	ug/kg	
91-20-3	Naphthalene	ND	320	49	ug/kg	
85-01-8	Phenanthrene	ND	320	49	ug/kg	
129-00-0	Pyrene	ND	320	57	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09470.D

Run 1 only

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Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09470.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1000	420	ug/kg	
95-57-8	2-Chlorophenol	ND	210	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	42	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	42	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	42	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	420	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	83	ug/kg	
95-48-7	2-Methylphenol	ND	210	42	ug/kg	
	3&4-Methylphenol	ND	210	42	ug/kg	
88-75-5	2-Nitrophenol	ND	210	42	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	420	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	420	ug/kg	
108-95-2	Phenol	ND	210	42	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	42	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	42	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	210	42	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	420	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	210	42	ug/kg	
91-58-7	2-Chloronaphthalene	ND	210	42	ug/kg	
106-47-8	4-Chloroaniline	ND	420	170	ug/kg	
86-74-8	Carbazole	ND	210	42	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	210	42	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	210	83	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	210	42	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	210	42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	42	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	42	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	83	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	83	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	420	210	ug/kg	
132-64-9	Dibenzofuran	ND	210	42	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	420	100	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	420	210	ug/kg	
84-66-2	Diethyl phthalate	ND	420	100	ug/kg	
131-11-3	Dimethyl phthalate	ND	420	100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	420	210	ug/kg	
118-74-1	Hexachlorobenzene	ND	210	42	ug/kg	
87-68-3	Hexachlorobutadiene	ND	210	83	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	210	83	ug/kg	
67-72-1	Hexachloroethane	ND	210	83	ug/kg	
78-59-1	Isophorone	ND	210	42	ug/kg	
88-74-4	2-Nitroaniline	ND	420	100	ug/kg	
99-09-2	3-Nitroaniline	ND	420	100	ug/kg	
100-01-6	4-Nitroaniline	ND	420	150	ug/kg	
98-95-3	Nitrobenzene	ND	210	42	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	210	83	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	42	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	210	42	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		40-102%
4165-62-2	Phenol-d5	77%		41-100%
118-79-6	2,4,6-Tribromophenol	80%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	69%		43-107%
1718-51-0	Terphenyl-d14	81%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035973.D

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Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035973.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	330	83	ug/kg	
208-96-8	Acenaphthylene	ND	330	83	ug/kg	
120-12-7	Anthracene	ND	330	50	ug/kg	
56-55-3	Benzo(a)anthracene	46.3 J	66	17	ug/kg	J
50-32-8	Benzo(a)pyrene	67.3	66	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	113	66	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	53.9 J	66	17	ug/kg	J
207-08-9	Benzo(k)fluoranthene	64.7 J	66	17	ug/kg	J
218-01-9	Chrysene	90.1	66	17	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	66	17	ug/kg	
206-44-0	Fluoranthene	154 J	330	58	ug/kg	J
86-73-7	Fluorene	ND	330	50	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	57.2 J	66	17	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	330	50	ug/kg	
91-57-6	2-Methylnaphthalene	ND	330	50	ug/kg	
91-20-3	Naphthalene	ND	330	50	ug/kg	
85-01-8	Phenanthrene	60.2 J	330	50	ug/kg	J
129-00-0	Pyrene	141 J	330	58	ug/kg	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09471.D

For I Only

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Report of Analysis

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Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09471.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1400	570	ug/kg	
95-57-8	2-Chlorophenol	ND	290	57	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	57	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	57	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	290	57	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1400	570	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	570	110	ug/kg	
95-48-7	2-Methylphenol	ND	290	57	ug/kg	
	3&4-Methylphenol	ND	290	57	ug/kg	
88-75-5	2-Nitrophenol	ND	290	57	ug/kg	
100-02-7	4-Nitrophenol	ND	1400	570	ug/kg	
87-86-5	Pentachlorophenol	ND	1400	570	ug/kg	
108-95-2	Phenol	ND	290	57	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	57	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	57	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	290	57	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	570	140	ug/kg	
100-51-6	Benzyl Alcohol	ND	290	57	ug/kg	
91-58-7	2-Chloronaphthalene	ND	290	57	ug/kg	
106-47-8	4-Chloroaniline	ND	570	230	ug/kg	
86-74-8	Carbazole	ND	290	57	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	290	57	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	290	110	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	290	57	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	290	57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	290	57	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	290	57	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	290	57	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	290	110	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	290	110	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	570	290	ug/kg	
132-64-9	Dibenzofuran	ND	290	57	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

For I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	570	140	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	570	290	ug/kg	
84-66-2	Diethyl phthalate	ND	570	140	ug/kg	
131-11-3	Dimethyl phthalate	ND	570	140	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	570	290	ug/kg	
118-74-1	Hexachlorobenzene	ND	290	57	ug/kg	
87-68-3	Hexachlorobutadiene	ND	290	110	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	290	110	ug/kg	
67-72-1	Hexachloroethane	ND	290	110	ug/kg	
78-59-1	Isophorone	ND	290	57	ug/kg	
88-74-4	2-Nitroaniline	ND	570	140	ug/kg	
99-09-2	3-Nitroaniline	ND	570	140	ug/kg	
100-01-6	4-Nitroaniline	ND	570	200	ug/kg	
98-95-3	Nitrobenzene	ND	290	57	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	290	110	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	57	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	290	57	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	74%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	61%		40-105%
321-60-8	2-Fluorobiphenyl	66%		43-107%
1718-51-0	Terphenyl-d14	76%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035974.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035974.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	460	110	ug/kg	
208-96-8	Acenaphthylene	ND	460	110	ug/kg	
120-12-7	Anthracene	ND	460	69	ug/kg	
56-55-3	Benzo(a)anthracene	29.0 J	92	23	ug/kg	J
50-32-8	Benzo(a)pyrene	31.9 J	92	23	ug/kg	J
205-99-2	Benzo(b)fluoranthene	45.6 J	92	23	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	92	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	31.2 J	92	23	ug/kg	J
218-01-9	Chrysene	43.0 J	92	23	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	92	23	ug/kg	
206-44-0	Fluoranthene	ND	460	80	ug/kg	
86-73-7	Fluorene	ND	460	69	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	92	23	ug/kg	
90-12-0	1-Methylnaphthalene	ND	460	69	ug/kg	
91-57-6	2-Methylnaphthalene	ND	460	69	ug/kg	
91-20-3	Naphthalene	ND	460	69	ug/kg	
85-01-8	Phenanthrene	ND	460	69	ug/kg	
129-00-0	Pyrene	ND	460	80	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09472.D

Form I Cor

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09472.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1200	500	ug/kg	
95-57-8	2-Chlorophenol	ND	250	50	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	250	50	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	50	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	250	50	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1200	500	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	500	100	ug/kg	
95-48-7	2-Methylphenol	ND	250	50	ug/kg	
	3&4-Methylphenol	ND	250	50	ug/kg	
88-75-5	2-Nitrophenol	ND	250	50	ug/kg	
100-02-7	4-Nitrophenol	ND	1200	500	ug/kg	
87-86-5	Pentachlorophenol	ND	1200	500	ug/kg	
108-95-2	Phenol	ND	250	50	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	50	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	50	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	250	50	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	500	120	ug/kg	
100-51-6	Benzyl Alcohol	ND	250	50	ug/kg	
91-58-7	2-Chloronaphthalene	ND	250	50	ug/kg	
106-47-8	4-Chloroaniline	ND	500	200	ug/kg	
86-74-8	Carbazole	ND	250	50	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	250	50	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	250	100	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	250	50	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	250	50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	250	50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	250	50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	250	50	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	100	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	100	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	500	250	ug/kg	
132-64-9	Dibenzofuran	ND	250	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR1

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	500	120	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	500	250	ug/kg	
84-66-2	Diethyl phthalate	ND	500	120	ug/kg	
131-11-3	Dimethyl phthalate	ND	500	120	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	500	250	ug/kg	
118-74-1	Hexachlorobenzene	ND	250	50	ug/kg	
87-68-3	Hexachlorobutadiene	ND	250	100	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	250	100	ug/kg	
67-72-1	Hexachloroethane	ND	250	100	ug/kg	
78-59-1	Isophorone	ND	250	50	ug/kg	
88-74-4	2-Nitroaniline	ND	500	120	ug/kg	
99-09-2	3-Nitroaniline	ND	500	120	ug/kg	
100-01-6	4-Nitroaniline	ND	500	170	ug/kg	
98-95-3	Nitrobenzene	ND	250	50	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	250	100	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	50	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	250	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		40-102%
4165-62-2	Phenol-d5	51%		41-100%
118-79-6	2,4,6-Tribromophenol	54%		42-108%
4165-60-0	Nitrobenzene-d5	44%		40-105%
321-60-8	2-Fluorobiphenyl	46%		43-107%
1718-51-0	Terphenyl-d14	54%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSD01		
Lab Sample ID:	F51154-16	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	65.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035975.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	400	100	ug/kg	
208-96-8	Acenaphthylene	ND	400	100	ug/kg	
120-12-7	Anthracene	ND	400	60	ug/kg	
56-55-3	Benzo(a)anthracene	26.2 J	80	20	ug/kg	J
50-32-8	Benzo(a)pyrene	27.9 J	80	20	ug/kg	J
205-99-2	Benzo(b)fluoranthene	37.5 J	80	20	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.8 J	80	20	ug/kg	J
207-08-9	Benzo(k)fluoranthene	26.9 J	80	20	ug/kg	J
218-01-9	Chrysene	32.8 J	80	20	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	80	20	ug/kg	
206-44-0	Fluoranthene	ND	400	70	ug/kg	
86-73-7	Fluorene	ND	400	60	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	20.2 J	80	20	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	400	60	ug/kg	
91-57-6	2-Methylnaphthalene	ND	400	60	ug/kg	
91-20-3	Naphthalene	ND	400	60	ug/kg	
85-01-8	Phenanthrene	ND	400	60	ug/kg	
129-00-0	Pyrene	ND	400	70	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037535.D

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037535.D	1	07/31/07	RB	07/26/07	OP21610	SL1920
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	25	9.8	ug/l	
95-57-8	2-Chlorophenol	ND	4.9	0.98	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.9	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	4.9	0.98	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.9	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	9.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.8	2.0	ug/l	
95-48-7	2-Methylphenol	ND	4.9	0.98	ug/l	
	3&4-Methylphenol	ND	4.9	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	4.9	0.98	ug/l	
100-02-7	4-Nitrophenol	ND	25	9.8	ug/l	
87-86-5	Pentachlorophenol	ND	25	9.8	ug/l	
108-95-2	Phenol	ND	4.9	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.9	0.98	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.9	0.98	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	4.9	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.9	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	4.9	0.98	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.9	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	4.9	2.0	ug/l	
86-74-8	Carbazole	ND	4.9	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.9	0.98	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.9	0.98	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.9	0.98	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.9	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	4.9	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	4.9	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	4.9	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	4.9	0.98	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	4.9	0.98	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	9.8	2.0	ug/l	
132-64-9	Dibenzofuran	ND	4.9	0.98	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form 1 only

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	4.9	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.9	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	4.9	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	4.9	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	4.9	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	4.9	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	4.9	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	4.9	1.5	ug/l	
67-72-1	Hexachloroethane	ND	4.9	1.9	ug/l	
78-59-1	Isophorone	ND	4.9	0.98	ug/l	
88-74-4	2-Nitroaniline	ND	9.8	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	9.8	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	9.8	2.0	ug/l	
98-95-3	Nitrobenzene	ND	4.9	0.98	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.9	0.98	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	0.98	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	4.9	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		14-62%
4165-62-2	Phenol-d5	32%		10-40%
118-79-6	2,4,6-Tribromophenol	80%		33-118%
4165-60-0	Nitrobenzene-d5	79%		42-108%
321-60-8	2-Fluorobiphenyl	79%		40-106%
1718-51-0	Terphenyl-d14	76%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035923.D

Form I GC/MS

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035923.D	1	07/31/07	RB	07/26/07	OP21611	SW1860
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result		RL	MDL	Units	Q
83-32-9	Acenaphthene	ND		0.98	0.49	ug/l	
208-96-8	Acenaphthylene	ND		0.98	0.49	ug/l	
120-12-7	Anthracene	ND		0.98	0.49	ug/l	
56-55-3	Benzo(a)anthracene	ND		0.20	0.049	ug/l	
50-32-8	Benzo(a)pyrene	ND		0.20	0.098	ug/l	
205-99-2	Benzo(b)fluoranthene	ND		0.20	0.049	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND		0.20	0.098	ug/l	
207-08-9	Benzo(k)fluoranthene	ND		0.20	0.098	ug/l	
218-01-9	Chrysene	ND		0.20	0.098	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND		0.20	0.049	ug/l	
206-44-0	Fluoranthene	ND		0.98	0.25	ug/l	
86-73-7	Fluorene	ND		0.98	0.25	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND		0.20	0.049	ug/l	
90-12-0	1-Methylnaphthalene	ND	VL	0.98	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	VL	0.98	0.25	ug/l	
91-20-3	Naphthalene	ND		0.98	0.25	ug/l	
85-01-8	Phenanthrene	ND		0.98	0.49	ug/l	
129-00-0	Pyrene	ND		0.98	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09473.D

For I COA

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09473.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	380	150	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	75	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND VL	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND VL	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	75	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	75	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND VL	380	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	190	ug/kg	
84-66-2	Diethyl phthalate	ND	380	94	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	75	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND VL	190	75	ug/kg	
67-72-1	Hexachloroethane	ND VL	190	75	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	94	ug/kg	
99-09-2	3-Nitroaniline	ND	380	94	ug/kg	
100-01-6	4-Nitroaniline	ND	380	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	75	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	71%		41-100%
118-79-6	2,4,6-Tribromophenol	66%		42-108%
4165-60-0	Nitrobenzene-d5	59%		40-105%
321-60-8	2-Fluorobiphenyl	60%		43-107%
1718-51-0	Terphenyl-d14	64%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035976.D

Form I OM

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035976.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	16.2 J	60	15	ug/kg	J
50-32-8	Benzo(a)pyrene	18.0 J	60	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	24.7 J	60	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	15.1 J	60	15	ug/kg	J
207-08-9	Benzo(k)fluoranthene	15.2 J	60	15	ug/kg	J
218-01-9	Chrysene	21.1 J	60	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	15.1 J	60	15	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09476.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	380	150	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	76	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	76	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	76	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	190	ug/kg	
84-66-2	Diethyl phthalate	ND	380	95	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	76	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	76	ug/kg	
67-72-1	Hexachloroethane	ND	190	76	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	95	ug/kg	
99-09-2	3-Nitroaniline	ND	380	95	ug/kg	
100-01-6	4-Nitroaniline	ND	380	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	76	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	72%		41-100%
118-79-6	2,4,6-Tribromophenol	70%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	63%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035977.D

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Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035977.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	76	ug/kg	
208-96-8	Acenaphthylene	ND	310	76	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	310	53	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09477.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	370	150	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	74	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	74	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	74	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	123 J	370	93	ug/kg	J
117-84-0	Di-n-octyl phthalate	ND	370	190	ug/kg	
84-66-2	Diethyl phthalate	ND	370	93	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	74	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	74	ug/kg	
67-72-1	Hexachloroethane	ND	190	74	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	93	ug/kg	
99-09-2	3-Nitroaniline	ND	370	93	ug/kg	
100-01-6	4-Nitroaniline	ND	370	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	74	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	74%		43-107%
1718-51-0	Terphenyl-d14	77%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035978.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035978.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	17.1 J	60	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	65.4 J	300	45	ug/kg	J
91-57-6	2-Methylnaphthalene	117 J	300	45	ug/kg	J
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	75.1 J	300	45	ug/kg	J
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09478.D U003771.D

Run 1 OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	R09478.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2 [b]	U003771.D	1	08/06/07	NJ	08/03/07	OP21735	SU184

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	910	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	910	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	910	360	ug/kg	
87-86-5	Pentachlorophenol	ND	910	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	91	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	360	140	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	72	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	72	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	72	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	180	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	128 J	360	91	ug/kg	J
117-84-0	Di-n-octyl phthalate	ND	360	180	ug/kg	
84-66-2	Diethyl phthalate	ND	360	91	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	91	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	72	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	72	ug/kg	
67-72-1	Hexachloroethane	ND	180	72	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	91	ug/kg	
99-09-2	3-Nitroaniline	ND	360	91	ug/kg	
100-01-6	4-Nitroaniline	ND	360	130	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	72	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%	53%	40-102%
4165-62-2	Phenol-d5	48%	62%	41-100%
118-79-6	2,4,6-Tribromophenol	41%	59%	42-108%
4165-60-0	Nitrobenzene-d5	50%	56%	40-105%
321-60-8	2-Fluorobiphenyl	49%	60%	43-107%
1718-51-0	Terphenyl-d14	51%	64%	45-119%

(a) All hits confirmed by re-extraction and reanalysis beyond holdtime.
(b) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OM

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035979.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	21.1 J	58	14	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	22.9 J	58	14	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	49.5 J	290	43	ug/kg	J
91-57-6	2-Methylnaphthalene	60.7 J	290	43	ug/kg	J
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	60.9 J	290	43	ug/kg	J
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09479.D

Form I OM

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09479.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	380	150	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	76	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	76	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	76	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	190	ug/kg	
84-66-2	Diethyl phthalate	ND	380	95	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	76	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	76	ug/kg	
67-72-1	Hexachloroethane	ND	190	76	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	95	ug/kg	
99-09-2	3-Nitroaniline	ND	380	95	ug/kg	
100-01-6	4-Nitroaniline	ND	380	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	76	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		40-102%
4165-62-2	Phenol-d5	78%		41-100%
118-79-6	2,4,6-Tribromophenol	82%		42-108%
4165-60-0	Nitrobenzene-d5	69%		40-105%
321-60-8	2-Fluorobiphenyl	70%		43-107%
1718-51-0	Terphenyl-d14	83%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035980.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035980.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09480.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09480.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	380	150	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	76	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	76	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	76	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	190	ug/kg	
84-66-2	Diethyl phthalate	ND	380	95	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	76	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	76	ug/kg	
67-72-1	Hexachloroethane	ND	190	76	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	95	ug/kg	
99-09-2	3-Nitroaniline	ND	380	95	ug/kg	
100-01-6	4-Nitroaniline	ND	380	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	76	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	69%		41-100%
118-79-6	2,4,6-Tribromophenol	66%		42-108%
4165-60-0	Nitrobenzene-d5	59%		40-105%
321-60-8	2-Fluorobiphenyl	60%		43-107%
1718-51-0	Terphenyl-d14	66%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035981.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035981.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09481.D

Form I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09481.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	360	140	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	72	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	72	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	72	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	180	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Corr

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	180	ug/kg	
84-66-2	Diethyl phthalate	ND	360	90	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	72	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	72	ug/kg	
67-72-1	Hexachloroethane	ND	180	72	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	90	ug/kg	
99-09-2	3-Nitroaniline	ND	360	90	ug/kg	
100-01-6	4-Nitroaniline	ND	360	130	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	72	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		40-102%
4165-62-2	Phenol-d5	67%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	59%		40-105%
321-60-8	2-Fluorobiphenyl	63%		43-107%
1718-51-0	Terphenyl-d14	75%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035982.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035982.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	38.2 J	58	14	ug/kg	J
50-32-8	Benzo(a)pyrene	35.6 J	58	14	ug/kg	J
205-99-2	Benzo(b)fluoranthene	42.4 J	58	14	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	18.9 J	58	14	ug/kg	J
207-08-9	Benzo(k)fluoranthene	31.1 J	58	14	ug/kg	J
218-01-9	Chrysene	40.1 J	58	14	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	90.6 J	290	51	ug/kg	J
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	21.3 J	58	14	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	67.0 J	290	43	ug/kg	J
129-00-0	Pyrene	83.8 J	290	51	ug/kg	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09482.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09482.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	890	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	890	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	71	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	890	360	ug/kg	
87-86-5	Pentachlorophenol	ND	890	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	89	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	360	140	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	71	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	71	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	71	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	180	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OZ

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	89	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	180	ug/kg	
84-66-2	Diethyl phthalate	ND	360	89	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	89	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	71	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	71	ug/kg	
67-72-1	Hexachloroethane	ND	180	71	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	89	ug/kg	
99-09-2	3-Nitroaniline	ND	360	89	ug/kg	
100-01-6	4-Nitroaniline	ND	360	120	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	71	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	71%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	77%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	65%		43-107%
1718-51-0	Terphenyl-d14	87%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035983.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035983.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	280	71	ug/kg	
208-96-8	Acenaphthylene	ND	280	71	ug/kg	
120-12-7	Anthracene	ND	280	43	ug/kg	
56-55-3	Benzo(a)anthracene	21.0 J	57	14	ug/kg	J
50-32-8	Benzo(a)pyrene	19.6 J	57	14	ug/kg	J
205-99-2	Benzo(b)fluoranthene	22.6 J	57	14	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	57	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	18.0 J	57	14	ug/kg	J
218-01-9	Chrysene	22.7 J	57	14	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg	
206-44-0	Fluoranthene	ND	280	50	ug/kg	
86-73-7	Fluorene	ND	280	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	57	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	280	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	280	43	ug/kg	
91-20-3	Naphthalene	ND	280	43	ug/kg	
85-01-8	Phenanthrene	ND	280	43	ug/kg	
129-00-0	Pyrene	ND	280	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Cap

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09483.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	370	150	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	74	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	74	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	74	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I 03

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	190	ug/kg	
84-66-2	Diethyl phthalate	ND	370	93	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	74	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	74	ug/kg	
67-72-1	Hexachloroethane	ND	190	74	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	93	ug/kg	
99-09-2	3-Nitroaniline	ND	370	93	ug/kg	
100-01-6	4-Nitroaniline	ND	370	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	74	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	75%		40-102%
4165-62-2	Phenol-d5	82%		41-100%
118-79-6	2,4,6-Tribromophenol	83%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	73%		43-107%
1718-51-0	Terphenyl-d14	90%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035984.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035984.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	44	ug/kg	
56-55-3	Benzo(a)anthracene	39.2 J	59	15	ug/kg	J
50-32-8	Benzo(a)pyrene	40.0 J	59	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	45.0 J	59	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	23.5 J	59	15	ug/kg	J
207-08-9	Benzo(k)fluoranthene	32.3 J	59	15	ug/kg	J
218-01-9	Chrysene	41.7 J	59	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	81.7 J	300	52	ug/kg	J
86-73-7	Fluorene	ND	300	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	26.3 J	59	15	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	300	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	44	ug/kg	
91-20-3	Naphthalene	ND	300	44	ug/kg	
85-01-8	Phenanthrene	48.8 J	300	44	ug/kg	J
129-00-0	Pyrene	74.7 J	300	52	ug/kg	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09484.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	880	350	ug/kg	
95-57-8	2-Chlorophenol	ND	180	35	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	35	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	880	350	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	70	ug/kg	
95-48-7	2-Methylphenol	ND	180	35	ug/kg	
	3&4-Methylphenol	ND	180	35	ug/kg	
88-75-5	2-Nitrophenol	ND	180	35	ug/kg	
100-02-7	4-Nitrophenol	ND	880	350	ug/kg	
87-86-5	Pentachlorophenol	ND	880	350	ug/kg	
108-95-2	Phenol	ND	180	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	35	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	35	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	350	88	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	35	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	35	ug/kg	
106-47-8	4-Chloroaniline	ND	350	140	ug/kg	
86-74-8	Carbazole	ND	180	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	70	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	35	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	35	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	70	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	70	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	350	180	ug/kg	
132-64-9	Dibenzofuran	ND	180	35	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	350	88	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	350	180	ug/kg	
84-66-2	Diethyl phthalate	ND	350	88	ug/kg	
131-11-3	Dimethyl phthalate	ND	350	88	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	350	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	35	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	70	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	70	ug/kg	
67-72-1	Hexachloroethane	ND	180	70	ug/kg	
78-59-1	Isophorone	ND	180	35	ug/kg	
88-74-4	2-Nitroaniline	ND	350	88	ug/kg	
99-09-2	3-Nitroaniline	ND	350	88	ug/kg	
100-01-6	4-Nitroaniline	ND	350	120	ug/kg	
98-95-3	Nitrobenzene	ND	180	35	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	70	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	35	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		40-102%
4165-62-2	Phenol-d5	72%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	67%		40-105%
321-60-8	2-Fluorobiphenyl	67%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035985.D

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Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035985.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result		RL	MDL	Units	Q
83-32-9	Acenaphthene	ND		280	70	ug/kg	
208-96-8	Acenaphthylene	ND		280	70	ug/kg	
120-12-7	Anthracene	ND		280	42	ug/kg	
56-55-3	Benzo(a)anthracene	ND		56	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND		56	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND		56	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND		56	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND		56	14	ug/kg	
218-01-9	Chrysene	ND		56	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND		56	14	ug/kg	
206-44-0	Fluoranthene	ND		280	49	ug/kg	
86-73-7	Fluorene	ND		280	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND		56	14	ug/kg	
90-12-0	1-Methylnaphthalene	92.0	J	280	42	ug/kg	J
91-57-6	2-Methylnaphthalene	115	J	280	42	ug/kg	J
91-20-3	Naphthalene	82.2	J	280	42	ug/kg	J
85-01-8	Phenanthrene	65.4	J	280	42	ug/kg	J
129-00-0	Pyrene	ND		280	49	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09485.D

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Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09485.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	870	350	ug/kg	
95-57-8	2-Chlorophenol	ND	170	35	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	35	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	870	350	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	350	69	ug/kg	
95-48-7	2-Methylphenol	ND	170	35	ug/kg	
	3&4-Methylphenol	ND	170	35	ug/kg	
88-75-5	2-Nitrophenol	ND	170	35	ug/kg	
100-02-7	4-Nitrophenol	ND	870	350	ug/kg	
87-86-5	Pentachlorophenol	ND	870	350	ug/kg	
108-95-2	Phenol	ND	170	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	35	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	35	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	350	87	ug/kg	
100-51-6	Benzyl Alcohol	ND	170	35	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	35	ug/kg	
106-47-8	4-Chloroaniline	ND	350	140	ug/kg	
86-74-8	Carbazole	ND	170	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	69	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	35	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	35	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	170	69	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	69	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	350	170	ug/kg	
132-64-9	Dibenzofuran	ND	170	35	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	350	87	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	350	170	ug/kg	
84-66-2	Diethyl phthalate	ND	350	87	ug/kg	
131-11-3	Dimethyl phthalate	ND	350	87	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	350	170	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	35	ug/kg	
87-68-3	Hexachlorobutadiene	ND	170	69	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	69	ug/kg	
67-72-1	Hexachloroethane	ND	170	69	ug/kg	
78-59-1	Isophorone	ND	170	35	ug/kg	
88-74-4	2-Nitroaniline	ND	350	87	ug/kg	
99-09-2	3-Nitroaniline	ND	350	87	ug/kg	
100-01-6	4-Nitroaniline	ND	350	120	ug/kg	
98-95-3	Nitrobenzene	ND	170	35	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	69	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	35	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	170	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		40-102%
4165-62-2	Phenol-d5	49%		41-100%
118-79-6	2,4,6-Tribromophenol	55%		42-108%
4165-60-0	Nitrobenzene-d5	46%		40-105%
321-60-8	2-Fluorobiphenyl	49%		43-107%
1718-51-0	Terphenyl-d14	57%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035986.D

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Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035986.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	280	69	ug/kg	
208-96-8	Acenaphthylene	ND	280	69	ug/kg	
120-12-7	Anthracene	ND	280	42	ug/kg	
56-55-3	Benzo(a)anthracene	ND	56	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	56	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	56	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	56	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	56	14	ug/kg	
218-01-9	Chrysene	ND	56	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	56	14	ug/kg	
206-44-0	Fluoranthene	ND	280	49	ug/kg	
86-73-7	Fluorene	ND	280	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	56	14	ug/kg	
90-12-0	1-Methylnaphthalene	51.4 J	280	42	ug/kg	J
91-57-6	2-Methylnaphthalene	56.4 J	280	42	ug/kg	J
91-20-3	Naphthalene	ND	280	42	ug/kg	
85-01-8	Phenanthrene	45.3 J	280	42	ug/kg	J
129-00-0	Pyrene	ND	280	49	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09486.D

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Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09486.D	1	07/30/07	NJ	07/27/07	OP21634	SR448
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	380	150	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	76	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	76	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	76	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OM

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Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	190	ug/kg	
84-66-2	Diethyl phthalate	ND	380	96	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	76	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	76	ug/kg	
67-72-1	Hexachloroethane	ND	190	76	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	96	ug/kg	
99-09-2	3-Nitroaniline	ND	380	96	ug/kg	
100-01-6	4-Nitroaniline	ND	380	130	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	76	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	84%		41-100%
118-79-6	2,4,6-Tribromophenol	84%		42-108%
4165-60-0	Nitrobenzene-d5	71%		40-105%
321-60-8	2-Fluorobiphenyl	75%		43-107%
1718-51-0	Terphenyl-d14	85%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035987.D

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035987.D	4	08/01/07	RB	07/27/07	OP21636	SW1862
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	76	ug/kg	
208-96-8	Acenaphthylene	ND	310	76	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003671.D

for I copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003671.D	1	07/31/07	NJ	07/24/07	OP21580	SU180
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	25	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	1.0	ug/l	
	3&4-Methylphenol	ND	5.0	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	10	ug/l	
87-86-5	Pentachlorophenol	ND	25	10	ug/l	
108-95-2	Phenol	ND	5.0	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	2.0	ug/l	
86-74-8	Carbazole	ND	5.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.0	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.9	ug/l	
78-59-1	Isophorone	ND	5.0	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		14-62%
4165-62-2	Phenol-d5	27%		10-40%
118-79-6	2,4,6-Tribromophenol	80%		33-118%
4165-60-0	Nitrobenzene-d5	76%		42-108%
321-60-8	2-Fluorobiphenyl	79%		40-106%
1718-51-0	Terphenyl-d14	83%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W035906.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W035906.D	1	07/30/07	RB	07/24/07	OP21581	SW1859
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	0.50	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.50	ug/l	
120-12-7	Anthracene	ND	1.0	0.50	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.050	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.25	ug/l	
86-73-7	Fluorene	ND	1.0	0.25	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-20-3	Naphthalene	ND	1.0	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.50	ug/l	
129-00-0	Pyrene	ND	1.0	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F51154

DATE: September 25, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 18, 2007 and July 19, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5030B/8260B for aqueous matrices and USEPA SW846 Method 5035/8260B for solid matrices. A total of seven aqueous samples and eighteen solid samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
AOSW01	F51154-1	APSD01	F51154-18
AOSW02	F51154-2	41SD11	F51154-22
TMSW01	F51154-3	49SS02	F51154-23
AOSD01	F51154-4	49SS03	F51154-24
AOSD02	F51154-5	49SS04	F51154-25
41SW08	F51154-6	49SS05	F51154-26
41SW09	F51154-7	59SS06	F51154-27
41SW10	F51154-8	59SS07	F51154-28
41SD08	F51154-9	59SS08	F51154-29
41SD09	F51154-10	59SS09	F51154-30
41SD10	F51154-11	59SS10	F51154-31
LFSD01	F51154-15	TMSS05	F51154-32
LFSW01	F51154-17		

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
X		Laboratory Control Sample
X		Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
	X	Internal Standards
	X	Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

9/25/07
Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F51154

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: For aqueous samples cooled @ 4°C±2°C; pH<2 HCl, the maximum holding time is 14 days (7 days if no HCl added) from sample collection to analysis. For soil samples cooled @ 4°C±2°C; the maximum holding time is 14 days from sample collection to analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/18/07 and 07/19/07, the coolers were received by the primary laboratory (Accutest) on 07/20/07 at 4.0°C, 4.0°C, 4.6°C, 4.6°C, 4.8°C, 5.0°C, 5.0°C, and 5.8°C. The herbicides were subcontracted to Accutest TX and were received the samples at 4.2°C, 4.0°C, and 3.6°C. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 3.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 5.5°C and 5.2°C. All criteria were met. No qualifiers were applied.

- Holding Time Review: The aqueous samples were collected for TCL VOCs on 07/18/07 and 07/19/07. For the aqueous samples collected 07/18/07, the VOCs were prepped and analyzed on 07/26/07 and 07/31/07 (LFSW01). For the solid samples collected 07/18/07 and 07/19/07, the VOCs were prepped and analyzed on 07/26/07, 07/27/07, and 07/28/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check
The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration performed on 07/25/07 on instrument MSVOA9, target compounds methylene chloride (49.2%; grossly exceeding) and acetone (21.3%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds methylene chloride (r=0.9984) and acetone (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), 59SS10 (F51154-31), and TMSS05 (F51154-32) were analyzed using this initial calibration.

- For initial calibration performed on 07/16/07 on instrument MSVOA3, target compounds acetone (18.5%), methylene chloride (32.0%; grossly exceeding), ethylbenzene (15.1%), m,p-xylene (16.6%), and o-xylene (15.4%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds acetone (r=0.9962), methylene chloride (r=1.0000), ethylbenzene (r=0.9985), m,p-xylene (r=0.9988), and o-xylene (r=0.9990) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), and 49SS05 (F51154-26) as well as the sample confirmations for samples 41SD08 (F51154-9), 41SD10 (F51154-11), 49SS02 (F51154-23), 49SS03 (F51154-24), and 49SS05 (F51154-26) were analyzed using this initial calibration.

- For initial calibration performed on 07/18/07 on instrument MSVOA6, target compounds bromomethane (24.2%), chloroethane (30.7%; grossly exceeding), carbon disulfide (17.4%), methylene chloride (39.6%; grossly exceeding), acetone (22.6%), trans-1,2-dichloroethene (18.2%), and benzene (16.8%) were outside %RSD/RRF criteria. All RSDs/RRFs (RRF≥0.05) were within criteria for all other target compounds. Compounds bromomethane (r=0.9982), chloroethane (r=0.9974), carbon disulfide (r=0.9994), methylene chloride (r=0.9995), acetone (r=0.9989), trans-1,2-dichloroethene (r=1.0000), and benzene (r=1.0000) were quantified using linear or higher order with correlations >0.995; therefore, no qualifiers were applied based upon these outliers. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) were analyzed using this initial calibration.

- For initial calibration performed on 07/31/07 on instrument MSVOA6, target compounds bromomethane (22.0%), chloroethane (21.9%), methylene chloride (123%; grossly exceeding), and trans-1,3-dichloropropene (21.2%) were outside %RSD/RRF criteria. All RSDs/RRFs (RRF≥0.05) were within criteria for all other target compounds. Compounds bromomethane (r=0.9954), chloroethane (r=0.9957), methylene chloride (r=0.9962), and trans-1,3-dichloropropene (r=0.9998) were quantified using linear or higher order with correlations >0.995; therefore, no qualifiers were applied based upon these outliers. Sample LFSW01 (F51154-17) was analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration verification performed on 07/25/07 @15:34 on instrument MSVOA9, bromomethane (28.8%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 07/27/07 @11:30 on instrument MSVOA9, target compounds bromomethane (20.8%) and acetone (59.9%; grossly exceeding) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was qualified estimated "J" for detects and "UJ" for non-detects based upon the very high %Drift. Bromomethane was non-detect for all associated samples; therefore no qualifiers were applied based upon this outlier. Samples 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this continuing calibration.

- For continuing calibration performed on 07/28/07 @12:33 on instrument MSVOA9, all criteria were met. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this continuing calibration.

- For initial calibration verification performed on 07/16/07 @18:20 on instrument MSVOA3, bromomethane (36.1%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 07/26/07 @10:18 on instrument MSVOA3, target compounds acetone (77.6%; grossly exceeding) and 2-butanone (23.6%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was qualified estimated "J" for detects and "UJ" for non-detects based upon the very high %Drift. 2-Butanone (MEK) was qualified estimated "J" for detects and no qualifier for non-detects based upon the high %Drift. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), and 49SS05 (F51154-26) apply to this continuing calibration.

- For continuing calibration performed on 07/27/07 @11:02 on instrument MSVOA3, target compounds acetone (55.4%; grossly exceeding), 1,1,1-trichloroethane (25.9%) and carbon tetrachloride (30.4%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was qualified estimated "J" for detects and "UJ" for non-detects based upon the very high %Drift. 1,1,1-Trichloroethane and carbon tetrachloride were non-detect for all associated confirmation samples; therefore, no qualifiers were applied based upon these outliers. Sample confirmations 41SD08 (F51154-9), 41SD10 (F51154-11), 49SS02 (F51154-23), 49SS03 (F51154-24), and 49SS05 (F51154-26) apply to this continuing calibration.

- For initial calibration verification performed on 07/18/07 @12:59 on instrument MSVOA6, target compound bromomethane (31.1%) was outside criteria. All criteria (%D≤20%; %Drift≤20%; RRF≥0.05) were met for all other target compounds. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 07/26/07 @10:10 on instrument MSVOA6, target compound chloroethane (27.8%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Chloroethane was non-detect for all associated samples; therefore no qualifiers were applied based upon the high %D. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this continuing calibration.

- For initial calibration verification performed on 07/31/07 @13:39 on instrument MSVOA6, target compound bromomethane (21.8%), acetone (22.5%), and trans-1,3-dichloropropene (20.5%) were outside criteria. All criteria (%D≤20%; %Drift≤20%; RRF≥0.05) were met for all other target compounds. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon these outliers.

- For continuing calibration performed on 07/31/07 @14:27 on instrument MSVOA6, all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 1) as needed. Rinse blank RB083007 (F52208-1) (low-flow pump) applies to the groundwater "GW" samples in this SDG. The surface water "SW" samples were collected directly into the laboratory bottles; therefore, no rinse blank applies for the SW samples. Rinse blanks 072407R (F51275-1) and 072507R (F51300-31) apply to the surface soil "SS" and subsurface soil "SB" samples in this SDG. Rinse blank RB071807 (F51154-12) applies to the sediment "SD" samples in this SDG. The trip blanks 071807TW (F51154-13) and TB071907W (F51154-21) apply to the aqueous samples collected 07/18/07 and 07/19/07, respectively. The trip blanks 071807TS (F51154-14) and TB071907S (F51154-19) apply to the solid samples collected 07/18/07 and 07/19/07, respectively.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
07/26/07	VJ2187-MB	All target <½MRL	NA	NA	None
07/31/07	VJ2191-MB	All target <½MRL	NA	NA	None
09/13/07	RB083007	All target <½MRL	NA	NA	None
07/26/07	071807TW	All target <½MRL	NA	NA	None
07/26/07	071907TW	Chloroform	1.3	6.5	None
Analysis Date	**QC Blank ID**	**Compound**	**Max Conc. µg/kg**	**Action Level µg/kg**	**B qualified samples**
07/26/07	VH1662-MB	All target <½MRL	NA	NA	None
07/27/07	VF413-MB	All target <½MRL	NA	NA	None
07/28/07	VF414-MB	All target <½MRL	NA	NA	None
07/31/07	072407R	All target <½MRL	NA	NA	None
08/02/07	072507R	All target <½MRL	NA	NA	None
07/26/07	RB071807	Methylene chloride	2.7J	27	None
07/26/07	071807TS	All target <½MRL	NA	NA	None
07/26/07	071907TS	All target <½MRL	NA	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. The DoD aqueous LCS recovery limits are specified in Table D-4 of the DoD QSM (DoD, 2006). DoD LCS soil recovery limits are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample VJ2187-BS was used as the aqueous LCS for the VOC analysis on 07/26/07. Trans-1,3-dichloropropene (83%) was below lab limits and within DoD QSM criteria. Trans-1,3-dichloropropene was non-detect for all associated samples; therefore, the samples were qualified bias low "UL" for these compounds based upon this outlier. All other percent recoveries were within criteria for all target compounds. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this LCS.

- Sample VJ2191-BS was used as the aqueous LCS for the VOC analysis on 07/31/07. All criteria were met. No qualifiers were applied. Sample LFSW01 (F51154-17) applies to this LCS.

- Sample VH1662-BS was used as the solid LCS for the VOC analysis on 07/26/07. Chloromethane (56%) was below the lab limits and within DoD QSM criteria and vinyl chloride (58%) was below both the DoD QSM and lab limits. Chloromethane and vinyl chloride were non-detect for all associated samples; therefore, the samples were qualified bias low "UL" for these compounds based upon these outliers. All other percent recoveries were within criteria for all target compounds. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), and 49SS05 (F51154-26) apply to this LCS.

- Sample VF413-BS was used as the solid LCS for the VOC analysis on 07/27/07. All criteria were met. No qualifiers were applied. Samples 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this LCS.

- Sample VF414-BS was used as the solid LCS for the VOC analysis on 07/28/07. All criteria were met. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The DoD MS/MSD aqueous recovery limits follow the LCS criteria and are specified in Table D-4 of the DoD QSM (DoD, 2006). The DoD MS/MSD solid recovery limits follow the LCS criteria and are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample AOSW02 (F51154-2) was used for the aqueous MS/MSD analysis on 07/26/07. Cis-1,3-dichloropropene (81%) and trans-1,3-dichloropropene (80%, 82%) were outside lab criteria and within DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI). The associated samples were non-detect for these compounds; therefore, the spiked sample was qualified bias low "UL" for these compounds based upon these outliers. All other percent recoveries were within criteria for all target compounds. Samples AOSW01 (F51154-1), AOSW02 (F51154-2), TMSW01 (F51154-3), 41SW08 (F51154-6), 41SW09 (F51154-7), and 41SW10 (F51154-8) apply to this MS/MSD.

- Sample LFSW01 (F51154-17) was used for the aqueous MS/MSD analysis on 07/31/07. Bromomethane (146%, 148%) was outside DoD QSM criteria and within lab criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI). The associated sample was non-detect for this compound; therefore, no qualifiers were applied based upon this outlier. All other percent recoveries were within criteria for all target compounds. Sample LFSW01 (F51154-17) applies to this MS/MSD.

- Sample AOSD02 (F51154-5) was used for the solid MS/MSD analysis on 07/26/07. Acetone (51%, 48%), bromoform (52%, 47%), chloroethane (56%, 60%), carbon tetrachloride (71%, 56%), dibromochloromethane (70%, 66%), trans-1,3-dichloropropene (82%), 2-hexanone (58%), 4-methyl-2-pentanone (65%), methyl bromide (52%, 56%), methyl chloride (39%, 46%), methylene chloride (202%, 171%), methyl ethyl ketone (48%, 55%), toluene (125%), and vinyl chloride (43%, 46%) were outside lab criteria and/or DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI) except for methyl chloride and vinyl chloride. The associated samples were non-detect for all of these compounds. All associated samples were qualified bias low "UL" for methyl chloride and vinyl chloride based upon these outliers. The spiked sample was qualified bias low "L" for detects and "UL" for non-detects for acetone, bromoform, chloroethane, carbon tetrachloride, dibromochloromethane, trans-1,3-dichloropropene, 2-hexanone, 4-methyl-2-pentanone, methyl bromide, and methyl ethyl ketone based upon these outliers. No qualifiers were applied for methylene chloride and toluene based upon the high recoveries (spiked sample was non-detect for these compounds). All other percent recoveries were within criteria for all target compounds. Samples AOSD01 (F51154-4), AOSD02 (F51154-5), 41SD08 (F51154-9), 41SD09 (F51154-10), 41SD10 (F51154-11), LFSD01 (F51154-15), APSD01 (F51154-18), 41SD11 (F51154-22), 49SS02 (F51154-23), 49SS03 (F51154-24), 49SS04 (F51154-25), and 49SS05 (F51154-26) apply to this MS/MSD.

- Sample F51158-1 was used for the solid MS/MSD analysis for analysis on 07/27/07. Since this sample is not a RFAAP site sample, it was not evaluated. No qualifiers were applied. Samples 59SS06 (F51154-27), 59SS07 (F51154-28), 59SS08 (F51154-29), 59SS09 (F51154-30), and 59SS10 (F51154-31) apply to this MS/MSD.

- Sample F51333-1 was used for the solid MS/MSD analysis for analysis on 07/28/07. Since this sample is not a RFAAP site sample, it was not evaluated. No qualifiers were applied. Sample TMSS05 (F51154-32) applies to this MS/MSD.

VIII-System Monitoring Compounds (Surrogates)
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:	Dibromofluoromethane (87-116%) (DoD QSM = 85-115%) 1,2-Dichloroethane-d4 (76-127%) (DoD QSM = 70-120%) Toluene-d8 (86-112%) (DoD QSM = 85-120%) 4-Bromofluorobenzene (84-120%) (DoD QSM = 75-120%)
Solid Criteria:	Dibromofluoromethane (80-121%) (DoD QSM = None Listed) 1,2-Dichloroethane-d4 (77-123%) (DoD QSM = None Listed) Toluene-d8 (71-130%) (DoD QSM = 85-115%) 4-Bromofluorobenzene (59-148%) (DoD QSM = 85-120%)

- For sample AOSD02 (F51154-5), 4-bromofluorobenzene (125%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample AOSD02 (F51154-5), 4-bromofluorobenzene (125%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 41SD08 (F51154-9), 4-bromofluorobenzene (134%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 129% recovery.

- For sample 41SD09 (F51154-10), 4-bromofluorobenzene (131%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 41SD10 (F51154-11), 4-bromofluorobenzene (145%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 134% recovery.

- For sample LFSD01 (F51154-15), 4-bromofluorobenzene (126%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 41SD11 (F51154-22), 4-bromofluorobenzene (135%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 49SS02 (F51154-23), 4-bromofluorobenzene (146%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 134% recovery.

- For sample 49SS03 (F51154-24), 4-bromofluorobenzene (162%) was outside DoD QSM criteria and outside lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 133% recovery.

- For sample 49SS04 (F51154-25), 4-bromofluorobenzene (125%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 49SS05 (F51154-26), 4-bromofluorobenzene (130%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier. The sample was rerun for confirmation with 138% recovery.

- For sample 59SS09 (F51154-30), 4-bromofluorobenzene (132%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample TMSS05 (F51154-32), 4-bromofluorobenzene (121%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met. No qualifiers were applied.

IX-Internal Standards (IS)
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- For sample AOSD01 (F51154-4), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample AOSD02 (F51154-5), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 41SD08 (F51154-9), internal standard 3 1,4-dichlorobenzene-d4 and internal standard 4 tert-butyl-alcohol-d10 were below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4 or tert-butyl-alcohol-d10; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation.

- For sample 41SD10 (F51154-11), internal standard 3 1,4-dichlorobenzene-d4 and internal standard 4 tert-butyl-alcohol-d10 were below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4 or tert-butyl-alcohol-d10; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation.

- For sample LFSD01 (F51154-15), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 41SD11 (F51154-22), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 49SS02 (F51154-23), internal standard 3 1,4-dichlorobenzene-d4 and internal standard 4 tert-butyl-alcohol-d10 were below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4 or tert-butyl-alcohol-d10; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation.

- For sample 49SS03 (F51154-24), internal standard 3 1,4-dichlorobenzene-d4 and internal standard 4 tert-butyl-alcohol-d10 were below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4 or tert-butyl-alcohol-d10; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation.

- For sample 49SS05 (F51154-26), internal standard 3 1,4-dichlorobenzene-d4 and internal standard 4 tert-butyl-alcohol-d10 were below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4 or tert-butyl-alcohol-d10; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation.

- For all other samples, all criteria were met. No qualifiers were applied.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field surface water sample duplicate pair AOSW01 (F51154-1) and TMSW01 (F51154-3) was collected for TCL VOCs. All TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field surface soil sample duplicate pair 49SS05 (F51154-26) and TMSS05 (F51154-32) was collected for TCL VOCs. Acetone was non-detect in the original sample and detected at a concentration below the MRL at 78.2J ug/kg in the duplicate pair. All other TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

XI-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: TB071907W (F51154-21), chloroform

Conc. (µg/L) = (Ax)*(Is) *(DF)/(Ais)*(RRF)

where: Ax is the compound area
Ais is the corresponding internal standard area
Is is the corresponding internal standard concentration (µg/L)
DF is the dilution factor
RRF is the relative response factor.

Conc. µg/L = (27317 * 50 µg/L * 1) / (2460609 * 0.423) = 1.3 µg/L

Reported Conc. = 1.3 µg/L
%D = 0.0%
Values were within 10% difference.

Sample: 41SD08 (F51154-9), methyl ethyl ketone

Conc. (µg/kg) = {(Ax)*(Is)*(DF)*(Vp)} / {(Ais)*(RRF)*(Ws)*Fs)}
where:
Ax is the compound area
Is is the corresponding internal standard concentration (ng/mL)
DF is the dilution factor
Vp is the volume purged (mL)
Ais is the corresponding internal standard area
RRF is the relative response factor
Ws is the weight of the sample (g)
Fs is the fraction solids for the sample

Conc. µg/kg = (73706 * 50 ng/mL * 1 * 5mL) / (919966 * 0.284 * 3.92g * 0.369) =
= 48.8 µg/kg

Reported Conc. = 48.8 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: J031452.D

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Report of Analysis

Client Sample ID:	AOSW01		
Lab Sample ID:	F51154-1	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031452.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSW01		
Lab Sample ID:	F51154-1	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		87-116%
17060-07-0	1,2-Dichloroethane-D4	95%		76-127%
2037-26-5	Toluene-D8	100%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031449.D

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Report of Analysis

Client Sample ID:	AOSW02		
Lab Sample ID:	F51154-2	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031449.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	7.0 J	25	5.0	ug/l	J
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSW02		
Lab Sample ID:	F51154-2	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	108%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-3	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031453.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSW01		
Lab Sample ID:	F51154-3		
Matrix:	AQ - Surface Water	Date Sampled:	07/18/07
Method:	SW846 8260B	Date Received:	07/19/07
Project:	WPA 019 Field Investigation; Radford AAP, VA	Percent Solids:	n/a

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		87-116%
17060-07-0	1,2-Dichloroethane-D4	97%		76-127%
2037-26-5	Toluene-D8	100%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
MDL - Method Detection Limit
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044667.D

For I Only

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOSD01		
Lab Sample ID:	F51154-4	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	66.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044667.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	3.53 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	110	53	ug/kg	
71-43-2	Benzene	ND	11	4.3	ug/kg	
75-27-4	Bromodichloromethane	ND	11	4.3	ug/kg	
75-25-2	Bromoform	ND	11	4.3	ug/kg	
108-90-7	Chlorobenzene	ND	11	4.3	ug/kg	
75-00-3	Chloroethane	ND	11	6.4	ug/kg	
67-66-3	Chloroform	ND	11	4.3	ug/kg	
75-15-0	Carbon disulfide	ND	11	4.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	11	4.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	11	4.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	11	4.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	11	4.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	11	4.3	ug/kg	
124-48-1	Dibromochloromethane	ND	11	4.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	11	4.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	11	4.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	11	4.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	11	4.3	ug/kg	
100-41-4	Ethylbenzene	ND	11	4.3	ug/kg	
591-78-6	2-Hexanone	ND	53	21	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	53	21	ug/kg	
74-83-9	Methyl bromide	ND	11	4.3	ug/kg	
74-87-3	Methyl chloride	ND UL	11	4.3	ug/kg	
75-09-2	Methylene chloride	ND	21	11	ug/kg	
78-93-3	Methyl ethyl ketone	ND	53	21	ug/kg	
100-42-5	Styrene	ND	11	4.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	11	4.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	11	4.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	11	4.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	11	4.3	ug/kg	
108-88-3	Toluene	ND	11	4.3	ug/kg	
79-01-6	Trichloroethylene	ND	11	4.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	AOSD01		
Lab Sample ID:	F51154-4	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	66.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	11	4.3	ug/kg	
	m,p-Xylene	ND	21	6.4	ug/kg	
95-47-6	o-Xylene	ND	11	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	109%		59-148%
17060-07-0	1,2-Dichloroethane-D4	105%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044668.D

Form I copy

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Report of Analysis

Client Sample ID:	AOSD02		
Lab Sample ID:	F51154-5	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	59.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044668.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	4.36 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	87.7 J	97	48	ug/kg	J
71-43-2	Benzene	ND	9.7	3.9	ug/kg	
75-27-4	Bromodichloromethane	ND	9.7	3.9	ug/kg	
75-25-2	Bromoform	ND VL	9.7	3.9	ug/kg	
108-90-7	Chlorobenzene	ND	9.7	3.9	ug/kg	
75-00-3	Chloroethane	ND VL	9.7	5.8	ug/kg	
67-66-3	Chloroform	ND	9.7	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	9.7	3.9	ug/kg	
56-23-5	Carbon tetrachloride	ND VL	9.7	3.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	9.7	3.9	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	9.7	3.9	ug/kg	
107-06-2	1,2-Dichloroethane	ND	9.7	3.9	ug/kg	
78-87-5	1,2-Dichloropropane	ND	9.7	3.9	ug/kg	
124-48-1	Dibromochloromethane	ND VL	9.7	3.9	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	9.7	3.9	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	9.7	3.9	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	9.7	3.9	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND VL	9.7	3.9	ug/kg	
100-41-4	Ethylbenzene	ND	9.7	3.9	ug/kg	
591-78-6	2-Hexanone	ND VL	48	19	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND VL	48	19	ug/kg	
74-83-9	Methyl bromide	ND VL	9.7	3.9	ug/kg	
74-87-3	Methyl chloride	ND VL	9.7	3.9	ug/kg	
75-09-2	Methylene chloride	ND	19	9.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND VL	48	19	ug/kg	
100-42-5	Styrene	ND	9.7	3.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	9.7	3.9	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	9.7	3.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	9.7	3.9	ug/kg	
127-18-4	Tetrachloroethylene	ND	9.7	3.9	ug/kg	
108-88-3	Toluene	ND	9.7	3.9	ug/kg	
79-01-6	Trichloroethylene	ND	9.7	3.9	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AOSD02		
Lab Sample ID:	F51154-5	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	59.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	9.7	3.9	ug/kg	
	m,p-Xylene	ND	19	5.8	ug/kg	
95-47-6	o-Xylene	ND	9.7	3.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	101%		71-130%
460-00-4	4-Bromofluorobenzene	125%		59-148%
17060-07-0	1,2-Dichloroethane-D4	104%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031454.D

Form 1 Copy

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Report of Analysis

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031454.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA1

Accutest Laboratories

Report of Analysis

3.3
3

Client Sample ID:	41SW08		
Lab Sample ID:	F51154-6	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	97%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	107%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031455.D

Form I COA

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031455.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	41SW09		
Lab Sample ID:	F51154-7	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	97%		76-127%
2037-26-5	Toluene-D8	100%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031456.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031456.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND VL	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I only

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Report of Analysis

Client Sample ID:	41SW10		
Lab Sample ID:	F51154-8	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	95%		76-127%
2037-26-5	Toluene-D8	101%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044671.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2 [a]	H044689.D	1	07/27/07	SH	n/a	n/a	VH1663

	Initial Weight
Run #1	3.92 g
Run #2	4.24 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	253 J	170	86	ug/kg	
71-43-2	Benzene	ND	17	6.9	ug/kg	
75-27-4	Bromodichloromethane	ND	17	6.9	ug/kg	
75-25-2	Bromoform	ND	17	6.9	ug/kg	
108-90-7	Chlorobenzene	ND	17	6.9	ug/kg	
75-00-3	Chloroethane	ND	17	10	ug/kg	
67-66-3	Chloroform	ND	17	6.9	ug/kg	
75-15-0	Carbon disulfide	ND	17	6.9	ug/kg	
56-23-5	Carbon tetrachloride	ND	17	6.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	17	6.9	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	17	6.9	ug/kg	
107-06-2	1,2-Dichloroethane	ND	17	6.9	ug/kg	
78-87-5	1,2-Dichloropropane	ND	17	6.9	ug/kg	
124-48-1	Dibromochloromethane	ND	17	6.9	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	17	6.9	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	17	6.9	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	17	6.9	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	17	6.9	ug/kg	
100-41-4	Ethylbenzene	ND	17	6.9	ug/kg	
591-78-6	2-Hexanone	ND	86	35	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	86	35	ug/kg	
74-83-9	Methyl bromide	ND	17	6.9	ug/kg	
74-87-3	Methyl chloride	ND VL	17	6.9	ug/kg	
75-09-2	Methylene chloride	ND	35	17	ug/kg	
78-93-3	Methyl ethyl ketone	48.8 J	86	35	ug/kg	J
100-42-5	Styrene	ND	17	6.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	17	6.9	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	17	6.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	17	6.9	ug/kg	
127-18-4	Tetrachloroethylene	ND	17	6.9	ug/kg	
108-88-3	Toluene	ND	17	6.9	ug/kg	
79-01-6	Trichloroethylene	ND	17	6.9	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD08		
Lab Sample ID:	F51154-9	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	36.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	17	6.9	ug/kg	
	m,p-Xylene	ND	35	10	ug/kg	
95-47-6	o-Xylene	ND	17	6.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	101%	80-121%
2037-26-5	Toluene-D8	110%	105%	71-130%
460-00-4	4-Bromofluorobenzene	129%	134%	59-148%
17060-07-0	1,2-Dichloroethane-D4	98%	100%	77-123%

(a) Confirmation run.
(b) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044672.D

Form I OV

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044672.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	5.48 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	2.2	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	2.2	ug/kg	
75-25-2	Bromoform	ND	5.5	2.2	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	2.2	ug/kg	
75-00-3	Chloroethane	ND	5.5	3.3	ug/kg	
67-66-3	Chloroform	ND	5.5	2.2	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	2.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	2.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	2.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	2.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	2.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	2.2	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	2.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	2.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	2.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	2.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	2.2	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	2.2	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.2	ug/kg	
74-87-3	Methyl chloride	ND UL	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	2.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	2.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	2.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	2.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	2.2	ug/kg	
108-88-3	Toluene	ND	5.5	2.2	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	2.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

For I Only

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD09		
Lab Sample ID:	F51154-10	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	82.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	5.5	2.2	ug/kg	
	m,p-Xylene	ND	11	3.3	ug/kg	
95-47-6	o-Xylene	ND	5.5	2.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-121%
2037-26-5	Toluene-D8	104%		71-130%
460-00-4	4-Bromofluorobenzene	131%		59-148%
17060-07-0	1,2-Dichloroethane-D4	108%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044673.D H044690.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044673.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2 [a]	H044690.D	1	07/27/07	SH	n/a	n/a	VH1663

	Initial Weight
Run #1	4.31 g
Run #2	4.39 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	73	37	ug/kg	
71-43-2	Benzene	ND	7.3	2.9	ug/kg	
75-27-4	Bromodichloromethane	ND	7.3	2.9	ug/kg	
75-25-2	Bromoform	ND	7.3	2.9	ug/kg	
108-90-7	Chlorobenzene	ND	7.3	2.9	ug/kg	
75-00-3	Chloroethane	ND	7.3	4.4	ug/kg	
67-66-3	Chloroform	ND	7.3	2.9	ug/kg	
75-15-0	Carbon disulfide	ND	7.3	2.9	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.3	2.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.3	2.9	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.3	2.9	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.3	2.9	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.3	2.9	ug/kg	
124-48-1	Dibromochloromethane	ND	7.3	2.9	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.3	2.9	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.3	2.9	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.3	2.9	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.3	2.9	ug/kg	
100-41-4	Ethylbenzene	ND	7.3	2.9	ug/kg	
591-78-6	2-Hexanone	ND	37	15	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	37	15	ug/kg	
74-83-9	Methyl bromide	ND	7.3	2.9	ug/kg	
74-87-3	Methyl chloride	ND VL	7.3	2.9	ug/kg	
75-09-2	Methylene chloride	ND	15	7.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	37	15	ug/kg	
100-42-5	Styrene	ND	7.3	2.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.3	2.9	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.3	2.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.3	2.9	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.3	2.9	ug/kg	
108-88-3	Toluene	ND	7.3	2.9	ug/kg	
79-01-6	Trichloroethylene	ND	7.3	2.9	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA7

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD10		
Lab Sample ID:	F51154-11	Date Sampled:	07/18/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	79.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	7.3	2.9	ug/kg	
	m,p-Xylene	ND	15	4.4	ug/kg	
95-47-6	o-Xylene	ND	7.3	2.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	104%	80-121%
2037-26-5	Toluene-D8	106%	110%	71-130%
460-00-4	4-Bromofluorobenzene	134%	145%	59-148%
17060-07-0	1,2-Dichloroethane-D4	108%	102%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044674.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044674.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	5.78 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	75	37	ug/kg	
71-43-2	Benzene	ND	7.5	3.0	ug/kg	
75-27-4	Bromodichloromethane	ND	7.5	3.0	ug/kg	
75-25-2	Bromoform	ND	7.5	3.0	ug/kg	
108-90-7	Chlorobenzene	ND	7.5	3.0	ug/kg	
75-00-3	Chloroethane	ND	7.5	4.5	ug/kg	
67-66-3	Chloroform	ND	7.5	3.0	ug/kg	
75-15-0	Carbon disulfide	ND	7.5	3.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.5	3.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.5	3.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.5	3.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.5	3.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.5	3.0	ug/kg	
124-48-1	Dibromochloromethane	ND	7.5	3.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.5	3.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.5	3.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.5	3.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.5	3.0	ug/kg	
100-41-4	Ethylbenzene	ND	7.5	3.0	ug/kg	
591-78-6	2-Hexanone	ND	37	15	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	37	15	ug/kg	
74-83-9	Methyl bromide	ND	7.5	3.0	ug/kg	
74-87-3	Methyl chloride	ND VL	7.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	15	7.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	37	15	ug/kg	
100-42-5	Styrene	ND	7.5	3.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.5	3.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.5	3.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.5	3.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.5	3.0	ug/kg	
108-88-3	Toluene	ND	7.5	3.0	ug/kg	
79-01-6	Trichloroethylene	ND	7.5	3.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSD01		
Lab Sample ID:	F51154-15	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	57.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	7.5	3.0	ug/kg	
	m,p-Xylene	ND	15	4.5	ug/kg	
95-47-6	o-Xylene	ND	7.5	3.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	102%		71-130%
460-00-4	4-Bromofluorobenzene	126%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031542.D

Form I COA

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031542.D	1	07/31/07	JG	n/a	n/a	VJ2191
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.38	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OR

Accutest Laboratories

Report of Analysis

Client Sample ID:	LFSW01		
Lab Sample ID:	F51154-17	Date Sampled:	07/19/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	104%		76-127%
2037-26-5	Toluene-D8	94%		86-112%
460-00-4	4-Bromofluorobenzene	98%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044675.D

Form I VOA

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044675.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	3.46 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	83	42	ug/kg	
71-43-2	Benzene	ND	8.3	3.3	ug/kg	
75-27-4	Bromodichloromethane	ND	8.3	3.3	ug/kg	
75-25-2	Bromoform	ND	8.3	3.3	ug/kg	
108-90-7	Chlorobenzene	ND	8.3	3.3	ug/kg	
75-00-3	Chloroethane	ND	8.3	5.0	ug/kg	
67-66-3	Chloroform	ND	8.3	3.3	ug/kg	
75-15-0	Carbon disulfide	ND	8.3	3.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	8.3	3.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	8.3	3.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	8.3	3.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	8.3	3.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	8.3	3.3	ug/kg	
124-48-1	Dibromochloromethane	ND	8.3	3.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	8.3	3.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	8.3	3.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	8.3	3.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	8.3	3.3	ug/kg	
100-41-4	Ethylbenzene	ND	8.3	3.3	ug/kg	
591-78-6	2-Hexanone	ND	42	17	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	42	17	ug/kg	
74-83-9	Methyl bromide	ND	8.3	3.3	ug/kg	
74-87-3	Methyl chloride	ND UL	8.3	3.3	ug/kg	
75-09-2	Methylene chloride	ND	17	8.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	42	17	ug/kg	
100-42-5	Styrene	ND	8.3	3.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	8.3	3.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	8.3	3.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	8.3	3.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	8.3	3.3	ug/kg	
108-88-3	Toluene	ND	8.3	3.3	ug/kg	
79-01-6	Trichloroethylene	ND	8.3	3.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSD01		
Lab Sample ID:	F51154-18	Date Sampled:	07/19/07
Matrix:	SO - Sediment	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	8.3	3.3	ug/kg	
	m,p-Xylene	ND	17	5.0	ug/kg	
95-47-6	o-Xylene	ND	8.3	3.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	116%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044676.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044676.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	5.17 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VJ	56	28	ug/kg	
71-43-2	Benzene	ND	5.6	2.2	ug/kg	
75-27-4	Bromodichloromethane	ND	5.6	2.2	ug/kg	
75-25-2	Bromoform	ND	5.6	2.2	ug/kg	
108-90-7	Chlorobenzene	ND	5.6	2.2	ug/kg	
75-00-3	Chloroethane	ND	5.6	3.3	ug/kg	
67-66-3	Chloroform	ND	5.6	2.2	ug/kg	
75-15-0	Carbon disulfide	ND	5.6	2.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.6	2.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.6	2.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.6	2.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.6	2.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.6	2.2	ug/kg	
124-48-1	Dibromochloromethane	ND	5.6	2.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	2.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	2.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	2.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	2.2	ug/kg	
100-41-4	Ethylbenzene	ND	5.6	2.2	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.6	2.2	ug/kg	
74-87-3	Methyl chloride	ND VL	5.6	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.6	2.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.6	2.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	2.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.6	2.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.6	2.2	ug/kg	
108-88-3	Toluene	ND	5.6	2.2	ug/kg	
79-01-6	Trichloroethylene	ND	5.6	2.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	41SD11		
Lab Sample ID:	F51154-22	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	5.6	2.2	ug/kg	
	m,p-Xylene	ND	11	3.3	ug/kg	
95-47-6	o-Xylene	ND	5.6	2.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	106%		71-130%
460-00-4	4-Bromofluorobenzene	135%		59-148%
17060-07-0	1,2-Dichloroethane-D4	115%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044677.D H044691.D

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044677.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2 [a]	H044691.D	1	07/27/07	SH	n/a	n/a	VH1663

	Initial Weight
Run #1	3.74 g
Run #2	2.36 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	70.7 J	75	37	ug/kg	J
71-43-2	Benzene	ND	7.5	3.0	ug/kg	
75-27-4	Bromodichloromethane	ND	7.5	3.0	ug/kg	
75-25-2	Bromoform	ND	7.5	3.0	ug/kg	
108-90-7	Chlorobenzene	ND	7.5	3.0	ug/kg	
75-00-3	Chloroethane	ND	7.5	4.5	ug/kg	
67-66-3	Chloroform	ND	7.5	3.0	ug/kg	
75-15-0	Carbon disulfide	ND	7.5	3.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.5	3.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.5	3.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.5	3.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.5	3.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.5	3.0	ug/kg	
124-48-1	Dibromochloromethane	ND	7.5	3.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.5	3.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.5	3.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.5	3.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.5	3.0	ug/kg	
100-41-4	Ethylbenzene	ND	7.5	3.0	ug/kg	
591-78-6	2-Hexanone	ND	37	15	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	37	15	ug/kg	
74-83-9	Methyl bromide	ND	7.5	3.0	ug/kg	
74-87-3	Methyl chloride	ND VL	7.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	15	7.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	37	15	ug/kg	
100-42-5	Styrene	ND	7.5	3.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.5	3.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.5	3.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.5	3.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.5	3.0	ug/kg	
108-88-3	Toluene	ND	7.5	3.0	ug/kg	
79-01-6	Trichloroethylene	ND	7.5	3.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	49SS02		
Lab Sample ID:	F51154-23	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	89.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	7.5	3.0	ug/kg	
	m,p-Xylene	ND	15	4.5	ug/kg	
95-47-6	o-Xylene	ND	7.5	3.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%	108%	80-121%
2037-26-5	Toluene-D8	105%	107%	71-130%
460-00-4	4-Bromofluorobenzene	134%	146%	59-148%
17060-07-0	1,2-Dichloroethane-D4	119%	112%	77-123%

(a) Confirmation run.
(b) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044678.D H044692.D

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Report of Analysis

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044678.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2 [a]	H044692.D	1	07/27/07	SH	n/a	n/a	VH1663

	Initial Weight
Run #1	2.95 g
Run #2	3.02 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VJ	92	46	ug/kg	
71-43-2	Benzene	ND	9.2	3.7	ug/kg	
75-27-4	Bromodichloromethane	ND	9.2	3.7	ug/kg	
75-25-2	Bromoform	ND	9.2	3.7	ug/kg	
108-90-7	Chlorobenzene	ND	9.2	3.7	ug/kg	
75-00-3	Chloroethane	ND	9.2	5.5	ug/kg	
67-66-3	Chloroform	ND	9.2	3.7	ug/kg	
75-15-0	Carbon disulfide	ND	9.2	3.7	ug/kg	
56-23-5	Carbon tetrachloride	ND	9.2	3.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	9.2	3.7	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	9.2	3.7	ug/kg	
107-06-2	1,2-Dichloroethane	ND	9.2	3.7	ug/kg	
78-87-5	1,2-Dichloropropane	ND	9.2	3.7	ug/kg	
124-48-1	Dibromochloromethane	ND	9.2	3.7	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	9.2	3.7	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	9.2	3.7	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	9.2	3.7	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	9.2	3.7	ug/kg	
100-41-4	Ethylbenzene	ND	9.2	3.7	ug/kg	
591-78-6	2-Hexanone	ND	46	18	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	46	18	ug/kg	
74-83-9	Methyl bromide	ND	9.2	3.7	ug/kg	
74-87-3	Methyl chloride	ND VL	9.2	3.7	ug/kg	
75-09-2	Methylene chloride	ND	18	9.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	46	18	ug/kg	
100-42-5	Styrene	ND	9.2	3.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	9.2	3.7	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	9.2	3.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	9.2	3.7	ug/kg	
127-18-4	Tetrachloroethylene	ND	9.2	3.7	ug/kg	
108-88-3	Toluene	ND	9.2	3.7	ug/kg	
79-01-6	Trichloroethylene	ND	9.2	3.7	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA7

Accutest Laboratories

Report of Analysis

3.2.4

Client Sample ID:	49SS03		
Lab Sample ID:	F51154-24	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	9.2	3.7	ug/kg	
	m,p-Xylene	ND	18	5.5	ug/kg	
95-47-6	o-Xylene	ND	9.2	3.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%	110%	80-121%
2037-26-5	Toluene-D8	108%	110%	71-130%
460-00-4	4-Bromofluorobenzene	133%	162%	59-148%
17060-07-0	1,2-Dichloroethane-D4	116%	117%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044680.D

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Report of Analysis

3-25

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044680.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	4.08 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VJ	70	35	ug/kg	
71-43-2	Benzene	ND	7.0	2.8	ug/kg	
75-27-4	Bromodichloromethane	ND	7.0	2.8	ug/kg	
75-25-2	Bromoform	ND	7.0	2.8	ug/kg	
108-90-7	Chlorobenzene	ND	7.0	2.8	ug/kg	
75-00-3	Chloroethane	ND	7.0	4.2	ug/kg	
67-66-3	Chloroform	ND	7.0	2.8	ug/kg	
75-15-0	Carbon disulfide	ND	7.0	2.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.0	2.8	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.0	2.8	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.0	2.8	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.0	2.8	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.0	2.8	ug/kg	
124-48-1	Dibromochloromethane	ND	7.0	2.8	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.0	2.8	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.0	2.8	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.0	2.8	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.0	2.8	ug/kg	
100-41-4	Ethylbenzene	ND	7.0	2.8	ug/kg	
591-78-6	2-Hexanone	ND	35	14	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	35	14	ug/kg	
74-83-9	Methyl bromide	ND	7.0	2.8	ug/kg	
74-87-3	Methyl chloride	ND VL	7.0	2.8	ug/kg	
75-09-2	Methylene chloride	ND	14	7.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	35	14	ug/kg	
100-42-5	Styrene	ND	7.0	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.0	2.8	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.0	2.8	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.0	2.8	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.0	2.8	ug/kg	
108-88-3	Toluene	ND	7.0	2.8	ug/kg	
79-01-6	Trichloroethylene	ND	7.0	2.8	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

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Report of Analysis

Client Sample ID:	49SS04		
Lab Sample ID:	F51154-25	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	7.0	2.8	ug/kg	
	m,p-Xylene	ND	14	4.2	ug/kg	
95-47-6	o-Xylene	ND	7.0	2.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	102%		71-130%
460-00-4	4-Bromofluorobenzene	125%		59-148%
17060-07-0	1,2-Dichloroethane-D4	117%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044681.D H044693.D

Form I OM

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Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044681.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2 [a]	H044693.D	1	07/27/07	SH	n/a	n/a	VH1663

	Initial Weight
Run #1	3.67 g
Run #2	2.93 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VJ	79	40	ug/kg	
71-43-2	Benzene	ND	7.9	3.2	ug/kg	
75-27-4	Bromodichloromethane	ND	7.9	3.2	ug/kg	
75-25-2	Bromoform	ND	7.9	3.2	ug/kg	
108-90-7	Chlorobenzene	ND	7.9	3.2	ug/kg	
75-00-3	Chloroethane	ND	7.9	4.8	ug/kg	
67-66-3	Chloroform	ND	7.9	3.2	ug/kg	
75-15-0	Carbon disulfide	ND	7.9	3.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.9	3.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.9	3.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.9	3.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.9	3.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.9	3.2	ug/kg	
124-48-1	Dibromochloromethane	ND	7.9	3.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.9	3.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.9	3.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.9	3.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.9	3.2	ug/kg	
100-41-4	Ethylbenzene	ND	7.9	3.2	ug/kg	
591-78-6	2-Hexanone	ND	40	16	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	40	16	ug/kg	
74-83-9	Methyl bromide	ND	7.9	3.2	ug/kg	
74-87-3	Methyl chloride	ND VL	7.9	3.2	ug/kg	
75-09-2	Methylene chloride	ND	16	7.9	ug/kg	
78-93-3	Methyl ethyl ketone	ND	40	16	ug/kg	
100-42-5	Styrene	ND	7.9	3.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.9	3.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.9	3.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.9	3.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.9	3.2	ug/kg	
108-88-3	Toluene	ND	7.9	3.2	ug/kg	
79-01-6	Trichloroethylene	ND	7.9	3.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Corg

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Report of Analysis

Client Sample ID:	49SS05		
Lab Sample ID:	F51154-26	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND VL	7.9	3.2	ug/kg	
	m,p-Xylene	ND	16	4.8	ug/kg	
95-47-6	o-Xylene	ND	7.9	3.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%	107%	80-121%
2037-26-5	Toluene-D8	107%	113%	71-130%
460-00-4	4-Bromofluorobenzene	138%	130%	59-148%
17060-07-0	1,2-Dichloroethane-D4	115%	115%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022458.D

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Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022458.D	1	07/27/07	WJ	n/a	n/a	VF413
Run #2							

	Initial Weight
Run #1	4.45 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VT	61	31	ug/kg	
71-43-2	Benzene	ND	6.1	2.4	ug/kg	
75-27-4	Bromodichloromethane	ND	6.1	2.4	ug/kg	
75-25-2	Bromoform	ND	6.1	2.4	ug/kg	
108-90-7	Chlorobenzene	ND	6.1	2.4	ug/kg	
75-00-3	Chloroethane	ND	6.1	3.7	ug/kg	
67-66-3	Chloroform	ND	6.1	2.4	ug/kg	
75-15-0	Carbon disulfide	ND	6.1	2.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.1	2.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.1	2.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.1	2.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.1	2.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.1	2.4	ug/kg	
124-48-1	Dibromochloromethane	ND	6.1	2.4	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.1	2.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.1	2.4	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.1	2.4	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.1	2.4	ug/kg	
100-41-4	Ethylbenzene	ND	6.1	2.4	ug/kg	
591-78-6	2-Hexanone	ND	31	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	31	12	ug/kg	
74-83-9	Methyl bromide	ND	6.1	2.4	ug/kg	
74-87-3	Methyl chloride	ND	6.1	2.4	ug/kg	
75-09-2	Methylene chloride	ND	12	6.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	31	12	ug/kg	
100-42-5	Styrene	ND	6.1	2.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.1	2.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.1	2.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.1	2.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.1	2.4	ug/kg	
108-88-3	Toluene	ND	6.1	2.4	ug/kg	
79-01-6	Trichloroethylene	ND	6.1	2.4	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

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Report of Analysis

Client Sample ID:	59SS06		
Lab Sample ID:	F51154-27	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	92.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.1	2.4	ug/kg	
	m,p-Xylene	ND	12	3.7	ug/kg	
95-47-6	o-Xylene	ND	6.1	2.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	106%		59-148%
17060-07-0	1,2-Dichloroethane-D4	110%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022459.D

Form I COA

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Report of Analysis

3.2.8

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022459.D	1	07/27/07	WJ	n/a	n/a	VF413
Run #2							

	Initial Weight
Run #1	4.16 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VT	66	33	ug/kg	
71-43-2	Benzene	ND	6.6	2.6	ug/kg	
75-27-4	Bromodichloromethane	ND	6.6	2.6	ug/kg	
75-25-2	Bromoform	ND	6.6	2.6	ug/kg	
108-90-7	Chlorobenzene	ND	6.6	2.6	ug/kg	
75-00-3	Chloroethane	ND	6.6	3.9	ug/kg	
67-66-3	Chloroform	ND	6.6	2.6	ug/kg	
75-15-0	Carbon disulfide	ND	6.6	2.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.6	2.6	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.6	2.6	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.6	2.6	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.6	2.6	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.6	2.6	ug/kg	
124-48-1	Dibromochloromethane	ND	6.6	2.6	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.6	2.6	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.6	2.6	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.6	2.6	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.6	2.6	ug/kg	
100-41-4	Ethylbenzene	ND	6.6	2.6	ug/kg	
591-78-6	2-Hexanone	ND	33	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	33	13	ug/kg	
74-83-9	Methyl bromide	ND	6.6	2.6	ug/kg	
74-87-3	Methyl chloride	ND	6.6	2.6	ug/kg	
75-09-2	Methylene chloride	ND	13	6.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	33	13	ug/kg	
100-42-5	Styrene	ND	6.6	2.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.6	2.6	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.6	2.6	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.6	2.6	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.6	2.6	ug/kg	
108-88-3	Toluene	ND	6.6	2.6	ug/kg	
79-01-6	Trichloroethylene	ND	6.6	2.6	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	59SS07		
Lab Sample ID:	F51154-28	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	91.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.6	2.6	ug/kg	
	m,p-Xylene	ND	13	3.9	ug/kg	
95-47-6	o-Xylene	ND	6.6	2.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	103%		71-130%
460-00-4	4-Bromofluorobenzene	116%		59-148%
17060-07-0	1,2-Dichloroethane-D4	110%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022460.D

Form I Cog

Accutest Laboratories

Report of Analysis

3129

3

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022460.D	1	07/27/07	WJ	n/a	n/a	VF413
Run #2							

	Initial Weight
Run #1	2.74 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND VJ	100	51	ug/kg	
71-43-2	Benzene	ND	10	4.1	ug/kg	
75-27-4	Bromodichloromethane	ND	10	4.1	ug/kg	
75-25-2	Bromoform	ND	10	4.1	ug/kg	
108-90-7	Chlorobenzene	ND	10	4.1	ug/kg	
75-00-3	Chloroethane	ND	10	6.2	ug/kg	
67-66-3	Chloroform	ND	10	4.1	ug/kg	
75-15-0	Carbon disulfide	ND	10	4.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	10	4.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	10	4.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	10	4.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	10	4.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	10	4.1	ug/kg	
124-48-1	Dibromochloromethane	ND	10	4.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	10	4.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	10	4.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	10	4.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	10	4.1	ug/kg	
100-41-4	Ethylbenzene	ND	10	4.1	ug/kg	
591-78-6	2-Hexanone	ND	51	21	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	51	21	ug/kg	
74-83-9	Methyl bromide	ND	10	4.1	ug/kg	
74-87-3	Methyl chloride	ND	10	4.1	ug/kg	
75-09-2	Methylene chloride	ND	21	10	ug/kg	
78-93-3	Methyl ethyl ketone	ND	51	21	ug/kg	
100-42-5	Styrene	ND	10	4.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	10	4.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	10	4.1	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	10	4.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	10	4.1	ug/kg	
108-88-3	Toluene	ND	10	4.1	ug/kg	
79-01-6	Trichloroethylene	ND	10	4.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OP

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS08		
Lab Sample ID:	F51154-29	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	89.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	10	4.1	ug/kg	
	m,p-Xylene	ND	21	6.2	ug/kg	
95-47-6	o-Xylene	ND	10	4.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	101%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	110%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022461.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022461.D	1	07/27/07	WJ	n/a	n/a	VF413
Run #2							

	Initial Weight
Run #1	2.18 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UJ	120	60	ug/kg	
71-43-2	Benzene	ND	12	4.8	ug/kg	
75-27-4	Bromodichloromethane	ND	12	4.8	ug/kg	
75-25-2	Bromoform	ND	12	4.8	ug/kg	
108-90-7	Chlorobenzene	ND	12	4.8	ug/kg	
75-00-3	Chloroethane	ND	12	7.2	ug/kg	
67-66-3	Chloroform	ND	12	4.8	ug/kg	
75-15-0	Carbon disulfide	ND	12	4.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	12	4.8	ug/kg	
75-34-3	1,1-Dichloroethane	ND	12	4.8	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	12	4.8	ug/kg	
107-06-2	1,2-Dichloroethane	ND	12	4.8	ug/kg	
78-87-5	1,2-Dichloropropane	ND	12	4.8	ug/kg	
124-48-1	Dibromochloromethane	ND	12	4.8	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	12	4.8	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	12	4.8	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	12	4.8	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	12	4.8	ug/kg	
100-41-4	Ethylbenzene	ND	12	4.8	ug/kg	
591-78-6	2-Hexanone	ND	60	24	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	60	24	ug/kg	
74-83-9	Methyl bromide	ND	12	4.8	ug/kg	
74-87-3	Methyl chloride	ND	12	4.8	ug/kg	
75-09-2	Methylene chloride	ND	24	12	ug/kg	
78-93-3	Methyl ethyl ketone	ND	60	24	ug/kg	
100-42-5	Styrene	ND	12	4.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	12	4.8	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	12	4.8	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	12	4.8	ug/kg	
127-18-4	Tetrachloroethylene	ND	12	4.8	ug/kg	
108-88-3	Toluene	ND	12	4.8	ug/kg	
79-01-6	Trichloroethylene	ND	12	4.8	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS09		
Lab Sample ID:	F51154-30	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	95.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	12	4.8	ug/kg	
	m,p-Xylene	ND	24	7.2	ug/kg	
95-47-6	o-Xylene	ND	12	4.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		80-121%
2037-26-5	Toluene-D8	108%		71-130%
460-00-4	4-Bromofluorobenzene	122%		59-148%
17060-07-0	1,2-Dichloroethane-D4	116%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022462.D

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022462.D	1	07/27/07	WJ	n/a	n/a	VF413
Run #2							

	Initial Weight
Run #1	2.06 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	65.8 J	130	63	ug/kg	J
71-43-2	Benzene	ND	13	5.1	ug/kg	
75-27-4	Bromodichloromethane	ND	13	5.1	ug/kg	
75-25-2	Bromoform	ND	13	5.1	ug/kg	
108-90-7	Chlorobenzene	ND	13	5.1	ug/kg	
75-00-3	Chloroethane	ND	13	7.6	ug/kg	
67-66-3	Chloroform	ND	13	5.1	ug/kg	
75-15-0	Carbon disulfide	ND	13	5.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	13	5.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	13	5.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	13	5.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	13	5.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	13	5.1	ug/kg	
124-48-1	Dibromochloromethane	ND	13	5.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	13	5.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	13	5.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	13	5.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	13	5.1	ug/kg	
100-41-4	Ethylbenzene	ND	13	5.1	ug/kg	
591-78-6	2-Hexanone	ND	63	25	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	63	25	ug/kg	
74-83-9	Methyl bromide	ND	13	5.1	ug/kg	
74-87-3	Methyl chloride	ND	13	5.1	ug/kg	
75-09-2	Methylene chloride	ND	25	13	ug/kg	
78-93-3	Methyl ethyl ketone	ND	63	25	ug/kg	
100-42-5	Styrene	ND	13	5.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	13	5.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	13	5.1	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	13	5.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	13	5.1	ug/kg	
108-88-3	Toluene	ND	13	5.1	ug/kg	
79-01-6	Trichloroethylene	ND	13	5.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

For I Only

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Report of Analysis

Client Sample ID:	59SS10		
Lab Sample ID:	F51154-31	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	95.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	13	5.1	ug/kg	
	m,p-Xylene	ND	25	7.6	ug/kg	
95-47-6	o-Xylene	ND	13	5.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	105%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	116%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022479.D

Form I OM

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Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022479.D	1	07/28/07	WJ	n/a	n/a	VF414
Run #2							

	Initial Weight
Run #1	3.53 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	78.2 J	82	41	ug/kg	J
71-43-2	Benzene	ND	8.2	3.3	ug/kg	
75-27-4	Bromodichloromethane	ND	8.2	3.3	ug/kg	
75-25-2	Bromoform	ND	8.2	3.3	ug/kg	
108-90-7	Chlorobenzene	ND	8.2	3.3	ug/kg	
75-00-3	Chloroethane	ND	8.2	4.9	ug/kg	
67-66-3	Chloroform	ND	8.2	3.3	ug/kg	
75-15-0	Carbon disulfide	ND	8.2	3.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	8.2	3.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	8.2	3.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	8.2	3.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	8.2	3.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	8.2	3.3	ug/kg	
124-48-1	Dibromochloromethane	ND	8.2	3.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	8.2	3.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	8.2	3.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	8.2	3.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	8.2	3.3	ug/kg	
100-41-4	Ethylbenzene	ND	8.2	3.3	ug/kg	
591-78-6	2-Hexanone	ND	41	16	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	41	16	ug/kg	
74-83-9	Methyl bromide	ND	8.2	3.3	ug/kg	
74-87-3	Methyl chloride	ND	8.2	3.3	ug/kg	
75-09-2	Methylene chloride	ND	16	8.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	41	16	ug/kg	
100-42-5	Styrene	ND	8.2	3.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	8.2	3.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	8.2	3.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	8.2	3.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	8.2	3.3	ug/kg	
108-88-3	Toluene	ND	8.2	3.3	ug/kg	
79-01-6	Trichloroethylene	ND	8.2	3.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Org

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSS05		
Lab Sample ID:	F51154-32	Date Sampled:	07/19/07
Matrix:	SO - Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	8.2	3.3	ug/kg	
	m,p-Xylene	ND	16	4.9	ug/kg	
95-47-6	o-Xylene	ND	8.2	3.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	106%		71-130%
460-00-4	4-Bromofluorobenzene	121%		59-148%
17060-07-0	1,2-Dichloroethane-D4	108%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031457.D

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Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031457.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	2.7 J	5.0	1.0	ug/l	J
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	RB071807		
Lab Sample ID:	F51154-12	Date Sampled:	07/18/07
Matrix:	AQ - Surface Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		87-116%
17060-07-0	1,2-Dichloroethane-D4	94%		76-127%
2037-26-5	Toluene-D8	101%		86-112%
460-00-4	4-Bromofluorobenzene	108%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031458.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	071807TW		
Lab Sample ID:	F51154-13	Date Sampled:	07/18/07
Matrix:	AQ - Trip Blank Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031458.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I rev

Accutest Laboratories

Report of Analysis

Client Sample ID:	071807TW		
Lab Sample ID:	F51154-13	Date Sampled:	07/18/07
Matrix:	AQ - Trip Blank Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044658.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	071807TS		
Lab Sample ID:	F51154-14	Date Sampled:	07/18/07
Matrix:	SO - Trip Blank Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044658.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	2.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	2.0	ug/kg	
75-25-2	Bromoform	ND	5.0	2.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	2.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	3.0	ug/kg	
67-66-3	Chloroform	ND	5.0	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	2.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	2.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	2.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	2.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	2.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	2.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	2.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	2.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	2.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	2.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	2.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	2.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	2.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	2.0	ug/kg	
108-88-3	Toluene	ND	5.0	2.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	2.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Final Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	071807TS		
Lab Sample ID:	F51154-14	Date Sampled:	07/18/07
Matrix:	SO - Trip Blank Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	2.0	ug/kg	
	m,p-Xylene	ND	10	3.0	ug/kg	
95-47-6	o-Xylene	ND	5.0	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	113%		59-148%
17060-07-0	1,2-Dichloroethane-D4	102%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044659.D

Form I OV7

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB071907S		
Lab Sample ID:	F51154-19	Date Sampled:	07/19/07
Matrix:	SO - Trip Blank Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044659.D	1	07/26/07	SH	n/a	n/a	VH1662
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	2.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	2.0	ug/kg	
75-25-2	Bromoform	ND	5.0	2.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	2.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	3.0	ug/kg	
67-66-3	Chloroform	ND	5.0	2.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	2.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	2.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	2.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	2.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	2.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	2.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	2.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	2.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	2.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	2.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	2.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	2.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	2.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	2.0	ug/kg	
108-88-3	Toluene	ND	5.0	2.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	2.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB071907S		
Lab Sample ID:	F51154-19	Date Sampled:	07/19/07
Matrix:	SO - Trip Blank Soil	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	2.0	ug/kg	
	m,p-Xylene	ND	10	3.0	ug/kg	
95-47-6	o-Xylene	ND	5.0	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	113%		59-148%
17060-07-0	1,2-Dichloroethane-D4	101%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: J031459.D

Form I GC

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB071907W		
Lab Sample ID:	F51154-21	Date Sampled:	07/19/07
Matrix:	AQ - Trip Blank Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031459.D	1	07/26/07	JG	n/a	n/a	VJ2187
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result		RL	MDL	Units	Q
67-64-1	Acetone	ND		25	5.0	ug/l	
71-43-2	Benzene	ND		1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND		1.0	0.50	ug/l	
75-25-2	Bromoform	ND		1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND		1.0	0.50	ug/l	
75-00-3	Chloroethane	ND		2.0	1.0	ug/l	
67-66-3	Chloroform	1.3	J	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND		2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND		1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND		1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND		1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND		1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND		1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND		1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND		1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND		1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND		1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND		5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND		5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND		2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND		2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND		5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND		5.0	2.5	ug/l	
100-42-5	Styrene	ND		1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND		1.0	0.50	ug/l	
108-88-3	Toluene	ND		1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND		1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I - OA

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB071907W		
Lab Sample ID:	F51154-21	Date Sampled:	07/19/07
Matrix:	AQ - Trip Blank Water	Date Received:	07/19/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	2.0	0.50	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	110%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerine
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for explosives, nitroglycerine, and PETN using USEPA SW-846 8330A. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
	X	Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F51353

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. For the solid samples, the explosives were extracted on 08/08/07 and analyzed on 08/09/07, 08/10/07, and 08/13/07 (confirmation for sample 43SB03B (F51353-21). All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/10/07	OP21797-MB	All target explosives <½MRL	NA	NA	None
08/10/07	OP21798-MB	All target explosives <½MRL	NA	NA	None
08/13/07	OP21797-MB	All target explosives <½MRL	NA	NA	None
08/09/07	OP21797-MB	PETN & NG <½MRL	NA	NA	None
08/09/07	OP21798-MB	PETN & NG <½MRL	NA	NA	None
08/01/07	072607R	All target explosives <½MRL	NA	NA	None
08/01/07	072607R	PETN & NG <½MRL	NA	NA	None

MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient must be ≥0.995 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For the explosives initial calibration performed on 10/18/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

- For the explosives initial calibration performed on 01/19/07 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Confirmation for sample 43SB03B (F51353-21) applies to this initial calibration.

- For the PETN and nitroglycerinee initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For explosives initial calibration verification performed on 10/18/06 @17:39 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/19/06 @13:44 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/09/07 @21:23 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22) and APSB07A (F51353-23) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @02:54 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @08:25 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @10:38 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), and 43SB03B (F51353-21) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @15:41 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), and TMSB01C (F51353-16) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @21:12 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/11/07 @02:43 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives initial calibration verification performed on 01/19/07 @14:58 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/13/07 @12:21 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Confirmation for sample 43SB03B (F51353-21) applies to this continuing calibration.

- For explosives continuing calibration performed on 08/13/07 @15:01 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerine initial calibration verification performed on 03/15/07 @12:35 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @16:57 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), and APSB08B (F51353-27) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @18:21 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @20:03 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB05A (F51353-4), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), and 43SB01B (F51353-13) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @21:46 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @23:12 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-System Monitoring Compound (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria: 3,4-dinitrotoluene (72-145%)

- All criteria were met for explosives, PETN, and nitroglycerine. No qualifiers were applied.

VI-Laboratory Control Sample

Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21797-BS was used as solid LCS for explosives analyzed on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21798-BS was used as solid LCS for explosives analyzed on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21797-BS was used as solid LCS for explosives analyzed on 08/13/07. HMX (138%) was outside DoD QSM criteria and within laboratory criteria. HMX was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Confirmation for sample 43SB03B (F51353-21) applies to this LCS.

- Sample OP21797-BS2 was used as solid LCS for PETN and nitroglycerine analyzed on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21798-BS2 was used as solid LCS for PETN and nitroglycerine analyzed on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used as the solid MS/MSD for the explosive analysis on 08/10/07. 2,6-Dinitrotoluene (RPD=19%), 4-amino-2,6-dinitrotoluene (RPD=20%), 4-nitrotoluene (RPD=22%), tetryl (RPD=25%), and 2,4,6-trinitrotoluene (26%, -38%; RPD=46%) were outside DoD QSM criteria and/or laboratory criteria. The sample was re-run for confirmation on dissimilar column. All recoveries were outside QC limits due to matrix interferences. The LCS was within criteria (Section VI) for all explosives. For the spiked sample, 2,4,6-trinitrotoluene was qualified estimated "J" based upon these outliers. Compounds 2,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 4-nitrotoluene, and tetryl had recoveries within criteria and/or were non-detect in the spiked sample; therefore, no qualifiers were applied based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as the solid MS/MSD for the explosive analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB05A (F51353-4) was used as the solid MS/MSD for the PETN and nitroglycerine analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB07B (F51353-24) was used as the solid MS/MSD for the PETN and nitroglycerine analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J".

- The %D between the primary and secondary columns was within criteria for all detected explosives, PETN, and nitroglycerine.

Sample: 43SB03B (F51353-21), 2,4,6-trinitrotoluene

Conc. µg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100 (Air dried =1)
DF = Dilution factor

Conc. µg/kg = (4962528 * 20 * 1) / (7320 * 2.13 * 1) = 6370 µg/kg (Signal #1)
Reported Value = 6370 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB05AMS (F51353-4MS), nitroglycerine

Conc. µg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (3406253 * 20 * 1) / (1228 * 2.41 * 1) = 23000 µg/kg (Signal #1)
Reported Value = 23000 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG023307.D PP022188.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A			
Lab Sample ID:	F51353-1		Date Sampled:	07/26/07
Matrix:	SO - Soil		Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A		Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023307.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022188.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.13 g	20.0 ml
Run #2	2.13 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	51	ug/kg	
98-95-3	Nitrobenzene	ND	230	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	116%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023308.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022189.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.39 g	20.0 ml
Run #2	2.39 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	74	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	59	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	64	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	86	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	49	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	105%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023309.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022190.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.45 g	20.0 ml
Run #2	2.45 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	102%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023310.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022194.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.64 g	20.0 ml
Run #2	2.64 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	39	ug/kg	
121-82-4	RDX	ND	190	38	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	38	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	41	ug/kg	
98-95-3	Nitrobenzene	ND	190	54	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	58	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	78	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	52	ug/kg	
479-45-8	Tetryl	ND	380	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	45	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	38	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	570	ug/kg	
78-11-5	PETN	ND [a]	1500	570	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	113%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023311.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022191.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.52 g	20.0 ml
Run #2	2.52 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	71	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	43	ug/kg	
98-95-3	Nitrobenzene	ND	200	56	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	61	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	82	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	55	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	47	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023314.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022197.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.48 g	20.0 ml
Run #2	2.48 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	101%	103%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023315.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022198.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.57 g	20.0 ml
Run #2	2.57 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	40	ug/kg	
121-82-4	RDX	ND	190	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	69	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	42	ug/kg	
98-95-3	Nitrobenzene	ND	190	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	580	ug/kg	
78-11-5	PETN	ND [a]	1600	580	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	103%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023316.D PP022199.D

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023316.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022199.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.27 g	20.0 ml
Run #2	2.27 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	91	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	100%	101%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023317.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022200.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.48 g	20.0 ml
Run #2	2.48 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	114%	114%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023318.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022201.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.21 g	20.0 ml
Run #2	2.21 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023319.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022202.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.38 g	20.0 ml
Run #2	2.38 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	75	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	65	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	87	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023320.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022203.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.75 g	20.0 ml
Run #2	2.75 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	38	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	65	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	52	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	56	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	75	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	50	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	43	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	550	ug/kg	
78-11-5	PETN	ND [a]	1500	550	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023321.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022206.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.75 g	20.0 ml
Run #2	2.75 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	38	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	65	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	52	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	56	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	75	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	50	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	43	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	550	ug/kg	
78-11-5	PETN	ND [a]	1500	550	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023322.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022207.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.56 g	20.0 ml
Run #2	2.56 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	70	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	42	ug/kg	
98-95-3	Nitrobenzene	ND	200	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	590	ug/kg	
78-11-5	PETN	ND [a]	1600	590	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	100%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023323.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022208.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.80 g	20.0 ml
Run #2	2.80 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	37	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	64	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	51	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	55	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	74	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	49	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	42	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1400	540	ug/kg	
78-11-5	PETN	ND [a]	1400	540	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	102%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023326.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022209.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.56 g	20.0 ml
Run #2	2.56 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	70	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	42	ug/kg	
98-95-3	Nitrobenzene	ND	200	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	590	ug/kg	
78-11-5	PETN	ND [a]	1600	590	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023327.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022210.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.47 g	20.0 ml
Run #2	2.47 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023328.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022211.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.66 g	20.0 ml
Run #2	2.66 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	39	ug/kg	
121-82-4	RDX	ND	190	38	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	38	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	41	ug/kg	
98-95-3	Nitrobenzene	ND	190	53	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	58	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	77	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	52	ug/kg	
479-45-8	Tetryl	ND	380	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	44	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	38	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	560	ug/kg	
78-11-5	PETN	ND [a]	1500	560	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	103%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023329.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022212.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.45 g	20.0 ml
Run #2	2.45 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	100%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023304.D PP022213.D PP022237.D

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG023304.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022213.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768
Run #3 [b]	PP022237.D	1	08/13/07	NAF	08/08/07	OP21797	GPP771

	Initial Weight	Final Volume
Run #1	2.13 g	20.0 ml
Run #2	2.13 g	20.0 ml
Run #3	2.13 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
~~DNX~~	~~DNX~~	~~ND~~	~~230~~	~~53~~	~~ug/kg~~	
~~MNX~~	~~MNX~~	~~ND~~	~~230~~	~~47~~	~~ug/kg~~	EQ 2/22/08
~~TNX~~	~~TNX~~	~~ND~~	~~230~~	~~49~~	~~ug/kg~~	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	727	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	136 J	230	47	ug/kg	J
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	51	ug/kg	
98-95-3	Nitrobenzene	ND	230	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	6370 J	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [c]	1900	700	ug/kg	
78-11-5	PETN	ND [c]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	97%	96%	107%	72-145%

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023285.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022172.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.35 g	20.0 ml
Run #2	2.35 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	76	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	46	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	66	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	88	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	59	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	640	ug/kg	
78-11-5	PETN	ND [a]	1700	640	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023286.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022173.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.24 g	20.0 ml
Run #2	2.24 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	69	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	92	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	670	ug/kg	
78-11-5	PETN	ND [a]	1800	670	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023289.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022174.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.14 g	20.0 ml
Run #2	2.14 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	99%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023290.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022177.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.19 g	20.0 ml
Run #2	2.19 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	46	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	46	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	46	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	46	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	65	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	94	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	63	ug/kg	
479-45-8	Tetryl	ND	460	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	54	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	46	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	115%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023291.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022178.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.28 g	20.0 ml
Run #2	2.28 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023292.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022179.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.29 g	20.0 ml
Run #2	2.29 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	660	ug/kg	
78-11-5	PETN	ND [a]	1700	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	101%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023295.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022182.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.31 g	20.0 ml
Run #2	2.31 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	61	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	89	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	650	ug/kg	
78-11-5	PETN	ND [a]	1700	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	115%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023296.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022183.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.26 g	20.0 ml
Run #2	2.26 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	91	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	112%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023297.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022184.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.30 g	20.0 ml
Run #2	2.30 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	650	ug/kg	
78-11-5	PETN	ND [a]	1700	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	116%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023298.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022185.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.50 g	20.0 ml
Run #2	2.50 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	71	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	43	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	82	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	55	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	47	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 3535A	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023036.D	1	08/01/07	NAF	07/31/07	OP21682	GGG990
Run #2	PP021894.D	1	08/01/07	NAF	07/31/07	OP21682	GPP756

	Initial Volume	Final Volume
Run #1	890 ml	10.0 ml
Run #2	890 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.22	0.057	ug/l	
121-82-4	RDX	ND	0.22	0.067	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.22	0.063	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.22	0.080	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	0.11	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.22	0.073	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.22	0.063	ug/l	
98-95-3	Nitrobenzene	ND	0.22	0.082	ug/l	
88-72-2	o-Nitrotoluene	ND	0.22	0.13	ug/l	
99-08-1	m-Nitrotoluene	ND	0.22	0.088	ug/l	
99-99-0	p-Nitrotoluene	ND	0.22	0.11	ug/l	
479-45-8	Tetryl	ND	0.22	0.076	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.22	0.073	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.22	0.056	ug/l	
55-63-0	Nitroglycerine	ND [a]	2.2	0.56	ug/l	
78-11-5	PETN	ND [a]	2.2	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	101%	93%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I RFAAP Project Manager

FROM: Eric Malarek, Shaw E&I RFAAP Project Chemist

SUBJECT: Radford Army Ammunition Plant (RFAAP) Data Validation – Herbicides
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for chlorinated herbicides using USEPA SW846 Method 3550B/8151A. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications, except for the following. Compound dalapon was qualified "R" rejected for the spiked sample 43SB03B (F51353-21) based upon no recoveries in the MS/MSD samples. The LCS was within criteria limits. See Sections VI and VII for further details.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
CHLORINATED HERBICIDES REVIEW
SDG F51353

I-Holding Times

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, chlorinated herbicides compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. For solid samples, the herbicides were extracted on 08/06/07 and analyzed on 08/08/07 and 08/09/07. All criteria were met. No qualifiers were applied.

II-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The DoD QSM specifies that the percent relative standard deviation (%RSD) for a 5-point standard calibration should be ≤20% for each target compound.

- No initial calibration was provided for MCPP and MCPA on instrument GC-GG. During discussions with the laboratory, they indicated that they perform a daily single point calibration rather than a five point calibration. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this single point calibration.

- For initial calibration performed on 08/08/07 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

III-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration establishes the response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The DoD QSM specifies that the percent difference (%D) between the initial calibration CF and the continuing calibration CF must be ≤20%.

- A single point calibration was provided for MCPP and MCPA on instrument GC-GG for 08/08/07 and 08/09/07 runs. The calibration standard indicated adequate response for MCPP and MCPA. However, since a five point calibration was not performed, %D calculation could not be verified. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this single point calibration.

- For initial calibration standard performed on 08/08/07 @18:06 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. See Section II for initial calibration discussion. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), and TMSB05B (F51353-6) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @01:21 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), and 43SB02C (F51353-19) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @06:46 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), and APSB07A (F51353-23) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @12:11 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @17:40 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

IV-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field or laboratory activities. No contaminants should be detected in any of the associated blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are qualified "B" if the concentration of the analyte is ≤ five times (5x) the absolute maximum blank concentration. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/08/07	OP7805-MB	All target compounds <½MRL	NA	NA	None
08/09/07	OP7806-MB	All target compounds <½MRL	NA	NA	None
08/03/07	072607R	All target compounds <½MRL	NA	NA	None

MRL = Method Reporting Limit.
NA = Not Applicable.

V-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. Spike recoveries must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Control Limit: 2,4-DCAA (34-179%)

- For samples 43SB05A (F51353-4) and 43SB01B (F51353-13), the surrogate was adjusted due to double spiking. All criteria were met. No qualifiers were applied.

- For all other samples, all criteria were met. No qualifiers were applied.

VI-Laboratory Control Samples

Data for laboratory control samples (LCS) are generated to determine long-term precision and accuracy of the analytical method. Percent recoveries must be within the specified control limits. DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP7805-BS was used as the solid LCS for the 08/08/07 run. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02C (F51353-19), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP7806-BS was used as the solid LCS for the 08/09/07 run. Dicamba (50%) and dichloroprop (71%) were outside DoD QSM criteria and within laboratory criteria. Dicamba and dichloroprop were non-detect for all associated samples and were qualified bias low "UL" based upon the low recoveries. For all other target compounds, all criteria were met. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used as the solid MS/MSD for the 08/08/07 run. 2,4-D (701%, RPD=176%), 2,4,5-TP (14029%, 3893%; RPD=113%), 2,4,5-T (50%, 0%; RPD=200%), dicamba (485%, 267%; RPD=58%), dinoseb (53%, 140%; RPD=90%), dalapon (0%, 0%), dichloroprop (198%; RPD=72%), and 2,4-DB (182%; RPD=53%) were outside DoD QSM criteria and/or laboratory criteria. The sample was re-run for confirmation. All recoveries were outside QC limits due to matrix interferences. The LCS was within criteria (Section VI) for all herbicides. The spiked sample was non-detect for 2,4-D, 2,4,5-TP, 2,4,5-T, dicamba, dinoseb, dichloroprop, 2,4-DB, MCPP, and MCPA and were qualified estimated "UJ" based upon these outliers and indicative matrix interferences. Dalapon was qualified "R" rejected for the spiked sample based upon no recoveries. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02C (F51353-19), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as the solid MS/MSD for the 08/09/07 run. All criteria were met. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. Percent difference (%D) between the calculated value and the reported value must be within 10%. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

- The %D between the primary and secondary columns was within criteria for all detected chlorinated herbicides.

Sample: 43SB01A (F51353-12), dicamba

Conc. µg/kg = (Amt * Ve * DF) / (CF * Ws * D)

where: Amt = the response on column (µg/mL) of the sample
CF = Calibration Factor (from initial calibration)
Ve = Final Volume of extract (mL)
DF = Dilution factor
W(s) = Weight of sample in grams.
D = Percent dry weight (100 - % moisture in sample)/100

Conc. µg/kg = (540538 * 10 * 1) / (30560* 30.1 * 0.8800) = 6.7 µg/kg

Reported value = 6.7 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

A (Dioxins) = MDL is based upon the signal-to-noise measurement.

B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics and Dioxins) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

D (Organics) = Indicates sample was analyzed at a dilution.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

E (Dioxins) = Reported value is estimated because of the presence of ether interferences.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/F ions is outside accepted ranges. The detected PCDD/F is reported as an estimated maximum possible concentration (EMPC).

I (Dioxins) = Reported value is estimated because of the incorrect isotope rations were obtained.

J (All) = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, (2) estimating a concentration <MRL and ≥ MDL, or estimating a concentration below the calibration range.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

U (All) = ND = BQL = Not detected. The associated number indicates the compound reporting limit for the sample.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36619.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	35	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.1	3.5	ug/kg	
1918-00-9	Dicamba	ND	7.1	5.3	ug/kg	
88-85-7	Dinoseb	ND	7.1	4.6	ug/kg	
75-99-0	Dalapon	ND	35	25	ug/kg	
120-36-5	Dichloroprop	ND	35	9.6	ug/kg	
94-82-6	2,4-DB	ND	71	58	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	87%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36620.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36620.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND VJ	200		ug/kg	
94-74-6	MCPA	ND VJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36621.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.8	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.1	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	
94-82-6	2,4-DB	ND	78	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	63%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36622.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	134% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36623.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36623.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	90%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36624.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36624.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	6.0	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	76%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36627.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.1	4.0	ug/kg	
1918-00-9	Dicamba	ND	8.1	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.1	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	81	66	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	87%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36628.D

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36628.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36629.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.4	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	10	ug/kg	
94-82-6	2,4-DB	ND	74	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	78%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36630.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	124%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36631.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	6.7 J	7.6	5.7	ug/kg	J
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	89%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36632.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	136% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36633.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	77%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36634.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	75%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36635.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	9.9	ug/kg	
94-82-6	2,4-DB	ND	73	60	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	69%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36644.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.0	4.0	ug/kg	
1918-00-9	Dicamba	ND VL	8.0	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.0	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND VL	40	11	ug/kg	
94-82-6	2,4-DB	ND	80	65	ug/kg	
93-65-2	MCPP	ND VJ	200		ug/kg	
94-74-6	MCPA	ND VJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	100%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36645.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.8	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	78	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	80%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36636.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	39	28	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	
94-82-6	2,4-DB	ND	79	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	82%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36646.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND VL	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND VL	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	56%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36639.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND UJ	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND UJ	15	13	ug/kg	
93-76-5	2,4,5-T	ND UJ	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND UJ	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND UJ	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND R	38	27	ug/kg	
120-36-5	Dichloroprop	ND UJ	38	10	ug/kg	
94-82-6	2,4-DB	ND UJ	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	101%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36647.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND VL	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND VL	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	54%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36648.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.5	3.8	ug/kg	
1918-00-9	Dicamba	ND VL	7.5	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.5	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND VL	38	10	ug/kg	
94-82-6	2,4-DB	ND	75	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	114%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36651.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36651.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36652.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36652.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.8	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	78	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36653.D

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36653.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	3.9	ug/kg	
1918-00-9	Dicamba	ND UL	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	39	28	ug/kg	
120-36-5	Dichloroprop	ND UL	39	11	ug/kg	
94-82-6	2,4-DB	ND	79	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	140%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36654.D

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36654.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36655.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND UL	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND UL	36	9.7	ug/kg	
94-82-6	2,4-DB	ND	72	58	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36656.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND UL	7.3	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND UL	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	85%		34-179%
19719-28-9	2,4-DCAA	79%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36657.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36657.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.1	3.6	ug/kg	
1918-00-9	Dicamba	ND VL	7.1	5.3	ug/kg	
88-85-7	Dinoseb	ND	7.1	4.6	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND VL	36	9.6	ug/kg	
94-82-6	2,4-DB	ND	71	58	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	83%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36658.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND UL	7.4	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND UL	37	9.9	ug/kg	
94-82-6	2,4-DB	ND	74	60	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36538.D	1	08/03/07	ATX	07/31/07	T:OP7790	T:GGG1141
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND	50		ug/l	
94-74-6	MCPA	ND	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	80%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals
Accutest Laboratories, Inc., SDG F51353

DATE: February 26, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for target analyte list (TAL) metals using USEPA SW-846 3050B/6010B for ICP metals and SW-846 7471A for mercury. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
	X	ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
X		Laboratory Sample Duplicate
X		Matrix Spike and Spike Duplicate
X		ICP Serial Dilution
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/26/08
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F51353

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: For solid matrices, the samples are shipped cool @4°C±2°C with a maximum holding time is 180 days for ICP metals and 28 days for mercury.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: Samples were collected 07/26/07 for metals analysis. For solid samples, they were digested on 08/01/07 and analyzed on 08/01/07 for ICP metals, 08/02/07 for Mg, Ca, Mn, and Zn for select samples, and 08/03/07 for Mn for select sample. Mercury was digested on 08/01/07 and analyzed on 08/01/07. All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL)	Hg:	1 – blank (DoD QSM <½ MRL)
	3 – standards (r≥0.995)		5 – standards (r≥0.995)
	ICV/CCV (90-110%) (DoD QSM 90-110%)		ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%)
	MRL (70-130%) (DoD QSM 80-120%)		MRL (80-120%) (DoD QSM 80-120%)
	High Std. (95-105%)		High Std. (95-105%)

- The solid samples were analyzed on 08/01/07 for ICP metals, 08/02/07 for Mg, Ca, Mn, and Zn for select samples, and 08/03/07 for Mn for select sample. Mercury was analyzed for the solid samples on 08/01/07 with a correlation coefficient of 0.9999. All ICV/CCV/High Standard criteria were met for all metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL (mg/kg)	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
08/01/07	ICP-Pb	5.0	124%; 138%	43SB01B, 43SB01C, 43SB02C, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06B, APSB07B, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	K
08/01/07	ICP-Se	5.0	130%	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	K
08/01/07	ICP-Tl	20	77.0%	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB02C, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	L, UL
08/01/07	ICP-Zn	1.0	125%	None	K
08/02/07	ICP-Zn	1.0	122%; 237%	None	K
08/02/07	ICP-Mn	3.5	All within criteria	None	None
08/01/07	Hg	0.083	All within criteria	None	None

III-Blanks

Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10 for ICP and Hg = 12) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. mg/kg	Action Level mg/kg	B qualified samples
08/01/07	Antimony	ICB/CCBs	1.34	6.70	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB02C, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B
08/01/07	Potassium	ICB/CCBs	171J	855	43SB01A, 43SB02A, 43SB03A, APSB09A, APSB09B, APSB10A, APSB10B, TMSB02B
08/01/07	Sodium	ICB/CCBs	195J	975	43SB02A, 43SB02C, 43SB03B, 43SB03C, APSB07A, APSB08A, TMSB02B
08/02/07	Mn, Ca, Mg, & Zn	ICB/CCBs	<2*MDL	NA	None
08/03/07	Manganese	ICB/CCBs	<2*MDL	NA	None
08/01/07	Mercury	ICB/CCBs	<2*MDL	NA	None
08/01/07	Potassium	MP12628-MB	86.3J	432	None
08/01/07	Sodium	MP12628-MB	111J	555	43SB02A, 43SB02C, TMSB02B
08/01/07	Potassium	MP12629-MB	82.0J	410	None
08/01/07	Sodium	MP12629-MB	105J	525	43SB03B, 43SB03C, APSB07A, APSB08A
08/01/07	Potassium	MP12630-MB	84.4J	422	None
08/01/07	Sodium	MP12630-MB	109J	545	None
08/01/07	Mercury	MP12624-MB	<2*MDL	NA	None
08/01/07	Mercury	MP12625-MB	<2*MDL	NA	None
07/31/07	Nickel	072607R	0.13J	0.65	None
07/31/07	Potassium	072607R	173J	865	43SB01A, 43SB02A, 43SB03A, APSB09A, APSB09B, APSB10A, APSB10B, TMSB02B
07/31/07	Sodium	072607R	195J	975	43SB02A, 43SB02C, 43SB03B, 43SB03C, APSB07A, APSB08A, TMSB02B
08/01/07	Mercury	072607R	<2*MDL	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
NA = Not Applicable
MDL = Method Detection Limit.

IV-ICP Interference Check Sample (ICS)

The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- All criteria were met. No qualifiers were applied.

V-Laboratory Control Samples (LCS)

The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS results must fall within the control limits. The DoD QSM solid LCS recovery limits are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12628-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this LCS.

- Sample MP12629-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this LCS.

- Sample MP12630-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample MP12624-BS was used as solid LCS for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this LCS.

- Sample MP12625-BS was used as solid LCS for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VI-Laboratory Duplicate Sample Analysis

Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Sample 43SB04A (F51353-1) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this laboratory duplicate.

- Sample 43SB03B (F51353-21) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. Aluminum (30.9%), antimony (24.0%), calcium (43.3%), chromium (27.8%), copper (84.2%), iron (33.1%), lead (103%), potassium (27.3%), selenium (25.2%), silver (51.0%), sodium (45.3%), and vanadium (41.5%) were above criteria. All other metals were within criteria. Antimony, potassium, selenium, silver, and sodium were outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon these outliers. Aluminum, calcium, chromium, copper, iron, lead, and vanadium were qualified estimated "J" based upon the high RPDs. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this laboratory duplicate.

- Sample APSB08B (F51353-27) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. Calcium (52.7%), lead (42.3%), magnesium (55.8%), and zinc (20.9%) were above criteria. All other metals were within criteria. Lead was outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon this outlier. Calcium, magnesium, and zinc were qualified estimated "J" based upon the high RPDs. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this laboratory duplicate.

- Sample 43SB03B (F51353-21) was used as solid laboratory duplicate for mercury analysis on 08/01/07. Mercury (RPD=86.8%) was outside criteria. All detects were qualified estimated "J" and non-detects no qualifier based upon the high RPD. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this laboratory duplicate.

- Sample APSB08B (F51353-27) was used as soil laboratory duplicate for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this laboratory duplicate.

VII-Matrix Spike/Spike Duplicate

MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Sample 43SB04A (F51353-1) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Antimony (9.6%, 9.2%), arsenic (59.2%, 61.6%), barium (76.2%, 76.3%), beryllium (76.8%, 76.8%), cadmium (57.9%, 58.8%), calcium (75.7%, 75.7%), chromium (72.4%, 76.3%), cobalt (69.9%, 72.4%), copper (74.9%, 78.7%), lead (69.1%, 71.3%), magnesium (71.8%, 73.5%), manganese (42.5%, 29.4%), nickel (71.0%, 72.8%), potassium (73.3%, 75.7%), selenium (60.2%, 57.6%), silver (69.8%, 69.5%), thallium (61.4%, 60.0%), vanadium (73.7%, 76.8%), and zinc (77.6%, 76.1%) were outside criteria. The sample concentration was >4 times the spike added for manganese; therefore, no qualifiers were applied based upon this outlier. Antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, nickel, potassium, silver, thallium, vanadium, and zinc were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Aluminum (267%), antimony (26.3%, 14.1%; RPD=48.9%), arsenic (198%; RPD=62.4%), barium (79.8%), beryllium (76.1%), cadmium (57.7%, 67.2%), calcium (146%; RPD=28.4%), cobalt (74.3%, 73.2%), copper (-129%, -165%), iron (4513%, 659%; RPD=103%), lead (-170%, -73.5%; RPD=42.7%), magnesium (13.7%, 34.6%), manganese (382%, -110%; RPD=49.0%), nickel (75.6%), potassium (77.9%, 70.0%), selenium (69.5%; RPD=33.9%), sodium (76.2%), thallium (78.7%, 67.7%), vanadium (121%), and zinc (-20.9%, 35.0%; RPD=23.6%) were outside criteria. The sample concentration was >4 times the spike added for aluminum, copper, iron, and manganese; therefore, no qualifiers were applied based upon these outliers. Antimony, barium, beryllium, cadmium, cobalt, lead, magnesium, nickel, potassium, sodium, thallium, and zinc were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Arsenic, calcium, and vanadium were qualified bias high "K" for detects and no qualifier for non-detects based upon the high recoveries. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Aluminum (70.9%), antimony (18.0%, 15.0%), arsenic (68.8%, 72.6%), cadmium (72.2%, 75.7%), calcium (-312%; -124%; RPD=39.0%), cobalt (77.7%), magnesium (-142%, -124%), nickel (76.9%), potassium (75.1%), selenium (69.8%, 73.5%), silver (79.5%), thallium (70.8%, 73.9%), vanadium (78.4%), and zinc (130%) were outside criteria. The sample concentration was >4 times the spike added for aluminum, calcium, and magnesium; therefore, no qualifiers were applied based upon these outliers. Antimony, arsenic, cadmium, cobalt, nickel, potassium, silver, thallium, and vanadium were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Zinc was qualified bias high "K" for detects and no qualifier for non-detects based upon the high recovery. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as solid MS/MSD for mercury analysis on 08/01/07. Mercury (398%, 662%; RPD=23.7%) was outside criteria. The sample concentration was >4 times the spike added for mercury; therefore, no qualifiers were applied based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as solid MS/MSD for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-ICP Serial Dilution

An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample 43SB04A (F51353-1). Aluminum (32.5%), antimony (21.3%), arsenic (53.8%), barium (29.3%), beryllium (40.8%), calcium (42.5%), chromium (40.1%), cobalt (41.7%), copper (26.4%), iron (40.9%), lead (42.0%), magnesium (39.0%), manganese (44.0%), nickel (44.5%), potassium (45.2%), selenium (58.8%), vanadium (36.9%), and zinc (50.4%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, and selenium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this serial dilution.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample 43SB03B (F51353-21). Aluminum (16.5%), antimony (10.6%), arsenic (39.3%), barium (12.7%), beryllium (31.0%), calcium (23.0%), chromium (20.2%), cobalt (20.9%), iron (21.9%), lead (25.7%), magnesium (23.6%), manganese (22.8%), nickel (26.5%), potassium (37.6%), selenium (35.8%), silver (100%), sodium (433%), vanadium (18.0%), and zinc (27.8%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, selenium, silver, and sodium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this serial dilution.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample APSB08B (F51353-27). Aluminum (14.7%), antimony (100%), arsenic (19.7%), barium (14.5%), beryllium (15.7%), calcium (30.8%), chromium (27.0%), cobalt (27.7%), copper (13.2%), iron (27.6%), lead (30.3%), magnesium (22.4%), manganese (28.5%), nickel (31.8%), potassium (38.5%), selenium (71.1%), vanadium (23.9%), and zinc (38.8%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, and selenium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample 43SB03B (F51353-21) on 08/01/07. Mercury (27.8%) was above criteria. Sample concentration was <50 times MDL for mercury; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample APSB08B (F51353-27) on 08/01/07. Mercury (100%) was above criteria. Sample concentration was <50 times MDL for mercury; therefore, no qualifiers were applied based upon this outlier. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this serial dilution.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 4**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 4 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB05B (F51353-5) and TMSB05B (F51353-6)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	14700	14300	2.8
Antimony	1.4J	1.5J	6.9
Arsenic	2.1	1.9	10.0
Barium	96.1	94.8	1.4
Beryllium	0.93	0.95	2.1
Calcium	982	924	6.1
Chromium	22.3	20.6	7.9
Cobalt	10.6	10.9	2.8
Copper	12.1	11.8	2.5
Iron	22100	21300	3.7
Lead	8.0	7.9	1.3
Magnesium	3840	3840	0.0
Manganese	505	448	12.0
Nickel	13.1	12.8	2.3
Potassium	1640	1590	3.1
Selenium	6.9	6.8	1.5
Vanadium	39.8	38.6	3.1
Zinc	56.7	57.0	0.5
Mercury	0.039J	0.041J	5.0

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 5**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 5 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair APSB06B (F51353-10) and TMSB06B (F51353-11)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	12300	13000	5.5
Antimony	1.1J	1.2J	8.7
Arsenic	1.8	1.7	5.7
Barium	106	114	7.3
Beryllium	0.91	0.93	2.2
Calcium	1120	1070	4.6
Chromium	18.9	18.8	0.5
Cobalt	9.4	11.7	21.8
Copper	9.2	9.8	6.3
Iron	18800	19200	2.1
Lead	7.5	8.0	6.5
Magnesium	3070	3250	5.7
Manganese	580	728	22.6
Nickel	11.4	12.3	7.6
Potassium	1270	1370	7.6
Selenium	6.1	6.0	1.7
Vanadium	30.4	31.4	3.2
Zinc	47.3	49.3	4.1
Mercury	0.027J	0.026J	3.8

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 6**. All other target metals were non-detect. Antimony (40.0%) was qualified estimated "J" for detects for the duplicate pair based upon the high %RPD. The high %RPD for antimony was due to the low concentration (i.e. <MRL) detected for the duplicate pair. For all other metals, all criteria were met.

Table 6 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB01C (F51353-14) and TMSB01C (F51353-16)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	15000	13800	8.3
Antimony	1.0J	1.5J	40.0
Arsenic	1.9	2.3	19.1
Barium	125	120	4.1
Beryllium	1.0	0.95	5.1
Calcium	1240	1320	6.3
Chromium	21.8	20.4	6.6
Cobalt	10.8	11.0	1.8
Copper	13.4	11.9	11.9
Iron	21600	20700	4.3
Lead	8.5	8.8	3.5
Magnesium	3670	3580	2.5
Manganese	534	545	2.0
Nickel	13.2	12.5	5.5
Potassium	1720	1510	13.0
Selenium	6.6	6.5	1.5
Vanadium	36.6	32.8	11.0
Zinc	54.6	54.1	0.9
Mercury	0.036J	0.040J	10.5

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 7**. All other target metals were non-detect. Arsenic (80.0%), beryllium (45.2%), calcium (53.6%), chromium (35.3%), copper (72.0%), lead (174%), manganese (38.1%), potassium (73.7%), vanadium (39.2%), zinc (95.0%), and mercury (136%) were qualified estimated "J" for detects for the duplicate pair based upon the high %RPDs. The high %RPDs were due to sample inhomogeneity for the duplicate pair. For all other metals, all criteria were met.

Table 7 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	11200	12300	9.4
Antimony	1.3J	1.3J	0.0
Arsenic	4.9	2.1	80.0
Barium	91.8	120	26.6
Beryllium	0.76	0.48	45.2
Calcium	2530	1460	53.6
Chromium	19.0	13.3	35.3
Cobalt	10.8	12.1	11.4
Copper	24.1	51.2	72.0
Iron	20700	18400	11.8
Lead	34.4	2.4J	174
Magnesium	3580	3820	6.5
Manganese	625	425	38.1
Nickel	12.2	9.1	29.1
Potassium	1470	678	73.7
Selenium	6.2	5.7J	8.4
Sodium	<29	33.5J	NA
Vanadium	29.7	44.2	39.2
Zinc	75.0	26.7	95.0
Mercury	0.63	0.12	136

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 8**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 8 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair APSB07B (F51353-24) and TMSB07B (F51353-25)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	13400	13200	1.5
Antimony	1.0J	1.2J	18.2
Arsenic	1.8	1.9	5.4
Barium	108	105	2.8
Beryllium	0.81	0.82	1.2
Calcium	1350	1600	17.0
Chromium	19.5	19.8	1.5
Cobalt	9.4	9.7	3.1
Copper	10.0	9.9	1.0
Iron	17700	18100	2.2
Lead	6.3	6.2	1.6
Magnesium	3200	3380	5.5
Manganese	471	458	2.8
Nickel	12.4	12.7	2.4
Potassium	1350	1330	1.5
Selenium	5.6	5.6J	0.0
Vanadium	32.7	33.2	1.5
Zinc	47.4	49.6	4.5
Mercury	0.029J	0.023J	23.1

J = Estimated value <MRL and >MDL.

X-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

ICP Sample: 43SB04A (F51353-1), Barium

Conc. (mg/kg) = {(conc. μg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(2070 μg/L)*(0.050 L)*(1)} / {(1.04 g)*(0.9190)} = 108 μg/g = 108 mg/kg

Reported concentration = 108 mg/kg
%D = 0.0%
Values were within 10% difference.

Hg Sample: 43SB04A (F51353-1), Mercury

Conc. (mg/kg) = {(conc. μg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(0.784 μg/L)*(0.050 L)*(1)} / {(0.67 g)*(0.9190)} = 0.064 μg/g = 0.064 mg/kg

Reported concentration = 0.064 mg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
		Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11900 J	10	2.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.1	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 L	0.42	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	108 J	10	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.81 L	0.26	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.52 U UL	1.1	0.52	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1330 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.1 J	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.7 J	2.6	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.3 J	1.3	0.099	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18500 J	5.2	0.73	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	9.6 J	5.2	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3310 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	570 J	3.9	0.26	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.064 J J	0.081	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.4 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1420 J	520	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J	5.2	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.073 U UL	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	26 U	520	26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.1 J	2.6	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	50.7 J	1.0	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14100 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	91.1 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.83 L	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U VL	1.2	0.57	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1040 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.2 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.4 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21600 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.6 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3830 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	540 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.031 J J	0.089	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.0 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1640 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.7 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U VL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	16 U VL	23	16	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.8 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	48.3 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12700 J	12	2.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.0 L	0.48	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	103 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.85 L	0.30	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.60 U VL	1.2	0.60	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	846 J	300	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.1 J	0.60	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.9 J	3.0	0.066	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.5 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21200 J	6.0	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.4 J	6.0	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3830 J	300	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	530 J	4.5	0.30	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.018 J J	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.9 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1560 J	600	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.8 J	6.0	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.60	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30 U	600	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	35.1 J	3.0	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.8 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11100 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.2 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	110 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.80 L	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.53 U VL	1.1	0.53	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1300 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.5 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.5 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17800 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.8 J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3140 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	472 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.20 J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.2 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1290 J	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.8 J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U VL	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	29.5 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	48.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14700 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 L	0.46	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	96.1 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.58 U VL	1.2	0.58	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	982 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.3 J	0.58	0.081	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.6 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.1 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	22100 J	5.8	0.81	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.0 J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3840 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	505 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.039 J J	0.094	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.1 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1640 J	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.9 J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.081 U VL	0.58	0.081	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	16 U VL	23	16	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	39.8 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	56.7 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14300 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	94.8 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.95 L	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.59 U VL	1.2	0.59	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	924 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	20.6 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.9 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.8 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21300 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.9 J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3840 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	448 J	4.4	0.30	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.041 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.8 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1590 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.8 J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30 U	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	38.6 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	57.0 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7000 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.85 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.6	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	50.6 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.49	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.059 U UL	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	830 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	13.9 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	7.2 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	7.9 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	10600 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	5.1 J J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	2310 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	84.2 J	0.89	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.012 U	0.098	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	8.6 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1130 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	3.5 J J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.083 U UL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	30 U	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	13 U UL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	21.3 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	30.7 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12624
(4) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10200 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.94 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	170 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.056 U VL	0.22	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3190 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.6 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.1 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.9 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	14400 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	17.8 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2910 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	838 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.082 J J	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1220 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	4.2 J J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U VL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.9 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	103 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	106 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.91 L	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U VL	1.2	0.57	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1120 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.9 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.2 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18800 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.5 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3070 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	580 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.027 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.4 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1270 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.1 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U VL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	30.4 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.3 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.4	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.7 L	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	114 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1070 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.7 J	2.8	0.062	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	19200 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.0 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3250 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	728 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.026 J J	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.3 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1370 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.0 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U UL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.4 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	49.3 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10100 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.78 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	3.1 L	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	165 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.27	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1060 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.0 J	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.6 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.2 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	13100 J	5.5	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	36.2 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2130 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	488 J	4.1	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.035 J J	0.089	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.8 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	922 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	4.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.076 U UL	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	550	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.2 U UL	11	6.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	20.4 J	2.7	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	105 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	134 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U VL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1170 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	12.0 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20200 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.8 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3570 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	779 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.035 J J	0.094	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.5 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	2120 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.2 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U VL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.2 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	55.9 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.0 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	125 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1240 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	21.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.8 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	13.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21600 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.5 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3670 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	534 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.036 J J	0.097	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.2 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1720 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.6 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U UL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.6 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	54.6 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.4 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.78 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.54 U UL	1.1	0.54	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1860 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.8 J	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.2 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.3 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18300 J	5.4	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	13.7 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2260 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	708 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.043 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.2 J	2.2	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	757 B	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U UL	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30.6 J B	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.0 U UL	11	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	34.3 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	55.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13800 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.3 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.95 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.54 U VL	1.1	0.54	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1320 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	20.4 J	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.0 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.9 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20700 J	5.4	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.8 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3580 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	545 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.040 J J	0.083	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.5 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1510 J	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.5 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U VL	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.8 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	54.1 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11200 J	11	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	4.9 J	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	91.8 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.76 J	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.057 U UL	0.23	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	2530 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.0 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.8 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	24.1 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20700 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	34.4 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3580 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	625 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.63 J	0.17	0.022	mg/kg	2	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.2 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1470 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.2 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U UL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	29.7 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	75.0 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 J	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.48 J	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.58 U UL	1.2	0.58	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1460 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	13.3 J	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	12.1 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	51.2 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18400 J	5.8	0.82	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	2.4 J J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3820 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	425 J	4.4	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.12 J	0.085	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.1 J	2.3	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	678 B	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.082 U UL	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	33.5 J B	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	44.2 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	26.7 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4620 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.36 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	21.1 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.33 L	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.059 U VL	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	95900 J	5900	120	mg/kg	20	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Chromium	8.7 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	3.8 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	4.0 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	9750 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	2.2 J J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	58700 J	5900	120	mg/kg	20	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Manganese	227 J	0.89	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Mercury	0.011 U	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.4 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1200 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.27 U VL	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	377 J B	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	3.3 U VL	5.9	3.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	11.1 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	12.3 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.9 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	127 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.88 L	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U UL	1.1	0.55	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1440 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.5 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.5 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.7 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17600 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	13.6 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2520 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	582 J	4.1	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.053 J J	0.086	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	10.6 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	930 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.077 U UL	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.8 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	78.3 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	7.2 K	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	93.7 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.69 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.27 U VL	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1030 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	15.7 J	0.54	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.0 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	71.9 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	16400 J	5.4	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	95.6 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2470 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	363 J	4.1	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	1.5 J	0.58	0.071	mg/kg	7	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.9 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1170 J	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.9 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.076 U	0.54	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	92.1 J B	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	23.7 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	64.4 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9410 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.4 K	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	90.6 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.59 L	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.053 U UL	0.21	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	809 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	14.6 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.6 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	35.5 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20800 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	4.0 J J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2560 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	733 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.049 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	16.3 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1120 J	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.7 J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	414 J B	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	20.6 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	37.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10300 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.72 J B	3.4	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 K	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	190 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.74 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.18 J L	0.22	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	12900 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	13.9 J	0.56	0.079	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.3 J	2.8	0.062	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	15700 J	5.6	0.79	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	53.3 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	9060 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1150 J	8.4	0.56	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.037 J J	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1350 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	2.8 J J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.079 U	0.56	0.079	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	52.0 J B	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.2 U UL	11	6.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.1 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	160 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13400 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.0 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 K	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	108 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.81 L	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1350 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.5 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17700 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.3 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3200 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	471 J	4.1	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.029 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.4 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1350 J	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.077 U	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U UL	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.7 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.4 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13200 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 K	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	105 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.82 L	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.058 U UL	0.23	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1600 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.8 J	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.7 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.9 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18100 J	5.8	0.82	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.2 J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3380 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	458 J	4.4	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.023 J J	0.093	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.7 J	2.3	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1330 J	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.082 U	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U UL	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	33.2 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	49.6 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11400 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	4.3 K	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	159 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.83 J	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.39 J	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3380 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.2 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.9 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	108 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	19300 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	141 J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2940 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1240 J	8.9	0.59	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.091	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.6 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1270 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	232 J B	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.6 U UL	12	6.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.3 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	1060 J	12	3.0	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9040 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.83 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.6 L	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	86.5 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.66	0.28	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.057 U UL	0.23	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	9520 J	280	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	12.8 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	6.6 J	2.8	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	8.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	12200 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.2 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	5980 J	280	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	401 J	17	1.1	mg/kg	20	08/01/07	08/03/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.020 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.2 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1040 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	2.6 J J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U UL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	570	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	18.2 J	2.8	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	50.9 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5894
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5440 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.51 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.1 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	52.7 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.43	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.053 U UL	0.21	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	2800 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	9.4 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.5 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	6.1 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7920 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	8.2 J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	2190 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	176 J	0.80	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.010 J J	0.079	0.0097	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.6 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	853 B	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.4 J J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.075 U UL	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	27 U	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	11.5 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	52.8 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4720 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.46 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.77 L	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	44.6 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.37	0.27	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	1380 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	8.9 J	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.2 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	3.1 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	6900 J	5.5	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	3.7 J J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1560 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	132 J	0.82	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.011 U	0.086	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	5.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	725 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.0 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.076 U UL	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	27 U	550	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	10.8 J	2.7	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	25.9 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5370 J	10	2.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.59 J B	3.1	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.93 L	0.42	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	54.2 J	10	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.44	0.26	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.052 U UL	0.21	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	1180 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	10.9 J	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.8 J	2.6	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	5.0 J	1.3	0.099	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7860 J	5.2	0.73	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	4.9 J J	5.2	0.12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1620 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	171 J	0.78	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.010 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.8 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	796 B	520	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.5 J J	5.2	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.073 U UL	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	26 U	520	26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	12.4 J	2.6	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	36.5 J	1.0	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4920 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.50 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.70 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	49.1 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.41	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	927 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	12.2 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.3 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	3.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7450 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	2.7 J J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1390 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	150 J	0.83	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.012 J J	0.091	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.2 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	697 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.077 U UL	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	28 U	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	11.5 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	26.2 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	79 U	200	79	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Antimony	3.3 U	6.0	3.3	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Arsenic	3.7 U	10	3.7	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Barium	5.0 U	200	5.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Calcium	100 U	1000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Chromium	0.92 U	10	0.92	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Cobalt	1.0 U	50	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Copper	1.2 U	25	1.2	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Iron	15 U	300	15	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Lead	2.1 U	5.0	2.1	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Magnesium	100 U	5000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Manganese	1.0 U	15	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Mercury	0.11 U	1.0	0.11	ug/l	1	08/01/07	08/01/07	MS	SW846 7470A [2]	SW846 7470A [4]
Nickel	1.3 J J	40	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Potassium	1730 J J	10000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Selenium	4.0 U	10	4.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Silver	0.77 U	10	0.77	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Sodium	1950 J J	10000	500	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Thallium	6.5 U	10	6.5	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Vanadium	1.1 U	50	1.1	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Zinc	5.0 U	20	5.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA5886
(2) Instrument QC Batch: MA5888
(3) Prep QC Batch: MP12618
(4) Prep QC Batch: MP12623

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for pesticides and PCBs using USEPA Method 3550B/8081A and 3550B/8082, respectively. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
X		Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Samples
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications, except for the following. Compound endrin aldehyde was qualified "R" rejected for the spiked sample 43SB03B (F51353-21) based upon no recoveries in the MS/MSD samples. The LCS had recoveries below criteria limits. See Sections VII and VIII for further details.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F51353

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. The pesticides were extracted on 08/06/07 and 08/07/07 and analyzed on 08/11/07, 08/13/07, 08/14/08, and 08/15/07. The PCBs were extracted on 08/06/07 and 08/07/07 and analyzed on 08/09/07, 08/10/07, 08/11/07, and 08/14/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)
Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- For analysis performed on 08/13/07 @10:00, endrin and 4,4'-DDT percent breakdowns were 14.6% and 6.3% on signal #1 and 12.8% and 5.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/10/07 @15:38, endrin and 4,4'-DDT percent breakdowns were 3.7% and 2.5% on signal #1 and 3.9% and 2.0% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/11/07 @10:54, endrin and 4,4'-DDT percent breakdowns were 3.4% and 2.3% on signal #1 and 3.5% and 2.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/13/07 @11:16, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.4% on signal #1 and 2.6% and 1.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/14/07 @11:52, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.9% on signal #1 and 2.6% and 1.8% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/15/07 @11:54, endrin and 4,4'-DDT percent breakdowns were 5.4% and 7.2% on signal #1 and 5.2% and 6.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.995. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- For the pesticide initial calibration performed on 08/14/07 on instrument ECD5, target compound endrin (19.6%) was outside criteria for signal #1. All other target compounds were within criteria (%RSD≤20%). Endrin (r=0.9796) was quantified using linear regression with a correlation coefficients <0.995, therefore, all non-detects were qualified estimated "UJ" based upon the low correlation coefficient. Samples 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/10/07 on instrument ECD6, all criteria were met. No qualifiers were applied. 4,4'-DDE (r=0.9981) and 4,4'-DDD (r=0.9985) were quantified using linear regression with a correlation coefficients >0.995. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), and TMSB01C (F51353-16) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/13/07 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/14/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03B (F51353-21) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 08/02/07 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the initial calibration should be no greater than ±20%.

- Samples 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28) were analyzed directly after the 08/13/07 initial calibration. See Section III for further discussion.

- For pesticide continuing calibration performed on 08/13/07 @16:36 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/13/07 @17:56 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/10/07 @18:40 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/10/07 @20:15 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/10/07 @22:05 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @14:47 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), and 43SB05A (F51353-4) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @17:40 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), and TMSB01C (F51353-16) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @20:49 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @21:52 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Sample 43SB02A (F51353-15) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @23:27 on instrument ECD6, 4,4'-DDD (20.6%) and 4,4'-DDT (26.3%) were outside criteria for the signal #1. 4,4'-DDD (37.9%) and 4,4'-DDT (21.0%) were outside criteria for the signal #2. No samples reported was analyzed using this continuing calibration; therefore, no qualifiers were applied based upon these outliers.

- For pesticide initial calibration verification performed on 08/13/07 @17:36 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/13/07 @19:27 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/14/07 @14:58 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/14/07 @19:50 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/14/07 @21:09 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/14/07 @22:44 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/15/07 @19:55 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Sample 43SB03B (F51353-21) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/15/07 @21:14 on instrument ECD6, 4,4'-DDT (23.6%) and methoxychlor (21.3%) were outside criteria for the signal #1. All criteria were met for signal #2. No samples reported was analyzed using this continuing calibration; therefore, no qualifiers were applied based upon these outliers.

- For PCB 1016/1260 initial calibration verification performed on 08/02/07 @13:41 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @17:04 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 43SB03A (F51353-20) was analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @20:28 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @23:51 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @09:37 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 43SB03B (F51353-21) was analyzed using this continuing calibration.

- For PCB 1248 continuing calibration performed on 08/10/07 @09:54 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1242 continuing calibration performed on 08/10/07 @10:10 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1232/1268 continuing calibration performed on 08/10/07 @10:27 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1221/1254 continuing calibration performed on 08/10/07 @10:44 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @13:17 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @18:57 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), and 43SB05A (F51353-4) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @22:04 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01B (F51353-13), 43SB01C (F51353-14), and 43SB02A (F51353-15) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/11/07 @01:28 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples TMSB01C (F51353-16) and 43SB02C (F51353-19) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/11/07 @03:09 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @03:27 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples APSB06A (F51353-9), 43SB01A (F51353-12), 43SB02B (F51353-17), and TMSB02B (F51353-18) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @06:00 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
Pesticides	08/11/07	OP21762-MB	All target <½MRL	NA	NA	None
Pesticides	08/14/07	OP21762-MB	All target <½MRL	NA	NA	None
Pesticides	08/13/07	OP21766-MB	All target <½MRL	NA	NA	None
Pesticides	08/15/07	OP21766-MB	All target <½MRL	NA	NA	None
Pesticides	08/10/07	072607R	All target <½MRL	NA	NA	None
PCBs	08/10/07	OP21761-MB	All target <½MRL	NA	NA	None
PCBs	08/14/07	OP21761-MB	All target <½MRL	NA	NA	None
PCBs	08/09/07	OP21765-MB	All target <½MRL	NA	NA	None
PCBs	08/10/07	OP21765-MB	All target <½MRL	NA	NA	None
PCBs	08/01/07	072607R	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:	Tetrachloro-m-xylene:	Pesticides: 46-122% (DoD QSM 70-125%)
	Decachlorobiphenyl:	Pesticides: 50-133% (DoD QSM 55-130%)
Solid Criteria:	Tetrachloro-m-xylene:	PCBs: 44-126% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 39-157% (DoD QSM 60-125%)

- For pesticides sample 43SB03C (F51353-22), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB07B (F51353-24), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB08A (F51353-26), tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB10B (F51353-29), tetrachloro-m-xylene (64.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB09A (F51353-30), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB09B (F51353-31), tetrachloro-m-xylene (65.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met for pesticides and PCBs analysis.

VII-Laboratory Control Samples

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM solid LCS recovery limits are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21762-BS was used as the solid LCS for the pesticide analysis on 08/11/07. Compound endrin aldehyde (11%) was outside DoD QSM criteria; however, within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon very low recovery. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this LCS.

- Sample OP21766-BS was used as the solid LCS for the pesticide analysis on 08/13/07. Compounds beta-BHC (64%), endrin (158%), and endrin aldehyde (14%) were outside DoD QSM and/or laboratory criteria. Compounds endrin aldehyde and beta-BHC were non-detect for all associated samples; therefore, these compounds were qualified estimated bias "UL" for non-detects based upon the low recoveries. Compound endrin was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21761-BS was used as the solid LCS for the PCB analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this LCS.

- Sample OP21765-BS was used as the solid LCS for the PCB analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VIII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB04A (F51353-1) was used as the MS/MSD for the pesticide analysis on 08/11/07. Compound endrin aldehyde (22%, 20%) was outside DoD QSM criteria; however, within laboratory criteria. Compound endrin aldehyde was non-detect for the spiked sample and was qualified estimated bias "UL" for non-detect based upon low recoveries. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as the MS/MSD for the pesticide analysis on 08/15/07. Compounds aldrin (60%; 60%), alpha-BHC (65%), gamma chlordane (72%), 4,4'-DDD (180%), 4,4'-DDE (183%; RPD=46%), endrin (307%, 216%; RPD=35%), endrin aldehyde (0%; 0%), endosulfan I (69%, 65%), endosulfan II (62%, 63%), heptachlor (64%), heptachlor epoxide (215%, 155%; RPD=32%), and methoxychlor (63%, 61%) were outside DoD QSM criteria and/or laboratory criteria. The LCS was also low in recovery (See Section VII), except for endrin aldehyde. Compound endrin aldehyde was qualified "R" rejected for the spiked sample based upon no recoveries. Compounds aldrin, alpha-BHC, gamma chlordane, endosulfan I, endosulfan II, heptachlor, and methoxychlor were non-detect for the spiked sample and qualified estimated bias low "UL" for non-detects based upon low recoveries. Compounds 4,4'-DDD, 4,4'-DDE, endrin, and heptachlor epoxide were qualified bias high "K" for detects and no qualifier for non-detects based upon the high recoveries. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB05A (F51353-4) was used as the MS/MSD for the PCB analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as the MS/MSD for the PCB analysis on 08/10/07. PCB 1016 (-257%, -293%) and PCB 1260 (184%, 182%) were outside DoD QSM and laboratory criteria. PCB 1016 was outside criteria due to high level (>4x) in sample relative to the spiked amount. PCB 1260 was non-detect for the spiked sample. No qualifiers were applied based upon these outliers. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for pesticides and PCBs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Aroclor 1254 and aroclor 1016 were detected in the original sample and in the duplicate pair. All other target compounds were non-detect. All criteria were met. No qualifiers were applied.

Table 3 Field Precision Hits Analysis Summary for Pesticides and PCBs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Aroclor 1254	451J	418J	7.6
Aroclor 1016	104J	137J	27.4

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

X-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- For sample 43SB03B (F51353-21), 4,4'-DDD (69.1%) was outside confirmation criterion and was qualified estimated "J" based upon this outlier. All other chlorinated pesticides were non-detect. No confirmations were required.

- For all detected PCBs, the %Ds (average %D for multi-peak compounds) between the primary and secondary columns were within criteria. No qualifiers were applied.

Sample: 43SB03B (F51353-21), 4,4'-DDD

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (mL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Conc. µg/kg = (153205Area*10000µL*10) / (19280Area/pg*(1000pg/ng)*1 µL*31.3g*0.8750)
= 29.0 µg/kg (signal #1)

Conc. µg/kg = (51804Area*10000µL*10) / (13460Area/pg*(1000pg/ng)*1 µL*31.3g*0.8750)
= 14.1 µg/kg (signal #2)

Reported Value = 14.1 µg/kg (signal #2)
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB03B (F51353-21), Aroclor 1254

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Signal #1
Conc1 µg/kg = (414977*10000*10) / (2985*(1000)*1*31.3*0.8750) = 507.61 µg/kg
Conc2 µg/kg = (612440*10000*10) / (4371*(1000)*1*31.3*0.8750) = 511.60 µg/kg
Conc3 µg/kg = (597791*10000*10) / (4505*(1000)*1*31.3*0.8750) = 484.51 µg/kg
Conc4 µg/kg = (431859*10000*10) / (3007*(1000)*1*31.3*0.8750) = 524.39 µg/kg
Conc5 µg/kg = (181562*10000*10) / (1914*(1000)*1*31.3*0.8750) = 346.36 µg/kg
Conc6 µg/kg = (420994*10000*10) / (3859*(1000)*1*31.3*0.8750) = 398.34 µg/kg
Average concentration = 462 µg/kg

Signal #2
Conc1 µg/kg = (255236*10000*10) / (2061*(1000)*1*31.3*0.8750) = 452.18 µg/kg
Conc2 µg/kg = (281714*10000*10) / (2197*(1000)*1*31.3*0.8750) = 468.19 µg/kg
Conc3 µg/kg = (393653*10000*10) / (2975*(1000)*1*31.3*0.8750) = 483.14 µg/kg
Conc4 µg/kg = (284051*10000*10) / (2003*(1000)*1*31.3*0.8750) = 517.80 µg/kg
Conc5 µg/kg = (103409*10000*10) / (1097*(1000)*1*31.3*0.8750) = 344.19 µg/kg
Conc6 µg/kg = (299358*10000*10) / (2775*(1000)*1*31.3*0.8750) = 393.89 µg/kg
Average concentration = 443 µg/kg

Reported Value = 462 µg/kg (signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: TT08349.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08349.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023018.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023018.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08352.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08352.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	76%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023019.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023019.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08353.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.47	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.78	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg	
8001-35-2	Toxaphene	ND	97	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023020.D

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023020.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	16	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		44-126%
2051-24-3	Decachlorobiphenyl	92%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08354.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.80	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.62	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.73	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.73	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.84	ug/kg	
72-20-8	Endrin	ND	3.7	0.73	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.73	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.73	ug/kg	
8001-35-2	Toxaphene	ND	91	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023021.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.1	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.1	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.1	ug/kg	
11097-69-1	Aroclor 1254	9.4 J	18	9.1	ug/kg	J
11096-82-5	Aroclor 1260	ND	18	9.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08357.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08357.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.87	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.79	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.91	ug/kg	
72-20-8	Endrin	ND	3.9	0.79	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.79	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.79	ug/kg	
8001-35-2	Toxaphene	ND	99	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023026.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023026.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.9	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.9	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.9	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.9	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08358.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	74%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023027.D

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023027.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08359.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.48	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg	
50-29-3	4,4'-DDT	ND	4.0	0.93	ug/kg	
72-20-8	Endrin	ND	4.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	4.0	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.56	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
72-43-5	Methoxychlor	ND	4.0	0.80	ug/kg	
8001-35-2	Toxaphene	ND	100	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023028.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	10	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	10	ug/kg	
12672-29-6	Aroclor 1248	ND	20	10	ug/kg	
11097-69-1	Aroclor 1254	ND	20	10	ug/kg	
11096-82-5	Aroclor 1260	ND	20	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08360.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	1.9	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT [a]	ND	7.6	7.6	ug/kg	
72-20-8	Endrin	ND	3.8	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	3.8	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	73%		50-133%

(a) Elevated reporting limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023112.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	94	47	ug/kg	
11104-28-2	Aroclor 1221	ND	94	75	ug/kg	
11141-16-5	Aroclor 1232	ND	94	75	ug/kg	
53469-21-9	Aroclor 1242	ND	94	47	ug/kg	
12672-29-6	Aroclor 1248	ND	94	47	ug/kg	
11097-69-1	Aroclor 1254 [b]	403	94	47	ug/kg	
11096-82-5	Aroclor 1260	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	78%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08361.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023030.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08362.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		46-122%
2051-24-3	Decachlorobiphenyl	82%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023031.D

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023031.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	91%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08363.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023113.D	1	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08364.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND	3.8	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.77	ug/kg	
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023033.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08365.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023034.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08373.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.71	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.71	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND	3.6	0.71	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.71	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.71	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		46-122%
2051-24-3	Decachlorobiphenyl	68%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SQ - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023035.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		44-126%
2051-24-3	Decachlorobiphenyl	73%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08366.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023038.D

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023038.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08446.D

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08446.D	5	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.8	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.8	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.8	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.8	4.3	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.8	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.8	2.0	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.8	2.2	ug/kg	
60-57-1	Dieldrin	ND	9.8	2.2	ug/kg	
72-54-8	4,4'-DDD	ND	20	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	20	3.9	ug/kg	
50-29-3	4,4'-DDT	ND	20	4.5	ug/kg	
72-20-8	Endrin	ND	20	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	20	6.5	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	20	5.9	ug/kg	
53494-70-5	Endrin ketone	ND	20	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.8	2.2	ug/kg	
33213-65-9	Endosulfan-II	ND	20	2.9	ug/kg	
76-44-8	Heptachlor	ND	9.8	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.8	2.0	ug/kg	
72-43-5	Methoxychlor	ND	20	3.9	ug/kg	
8001-35-2	Toxaphene	ND	490	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	67%		50-133%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023114.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	104 J	98	49	ug/kg	J
11104-28-2	Aroclor 1221	ND	98	78	ug/kg	
11141-16-5	Aroclor 1232	ND	98	78	ug/kg	
53469-21-9	Aroclor 1242	ND	98	49	ug/kg	
12672-29-6	Aroclor 1248	ND	98	49	ug/kg	
11097-69-1	Aroclor 1254 [b]	451 J	98	49	ug/kg	J
11096-82-5	Aroclor 1260	ND	98	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		44-126%
2051-24-3	Decachlorobiphenyl	74%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08447.D	5	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.7	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.7	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.7	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.7	4.3	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.7	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.7	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.7	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.7	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.9	ug/kg	
50-29-3	4,4'-DDT	ND	19	4.5	ug/kg	
72-20-8	Endrin	ND	19	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.4	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	19	5.8	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.7	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.9	ug/kg	
76-44-8	Heptachlor	ND	9.7	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.7	1.9	ug/kg	
72-43-5	Methoxychlor	ND	19	3.9	ug/kg	
8001-35-2	Toxaphene	ND	490	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023115.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	137 J	97	49	ug/kg	J
11104-28-2	Aroclor 1221	ND	97	78	ug/kg	
11141-16-5	Aroclor 1232	ND	97	78	ug/kg	
53469-21-9	Aroclor 1242	ND	97	49	ug/kg	
12672-29-6	Aroclor 1248	ND	97	49	ug/kg	
11097-69-1	Aroclor 1254 [b]	418 J	97	49	ug/kg	J
11096-82-5	Aroclor 1260	ND	97	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08448.D

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08448.D	1	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.86	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.79	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg	
72-20-8	Endrin	ND	3.9	0.79	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.79	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.79	ug/kg	
8001-35-2	Toxaphene	ND	98	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023041.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.8	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.8	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	83%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20850.D

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20850.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND UJ	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	76%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022960.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08481.D	10	08/15/07	FS	08/07/07	OP21766	GTT285
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND VL	18	4.4	ug/kg	
319-84-6	alpha-BHC	ND VL	18	5.1	ug/kg	
319-85-7	beta-BHC	ND VL	18	4.7	ug/kg	
319-86-8	delta-BHC	ND	18	8.0	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	18	6.2	ug/kg	
5103-71-9	alpha-Chlordane	ND	18	3.7	ug/kg	
5103-74-2	gamma-Chlordane	ND VL	18	4.0	ug/kg	
60-57-1	Dieldrin	ND	18	4.0	ug/kg	
72-54-8	4,4'-DDD	14.1 J	37	7.3	ug/kg	J
72-55-9	4,4'-DDE	ND	37	7.3	ug/kg	
50-29-3	4,4'-DDT	ND	37	8.4	ug/kg	
72-20-8	Endrin	ND	37	7.3	ug/kg	
1031-07-8	Endosulfan sulfate	ND	37	12	ug/kg	
7421-93-4	Endrin aldehyde	ND R	37	11	ug/kg	
53494-70-5	Endrin ketone	ND	37	7.3	ug/kg	
959-98-8	Endosulfan-I	ND VL	18	4.0	ug/kg	
33213-65-9	Endosulfan-II	ND VL	37	5.5	ug/kg	
76-44-8	Heptachlor	ND VL	18	5.1	ug/kg	
1024-57-3	Heptachlor epoxide	ND	18	3.7	ug/kg	
72-43-5	Methoxychlor	ND VL	37	7.3	ug/kg	
8001-35-2	Toxaphene	ND	910	460	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		46-122%
2051-24-3	Decachlorobiphenyl	85%		50-133%

(a) All hits confirmed by dual column analysis. Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX022987.D	10	08/10/07	AC	08/07/07	OP21765	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	694 J	180	91	ug/kg	J
11104-28-2	Aroclor 1221	ND	180	150	ug/kg	
11141-16-5	Aroclor 1232	ND	180	150	ug/kg	
53469-21-9	Aroclor 1242	ND	180	91	ug/kg	
12672-29-6	Aroclor 1248	ND	180	91	ug/kg	
11097-69-1	Aroclor 1254 [b]	462 J	180	91	ug/kg	J
11096-82-5	Aroclor 1260	ND	180	91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20851.D

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20851.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND UL	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022966.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20852.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.83	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	75%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022967.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20853.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND VL	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND VJ	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	84%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022968.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022968.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20854.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20854.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	UL
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	UJ
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	87%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022969.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022969.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20855.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.47	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND UL	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND UJ	3.9	0.78	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX022970.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	16	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254 [b]	40.2	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20856.D

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20856.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND UL	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND UJ	3.8	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	83%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022971.D

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022971.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20857.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	82%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022972.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20860.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.62	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND UJ	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022973.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20861.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND UL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.83	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022974.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		44-126%
2051-24-3	Decachlorobiphenyl	78%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20862.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.42	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.49	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	UL
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.60	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.5	0.70	ug/kg	
72-55-9	4,4'-DDE	ND	3.5	0.70	ug/kg	
50-29-3	4,4'-DDT	ND	3.5	0.81	ug/kg	
72-20-8	Endrin	ND	3.5	0.70	ug/kg	UJ
1031-07-8	Endosulfan sulfate	ND	3.5	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.5	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.5	0.70	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.5	0.53	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.49	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.35	ug/kg	
72-43-5	Methoxychlor	ND	3.5	0.70	ug/kg	
8001-35-2	Toxaphene	ND	88	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		46-122%
2051-24-3	Decachlorobiphenyl	84%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022975.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.8	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.8	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.8	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.8	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08309.D

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	Date Sampled:	07/26/07
Matrix:	AQ - Equipment Blank	Date Received:	07/27/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08309.D	1	08/10/07	FS	07/30/07	OP21657	GTT281
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.051	0.010	ug/l	
319-84-6	alpha-BHC	ND	0.051	0.010	ug/l	
319-85-7	beta-BHC	ND	0.051	0.011	ug/l	
319-86-8	delta-BHC	ND	0.051	0.010	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.051	0.010	ug/l	
5103-71-9	alpha-Chlordane	ND	0.051	0.010	ug/l	
5103-74-2	gamma-Chlordane	ND	0.051	0.010	ug/l	
60-57-1	Dieldrin	ND	0.051	0.010	ug/l	
72-54-8	4,4'-DDD	ND	0.10	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.10	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.10	0.020	ug/l	
72-20-8	Endrin	ND	0.10	0.020	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	0.020	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	0.030	ug/l	
53494-70-5	Endrin ketone	ND	0.10	0.020	ug/l	
959-98-8	Endosulfan-I	ND	0.051	0.010	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	0.010	ug/l	
76-44-8	Heptachlor	ND	0.051	0.010	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.051	0.010	ug/l	
72-43-5	Methoxychlor	ND	0.10	0.020	ug/l	
8001-35-2	Toxaphene	ND	2.5	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		42-127%
2051-24-3	Decachlorobiphenyl	72%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64322.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64322.D	1	08/01/07	JB	07/30/07	OP21658	GST1698
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.51	0.25	ug/l	
11104-28-2	Aroclor 1221	ND	0.51	0.40	ug/l	
11141-16-5	Aroclor 1232	ND	0.51	0.40	ug/l	
53469-21-9	Aroclor 1242	ND	0.51	0.25	ug/l	
12672-29-6	Aroclor 1248	ND	0.51	0.25	ug/l	
11097-69-1	Aroclor 1254	ND	0.51	0.25	ug/l	
11096-82-5	Aroclor 1260	ND	0.51	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		38-127%
2051-24-3	Decachlorobiphenyl	77%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F51353

DATE: February 21, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3550B/8270C for solid matrices. The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/21/08
Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F51353

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For semivolatile (SVOC) and polynuclear aromatic hydrocarbons (PAH) compounds in solid matrices, the samples are cooled @4°C±2°C with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The soil samples were collected 07/26/07. The SVOCs were extracted on 08/06/07 and 08/07/07 and analyzed on 08/08/07, 08/10/07, and 08/13/07. The PAHs by SIM were extracted on 08/07/07 and analyzed on 08/11/07, 08/13/07 and 08/15/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 07/05/07 on instrument MSBNA02. Target compounds 2,4-dinitrophenol (19.7%) and 4,6-dinitro-2-methylphenol (25.9%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9950) and 4,6-dinitro-2-methylphenol (r=0.9975) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 07/13/07 on instrument MSBNA04. Target compounds 2,4-dinitrophenol (42.0%; grossly exceeding) and 4,6-dinitro-2-methylphenol (24.0%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9988) and 4,6-dinitro-2-methylphenol (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB03B (F51353-21), and 43SB03C (F51353-22) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 08/07/07 on instrument MSBNA01, all target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 08/15/07 on instrument MSBNA01, all target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For SVOC initial calibration verification performed on 07/05/07 @15:27 on instrument MSBNA02, 3-nitroaniline (26.0%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 3-nitroaniline. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC initial calibration verification performed on 07/05/07 @15:55 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/01/07 @16:16 on instrument MSBNA02, 2,4-dinitrophenol (33.0%) and 4,6-dinitro-2-methylphenol (22.1%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for these compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/02/07 @13:24 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/03/07 @19:46 on instrument MSBNA02, benzoic acid (34.8%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for these compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/08/07 @10:46 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/13/07 @00:13 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/13/07 @19:50 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC initial calibration verification performed on 07/13/07 @13:48 on instrument MSBNA04, 4-chloroaniline (38.2%) and 3-nitroaniline (39.0%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 07/13/07 @14:19 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/08/07 @09:42 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), and 43SB03B (F51353-21) apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/10/07 @10:24 on instrument MSBNA04, 2,4-dinitrophenol (20.8%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 2,4-dinitrophenol. Sample 43SB03C (F51353-22) applies to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 08/07/07 @18:49 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM initial calibration verification performed on 08/07/07 @19:17 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM continuing calibration performed on 07/30/07 @11:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/10/07 @15:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), and APSB08B (F51353-27) apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/13/07 @10:12 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 08/15/07 @13:54 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this initial calibration verification.

- For PAH by SIM initial calibration verification performed on 08/15/07 @14:21 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this initial calibration verification.

- For PAH by SIM continuing calibration performed on 08/15/07 @16:26 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/17/07 @00:39 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/08/07	OP21763-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21763-MB	All SVOC target <½MRL	NA	NA	None
08/08/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/10/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/10/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/13/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/15/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/17/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/13/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/15/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/17/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/02/07	072607R	All SVOC target <½MRL	NA	NA	None
08/02/07	072607R	All PAH SIM target <½MRL	NA	NA	None

NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:
2-Fluorophenol (40-102%) – (DoD QSM = 35-105%)
Phenol – d5 (41-100%) – (DoD QSM = 40-100%)
2,4,6-Tribromophenol (42-108%) – (DoD QSM = 35-125%)
Nitrobenzene-d5 (40-105%) – (DoD QSM = 35-100%)
2-Fluorobiphenyl (43-107%) – (DoD QSM = 45-105%)
p-Terphenyl – d14 (45-119%) – (DoD QSM = 30-125%)

- All criteria were met. No qualifiers were applied.

VII-Internal Standards
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD LCS solid recovery limits are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21763-BS was used as the solid LCS for the SVOC analysis on 08/06/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/08/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/13/07. 2,4-Dinitrophenol (35%) and 4,6-dinitro-2-methylphenol (52%) were below laboratory criteria. The associated samples were non-detect for these compounds and was qualified bias low "UL" based upon the low recoveries. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21772-BS was used as the solid LCS for the PAH SIM analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21772-BS was used as the solid LCS for the PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21767-BS was used as the solid LCS for the PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21767-BS was used as the solid LCS for the PAH SIM analysis on 08/15/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD for SVOC analysis on 08/08/07. 4-Chloroaniline (RPD=35%) was within DoD QSM and outside laboratory criteria. All other target compounds were within criteria. The associated solid LCS was within criteria and all solid samples were non-detect for this compound. No qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the solid MS/MSD for SVOC analysis on 07/30/07. 2,4-Dimethylphenol (36%, 30%), 4,6-dinitro-2-methylphenol (52%, 49%), 1,2-dichlorobenzene (44%), 1,3-dichlorobenzene (39%), 1,4-dichlorobenzene (40%), and hexachloroethane (39%) were below laboratory and/or DoD QSM accuracy criteria. All other target compounds were within criteria. The associated solid LCS was within criteria and all solid samples were non-detect for these compounds. 2,4-Dimethylphenol, 4,6-dinitro-2-methylphenol, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and hexachloroethane were non-detect for the spiked sample and qualified "UL" based upon the low recoveries. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD for PAH SIM analysis on 08/15/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the aqueous MS/MSD for PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TCL SVOCs and PAHs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Bis(2-ethylhexyl)phthalate, n-nitrosodiphenylamine, chrysene, benzo(a)anthracene, naphthalene, and 2-methylnaphthalene were detected in the original sample and bis(2-ethylhexyl)phthalate, 2,4-dinitrotoluene, 4-chloro-3-methyl phenol, 2,6-dinitrotoluene, di-n-butyl phthalate, n-nitrosodiphenylamine, benzo(b)fluoranthene, chrysene, benzo(a)pyrene, benzo(a)anthracene, phenanthrene, 1-methylnaphthalene, naphthalene, and 2-methylnaphthalene were detected in the duplicate pair. All other target compounds were non-detect. Compounds bis(2-ethylhexyl)phthalate and n-nitrosodiphenylamine were qualified estimated "J" for detects for the duplicate pair based upon the high %RPDs. Compounds 2,4-dinitrotoluene and di-n-butyl phthalate were qualified estimated "J" for detects and "UJ" for non-detects based upon detections found above the MRL in one sample and non-detect in the second duplicate sample. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for TCL SVOCs and PAHs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
bis(2-ethylhexyl)phthalate	366J	781	72.4
2,4-dinitrotoluene	<200	720	NA
4-chloro-3-methyl phenol	<200	52.1J	NA
2,6-dinitrotoluene	<200	62.0J	NA
di-n-butyl phthalate	<400	3000	NA
n-nitrosodiphenylamine	442	922	70.4
benzo(b)fluoranthene	<64	24.5J	NA
chrysene	20.0J	27.6J	31.9
benzo(a)pyrene	<64	19.1J	NA
benzo(a)anthracene	16.4J	25.1J	41.9
phenanthrene	<320	52.6J	NA
1-methylnaphthalene	<320	46.3J	NA
naphthalene	77.9J	119J	41.8
2-methylnaphthalene	52.1J	82.6J	45.3

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SB02B (F51353-17), bis(2-ethylhexyl)phthalate

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
Ais = Area of characteristic ion for the internal standard.
RRF = Average relative response factor for compound being measured (from ICAL)
Vi = Volume of extract injected (uL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (74976 * 40 * 1000 * 1) / (323176 * 1.019 * 1 * 30.0 * 0.8290) = 366 µg/kg
Reported Value = 366 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB02B (F51353-17), chrysene

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
Ais = Area of characteristic ion for the internal standard.
RRF = Average relative response factor for compound being measured (from ICAL)
Vi = Volume of extract injected (uL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (5197 * 4.0 * 1000 * 4) / (107081 * 1.564 * 1 * 30.0 * 0.8290) = 20.0 µg/kg
Reported Value = 20.0 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003836.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	80%		40-102%
4165-62-2	Phenol-d5	87%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	75%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	92%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036214.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003837.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	79	ug/kg	
99-09-2	3-Nitroaniline	ND	400	79	ug/kg	
100-01-6	4-Nitroaniline	ND	400	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	77%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	67%		40-105%
321-60-8	2-Fluorobiphenyl	70%		43-107%
1718-51-0	Terphenyl-d14	86%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036215.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036215.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003839.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	78	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	90%		40-102%
4165-62-2	Phenol-d5	98%		41-100%
118-79-6	2,4,6-Tribromophenol	89%		42-108%
4165-60-0	Nitrobenzene-d5	80%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	100%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036216.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	16	ug/kg	
218-01-9	Chrysene	ND	62	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	62	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003840.D

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003840.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	77%		40-102%
4165-62-2	Phenol-d5	82%		41-100%
118-79-6	2,4,6-Tribromophenol	84%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	76%		43-107%
1718-51-0	Terphenyl-d14	91%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036217.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	57	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	57	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	57	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	57	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	57	14	ug/kg	
218-01-9	Chrysene	ND	57	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	57	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003841.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	86%		40-102%
4165-62-2	Phenol-d5	91%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	80%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	91%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036218.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	79	ug/kg	
208-96-8	Acenaphthylene	ND	310	79	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003842.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	78	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		40-102%
4165-62-2	Phenol-d5	81%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	69%		40-105%
321-60-8	2-Fluorobiphenyl	75%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036219.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003843.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	83%		40-102%
4165-62-2	Phenol-d5	89%		41-100%
118-79-6	2,4,6-Tribromophenol	92%		42-108%
4165-60-0	Nitrobenzene-d5	77%		40-105%
321-60-8	2-Fluorobiphenyl	83%		43-107%
1718-51-0	Terphenyl-d14	96%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036220.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	79	ug/kg	
208-96-8	Acenaphthylene	ND	310	79	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003844.D

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003844.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	75	ug/kg	
99-09-2	3-Nitroaniline	ND	380	75	ug/kg	
100-01-6	4-Nitroaniline	ND	380	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	85%		40-102%
4165-62-2	Phenol-d5	91%		41-100%
118-79-6	2,4,6-Tribromophenol	85%		42-108%
4165-60-0	Nitrobenzene-d5	79%		40-105%
321-60-8	2-Fluorobiphenyl	85%		43-107%
1718-51-0	Terphenyl-d14	90%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036221.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SQ - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003845.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	82%		40-102%
4165-62-2	Phenol-d5	88%		41-100%
118-79-6	2,4,6-Tribromophenol	96%		42-108%
4165-60-0	Nitrobenzene-d5	76%		40-105%
321-60-8	2-Fluorobiphenyl	80%		43-107%
1718-51-0	Terphenyl-d14	106%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036222.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003846.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	75	ug/kg	
99-09-2	3-Nitroaniline	ND	370	75	ug/kg	
100-01-6	4-Nitroaniline	ND	370	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	73%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	60%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	79%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036223.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003847.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	77%		40-102%
4165-62-2	Phenol-d5	82%		41-100%
118-79-6	2,4,6-Tribromophenol	80%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	74%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036224.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003848.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	960	390	ug/kg	
87-86-5	Pentachlorophenol	ND	960	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	96	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	77	ug/kg	
99-09-2	3-Nitroaniline	ND	390	77	ug/kg	
100-01-6	4-Nitroaniline	ND	390	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		40-102%
4165-62-2	Phenol-d5	84%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	77%		43-107%
1718-51-0	Terphenyl-d14	93%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036225.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	ND	62	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003852.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		40-102%
4165-62-2	Phenol-d5	89%		41-100%
118-79-6	2,4,6-Tribromophenol	88%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	92%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036226.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037767.D

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037767.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	890	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	890	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	71	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	890	360	ug/kg	
87-86-5	Pentachlorophenol	ND	890	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	89	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	71	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	71	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	89	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	89	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	89	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	71	ug/kg	
99-09-2	3-Nitroaniline	ND	360	71	ug/kg	
100-01-6	4-Nitroaniline	ND	360	71	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	68%		42-108%
4165-60-0	Nitrobenzene-d5	55%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	59%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036241.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	71	ug/kg	
208-96-8	Acenaphthylene	ND	290	71	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	23.2 J	57	14	ug/kg	J
50-32-8	Benzo(a)pyrene	31.4 J	57	14	ug/kg	J
205-99-2	Benzo(b)fluoranthene	29.9 J	57	14	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.6 J	57	14	ug/kg	J
207-08-9	Benzo(k)fluoranthene	21.9 J	57	14	ug/kg	J
218-01-9	Chrysene	29.7 J	57	14	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	18.4 J	57	14	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037768.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	71%		40-105%
321-60-8	2-Fluorobiphenyl	72%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036242.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	44	ug/kg	
91-20-3	Naphthalene	ND	300	44	ug/kg	
85-01-8	Phenanthrene	ND	300	44	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037769.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1000	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	80	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	400	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	80	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND UJ	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	80	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND UJ	400	100	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	100	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	366 J	400	200	ug/kg	J
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	80	ug/kg	
99-09-2	3-Nitroaniline	ND	400	80	ug/kg	
100-01-6	4-Nitroaniline	ND	400	80	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	442 J	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	80%		41-100%
118-79-6	2,4,6-Tribromophenol	89%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	78%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036243.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	80	ug/kg	
208-96-8	Acenaphthylene	ND	320	80	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	16.4 J	64	16	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	20.0 J	64	16	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	
91-57-6	2-Methylnaphthalene	52.1 J	320	48	ug/kg	J
91-20-3	Naphthalene	77.9 J	320	48	ug/kg	J
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037770.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	52.1 J	190	38	ug/kg	J
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	720 J	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	62.0 J	190	38	ug/kg	J
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	3000 J	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	781 J	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	77	ug/kg	
99-09-2	3-Nitroaniline	ND	380	77	ug/kg	
100-01-6	4-Nitroaniline	ND	380	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	922 J	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	85%		40-102%
4165-62-2	Phenol-d5	94%		41-100%
118-79-6	2,4,6-Tribromophenol	94%		42-108%
4165-60-0	Nitrobenzene-d5	86%		40-105%
321-60-8	2-Fluorobiphenyl	88%		43-107%
1718-51-0	Terphenyl-d14	89%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036244.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	25.1 J	62	15	ug/kg	J
50-32-8	Benzo(a)pyrene	19.1 J	62	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	24.5 J	62	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	27.6 J	62	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	46.3 J	310	46	ug/kg	J
91-57-6	2-Methylnaphthalene	82.6 J	310	46	ug/kg	J
91-20-3	Naphthalene	119 J	310	46	ug/kg	J
85-01-8	Phenanthrene	52.6 J	310	46	ug/kg	J
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037771.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	79	ug/kg	
99-09-2	3-Nitroaniline	ND	400	79	ug/kg	
100-01-6	4-Nitroaniline	ND	400	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	79%		40-102%
4165-62-2	Phenol-d5	87%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	81%		40-105%
321-60-8	2-Fluorobiphenyl	79%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036245.D

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036245.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037772.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	77	ug/kg	
99-09-2	3-Nitroaniline	ND	390	77	ug/kg	
100-01-6	4-Nitroaniline	ND	390	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	85%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	81%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036246.D

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036246.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	17.9 J	62	15	ug/kg	J
50-32-8	Benzo(a)pyrene	18.9 J	62	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	17.1 J	62	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	16.9 J	62	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003849.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	512	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	418	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	856	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		40-102%
4165-62-2	Phenol-d5	88%		41-100%
118-79-6	2,4,6-Tribromophenol	86%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	86%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036247.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	15.2 J	60	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	25.7 J	60	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	20.6 J	60	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	64.5 J	300	45	ug/kg	J
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003879.D	1	08/10/07	RB	08/07/07	OP21773	SU187
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	910	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	910	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	370	73	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	910	370	ug/kg	
87-86-5	Pentachlorophenol	ND	910	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	91	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	73	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	73	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	91	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	91	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	91	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	73	ug/kg	
99-09-2	3-Nitroaniline	ND	370	73	ug/kg	
100-01-6	4-Nitroaniline	ND	370	73	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	77%		42-108%
4165-60-0	Nitrobenzene-d5	58%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	77%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036192.D

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036192.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	73	ug/kg	
208-96-8	Acenaphthylene	ND	290	73	ug/kg	
120-12-7	Anthracene	ND	290	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg	
91-20-3	Naphthalene	ND	290	44	ug/kg	
85-01-8	Phenanthrene	ND	290	44	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037775.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	75	ug/kg	
99-09-2	3-Nitroaniline	ND	380	75	ug/kg	
100-01-6	4-Nitroaniline	ND	380	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	78%		41-100%
118-79-6	2,4,6-Tribromophenol	78%		42-108%
4165-60-0	Nitrobenzene-d5	73%		40-105%
321-60-8	2-Fluorobiphenyl	72%		43-107%
1718-51-0	Terphenyl-d14	70%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036193.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037776.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037776.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	69%		40-105%
321-60-8	2-Fluorobiphenyl	66%		43-107%
1718-51-0	Terphenyl-d14	70%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036194.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037777.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	70%		41-100%
118-79-6	2,4,6-Tribromophenol	69%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	64%		43-107%
1718-51-0	Terphenyl-d14	63%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration rang

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036195.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037778.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND UL	990	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND UL	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	990	390	ug/kg	
87-86-5	Pentachlorophenol	ND	990	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	99	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	71%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	65%		43-107%
1718-51-0	Terphenyl-d14	67%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036196.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037779.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND VL	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND VL	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND VL	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND VL	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND VL	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	69%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	62%		40-105%
321-60-8	2-Fluorobiphenyl	63%		43-107%
1718-51-0	Terphenyl-d14	64%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036197.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037782.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	880	350	ug/kg	
95-57-8	2-Chlorophenol	ND	180	35	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	35	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	880	350	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	350	70	ug/kg	
95-48-7	2-Methylphenol	ND	180	35	ug/kg	
	3&4-Methylphenol	ND	180	35	ug/kg	
88-75-5	2-Nitrophenol	ND	180	35	ug/kg	
100-02-7	4-Nitrophenol	ND	880	350	ug/kg	
87-86-5	Pentachlorophenol	ND	880	350	ug/kg	
108-95-2	Phenol	ND	180	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	35	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	35	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	350	88	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	35	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	35	ug/kg	
106-47-8	4-Chloroaniline	ND	180	70	ug/kg	
86-74-8	Carbazole	ND	180	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	35	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	35	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	35	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	35	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	35	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	350	70	ug/kg	
132-64-9	Dibenzofuran	ND	180	35	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	350	88	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	350	88	ug/kg	
84-66-2	Diethyl phthalate	ND	350	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	350	88	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	350	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	35	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	35	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	35	ug/kg	
67-72-1	Hexachloroethane	ND	180	35	ug/kg	
78-59-1	Isophorone	ND	180	35	ug/kg	
88-74-4	2-Nitroaniline	ND	350	70	ug/kg	
99-09-2	3-Nitroaniline	ND	350	70	ug/kg	
100-01-6	4-Nitroaniline	ND	350	70	ug/kg	
98-95-3	Nitrobenzene	ND	180	35	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	35	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	35	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	70%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	63%		40-105%
321-60-8	2-Fluorobiphenyl	64%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036208.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	280	70	ug/kg	
208-96-8	Acenaphthylene	ND	280	70	ug/kg	
120-12-7	Anthracene	ND	280	42	ug/kg	
56-55-3	Benzo(a)anthracene	ND	56	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	56	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	56	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	56	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	56	14	ug/kg	
218-01-9	Chrysene	ND	56	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	56	14	ug/kg	
206-44-0	Fluoranthene	ND	280	49	ug/kg	
86-73-7	Fluorene	ND	280	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	56	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	280	42	ug/kg	
91-57-6	2-Methylnaphthalene	ND	280	42	ug/kg	
91-20-3	Naphthalene	ND	280	42	ug/kg	
85-01-8	Phenanthrene	ND	280	42	ug/kg	
129-00-0	Pyrene	ND	280	49	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037783.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	81%		42-108%
4165-60-0	Nitrobenzene-d5	67%		40-105%
321-60-8	2-Fluorobiphenyl	69%		43-107%
1718-51-0	Terphenyl-d14	73%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036209.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037784.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	61%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	69%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036210.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037785.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		40-102%
4165-62-2	Phenol-d5	65%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	60%		43-107%
1718-51-0	Terphenyl-d14	64%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036211.D

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036211.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	74	ug/kg	
208-96-8	Acenaphthylene	ND	290	74	ug/kg	
120-12-7	Anthracene	ND	290	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	290	52	ug/kg	
86-73-7	Fluorene	ND	290	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg	
91-20-3	Naphthalene	ND	290	44	ug/kg	
85-01-8	Phenanthrene	ND	290	44	ug/kg	
129-00-0	Pyrene	ND	290	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037579.D	1	08/02/07	RB	07/31/07	OP21675	SL1922
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	25	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	1.0	ug/l	
	3&4-Methylphenol	ND	5.0	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	10	ug/l	
87-86-5	Pentachlorophenol	ND	25	10	ug/l	
108-95-2	Phenol	ND	5.0	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	2.0	ug/l	
86-74-8	Carbazole	ND	5.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.0	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.9	ug/l	
78-59-1	Isophorone	ND	5.0	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-62%
4165-62-2	Phenol-d5	28%		10-40%
118-79-6	2,4,6-Tribromophenol	87%		33-118%
4165-60-0	Nitrobenzene-d5	80%		42-108%
321-60-8	2-Fluorobiphenyl	79%		40-106%
1718-51-0	Terphenyl-d14	79%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09534.D	1	08/02/07	NJ	07/31/07	OP21676	SR451
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	0.50	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.50	ug/l	
120-12-7	Anthracene	ND	1.0	0.50	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.050	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.25	ug/l	
86-73-7	Fluorene	ND	1.0	0.25	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-20-3	Naphthalene	ND	1.0	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.50	ug/l	
129-00-0	Pyrene	ND	1.0	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F51353

DATE: February 21, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5035/8260B for solid matrices. A total of thirty solid samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	Laboratory Control Sample
X		Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
	X	Internal Standards
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/20/08
Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F51353

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: For soil samples cooled @ 4°C±2°C; the maximum holding time is 14 days from sample collection to analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: For the solid samples collected 07/26/07, the VOCs were prepped and analyzed on 08/01/07 and 08/02/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check
The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration performed on 07/25/07 on instrument MSVOA9, target compounds methylene chloride (49.2%; grossly exceeding) and acetone (21.3%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds methylene chloride (r=0.9984) and acetone (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) were analyzed using this initial calibration.

- For initial calibration performed on 07/31/07 on instrument MSVOA1, target compounds chloromethane (19.7%), vinyl chloride (16.3%), bromomethane (33.3%; grossly exceeding), chloroethane (18.7%), acetone (17.2%), and methylene chloride (41.3%; grossly exceeding) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds vinyl chloride (r=0.9974), bromomethane (r=0.9944), chloroethane (r=0.9973), acetone (r=0.9957), and methylene chloride (r=0.9998) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Chloromethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %RSD. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) were analyzed using this initial calibration. Confirmation for sample APSB06A (F51353-9) also applies to this initial calibration.

- For initial calibration performed on 07/16/07 on instrument MSVOA3, target compounds acetone (18.5%), methylene chloride (32.0%; grossly exceeding), ethylbenzene (15.1%), m,p-xylene (16.6%), and o-xylene (15.4%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds acetone (r=0.9962), methylene chloride (r=1.0000), ethylbenzene (r=0.9985), m,p-xylene (r=0.9988), and o-xylene (r=0.9990) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration verification performed on 07/25/07 @15:34 on instrument MSVOA9, bromomethane (28.8%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 08/01/07 @11:40 on instrument MSVOA9, all criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this continuing calibration.

- For initial calibration verification performed on 07/31/07 @14:08 on instrument MSVOA1, vinyl chloride (23.5%), bromomethane (29.6%), chloroethane (24.1%), and acetone (25.2%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Vinyl chloride, bromomethane, and chloroethane were non-detect for all associated samples; therefore, no qualifiers were applied based upon the high %Drifts/%Ds. Acetone would be qualified estimated "J" based upon the high %Drift for detects; however, no samples reported apply to this initial calibration verification. No qualifiers were applied based upon these outliers.

- For continuing calibration performed on 08/01/07 @09:17 on instrument MSVOA1, target compounds acetone (23.8%) and carbon tetrachloride (32.1%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was qualified estimated "J" for detects and no qualifier for non-detects based upon the high %Drift. Carbon tetrachloride was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this continuing calibration.

- For continuing calibration performed on 08/02/07 @09:54 on instrument MSVOA1, target compounds acetone (22.9%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Confirmation for sample APSB06A (F51353-9) applies to this continuing calibration.

- For initial calibration verification performed on 07/16/07 @18:20 on instrument MSVOA3, bromomethane (36.1%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 08/02/07 @09:18 on instrument MSVOA3, target compounds acetone (37.6%), 1,1,1-trichloroethane (29.9%), carbon tetrachloride (35.9%), 1,2-dichloroethane (22.1%), and trichloroethene (21.4%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Compounds acetone, 1,1,1-trichloroethane, carbon tetrachloride, 1,2-dichloroethane, and trichloroethene were non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 1) as needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/01/07	VG1721-MB	All target <½MRL	NA	NA	None
08/01/07	VF417-MB	All target <½MRL	NA	NA	None
08/02/07	VH1667-MB	All target <½MRL	NA	NA	None
08/06/07	072607R	All target <½MRL	NA	NA	None
08/06/07	TB072607W	Methyl chloride	0.49J	2.45	None
08/02/07	TB072607S	All target <½MRL	NA	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. DoD LCS soil recovery limits are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample VG1721-BS was used as the solid LCS for the VOC analysis on 08/01/07. Vinyl chloride (126%) was above DoD QSM criteria and within laboratory criteria. For all other target compounds, all criteria were met. All associated samples were non-detect for vinyl chloride; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this LCS.

- Sample VF417-BS was used as the solid LCS for the VOC analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this LCS.

- Sample VH1667-BS was used as the solid LCS for the VOC analysis on 08/02/07. Methyl bromide (159%) was above DoD QSM criteria and laboratory criteria. For all other target compounds, all criteria were met. All associated samples were non-detect for methyl bromide; therefore, no qualifiers were applied based upon this outlier. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The DoD MS/MSD solid recovery limits follow the LCS criteria and are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51297-4 was used for the solid MS/MSD analysis for analysis on 08/01/07. Since this sample is not a RFAAP site sample, it was not evaluated. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD analysis on 08/01/07. Acetone (54%), carbon disulfide (RPD=32%), cis-1,3-dichloropropene (78%), trans-1,3-dichloropropene (77%), 2-hexanone (62%), 4-methyl-2-pentanone (63%), methyl bromide (157%), methyl ethyl ketone (63%), vinyl chloride (130%, 132%), and o-xylene (128%; RPD=26%) were outside lab criteria and/or DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI). The spiked sample was qualified bias low "L" for detects and "UL" for non-detects for acetone, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 2-hexanone, 4-methyl-2-pentanone, and methyl ethyl ketone based upon the low recoveries. The spiked sample was qualified bias high "K" for vinyl chloride based upon the high recovery. Methyl bromide and o-xylene were non-detect for the spiked sample; therefore, no qualifiers were applied based upon the high recoveries. All other percent recoveries were within criteria for all target compounds. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the solid MS/MSD analysis on 08/02/07. Acetone (54%, 47%), chloroform (128%), carbon tetrachloride (149%, 140%), 2-hexanone (59%, 53%), 4-methyl-2-pentanone (63%), methyl bromide (173%, 165%), methyl ethyl ketone (52%, 46%), 1,1,1-trichloroethane (142%), and trichloroethene (132%, 128%) were outside lab criteria and/or DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI), except for methyl bromide. The spiked sample was qualified bias low "UL" for non-detects for acetone, 2-hexanone, 4-methyl-2-pentanone, and methyl ethyl ketone based upon the low recoveries. No qualifiers were applied for chloroform, carbon tetrachloride, methyl bromide, 1,1,1-trichloroethane, and trichloroethene based upon the high recoveries (spiked sample was non-detect for these compounds). All other percent recoveries were within criteria for all target compounds. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:
Dibromofluoromethane (80-121%) (DoD QSM = None Listed)
Toluene-d8 (71-130%) (DoD QSM = 85-115%)
4-Bromofluorobenzene (59-148%) (DoD QSM = 85-120%)
1,2-Dichloroethane-d4 (77-123%) (DoD QSM = None Listed)

- For confirmation of sample APSB06A (F51353-9), 4-bromofluorobenzene (121%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 43SB03B (F51353-21), 4-bromofluorobenzene (124%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample APSB08A (F51353-26), 4-bromofluorobenzene (136%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met. No qualifiers were applied.

IX-Internal Standards (IS)

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- For sample 43SB02C (F51353-19), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 43SB03C (F51353-22), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample APSB07A (F51353-23), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 43SB04C (F51353-3), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample APSB06A (F51353-9), internal standard 3 1,4-dichlorobenzene-d4 was below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation. The original run was reported.

- For confirmation of sample APSB06A (F51353-9), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The original run was reported.

- For sample APSB08A (F51353-26), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For all other samples, all criteria were met. No qualifiers were applied.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TCL VOCs. Acetone was detected at a concentration below the MRL of 43.6J µg/kg in the original sample and non-detect at <64 µg/kg in the duplicate pair. All other TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TCL VOCs. All TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TCL VOCs. Acetone was detected at a concentration below the MRL of 30.9J µg/kg in the original sample and of 23.0J ug/kg in the duplicate pair resulting in a RPD of 29.3%. All other TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TCL VOCs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Acetone, carbon disulfide, and methyl ethyl ketone were detected in the original sample and acetone, m,p-xylenes, and ethylbenzene were detected in the duplicate pair. All other target compounds were non-detect. Carbon disulfide and ethylbenzene were qualified estimated "J" for detects and "UJ" for non-detects based upon detections found above the MRL in one sample and non-detect in the second duplicate sample. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for TCL VOCs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Acetone	82.8	59.0	33.6
Carbon disulfide	9.0	<4.8	NA
Methyl ethyl ketone	13.7J	<24	NA
m,p-Xylene	<11	2.8J	NA
Ethylbenzene	<5.4	5.0	NA

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TCL VOCs. All TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

XI-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SB04C (F51353-3), carbon disulfide

Conc. (µg/kg) = {(Ax)*(Is)*(DF)*(Vp)} / {(Ais)*(RRF)*(Ws)*Fs)}

where:

Ax is the compound area
Is is the corresponding internal standard concentration (ng/mL)
DF is the dilution factor
Vp is the volume purged (mL)
Ais is the corresponding internal standard area
RRF is the relative response factor
Ws is the weight of the sample (g)
Fs is the fraction solids for the sample

Conc. µg/kg = (92649 * 50 ng/mL * 1 * 5mL) / (948861 * 0.959 * 5.73g * 0.839) =
= 5.3 µg/kg

Reported Conc. = 5.3 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Form I

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045303.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	4.30 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	63	32	ug/kg	
71-43-2	Benzene	ND	6.3	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.3	1.3	ug/kg	
75-25-2	Bromoform	ND	6.3	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.3	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.3	3.3	ug/kg	
67-66-3	Chloroform	ND	6.3	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.3	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.3	1.6	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.3	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.3	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.3	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.3	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	6.3	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.3	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.3	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.3	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.3	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.3	1.3	ug/kg	
591-78-6	2-Hexanone	ND	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.3	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.3	2.5	ug/kg	
75-09-2	Methylene chloride	ND	13	6.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	32	13	ug/kg	
100-42-5	Styrene	ND	6.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.3	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.3	1.6	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.3	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.3	1.3	ug/kg	
108-88-3	Toluene	ND	6.3	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.3	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.3	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.3	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045304.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.35 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	56	28	ug/kg	
71-43-2	Benzene	ND	5.6	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.6	1.1	ug/kg	
75-25-2	Bromoform	ND	5.6	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.6	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.6	2.9	ug/kg	
67-66-3	Chloroform	ND	5.6	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.6	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.6	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.6	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.6	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.6	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.6	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.6	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.6	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.6	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.6	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.6	1.1	ug/kg	
108-88-3	Toluene	ND	5.6	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.6	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.6	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.6	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	93%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045305.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.73 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	48.5 J	52	26	ug/kg	J
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	5.3	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	91%		71-130%
460-00-4	4-Bromofluorobenzene	97%		59-148%
17060-07-0	1,2-Dichloroethane-D4	100%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045306.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.11 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	54	27	ug/kg	
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045307.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.61 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	43.6 J	54	27	ug/kg	J
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-121%
2037-26-5	Toluene-D8	89%		71-130%
460-00-4	4-Bromofluorobenzene	94%		59-148%
17060-07-0	1,2-Dichloroethane-D4	102%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045308.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	4.69 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	64	32	ug/kg	
71-43-2	Benzene	ND	6.4	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	1.3	ug/kg	
75-25-2	Bromoform	ND	6.4	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.4	3.3	ug/kg	
67-66-3	Chloroform	ND	6.4	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.4	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	1.3	ug/kg	
591-78-6	2-Hexanone	ND	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.4	2.6	ug/kg	
75-09-2	Methylene chloride	ND	13	6.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	32	13	ug/kg	
100-42-5	Styrene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	1.3	ug/kg	
108-88-3	Toluene	ND	6.4	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.4	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.4	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	93%		71-130%
460-00-4	4-Bromofluorobenzene	95%		59-148%
17060-07-0	1,2-Dichloroethane-D4	96%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045309.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.63 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	42.3 J	54	27	ug/kg	J
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-121%
2037-26-5	Toluene-D8	92%		71-130%
460-00-4	4-Bromofluorobenzene	98%		59-148%
17060-07-0	1,2-Dichloroethane-D4	95%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045310.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2 [a]	G0045323.D	1	08/02/07	SH	n/a	n/a	VG1722

	Initial Weight
Run #1	6.07 g
Run #2	5.60 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	24	ug/kg	
71-43-2	Benzene	ND	4.7	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.95	ug/kg	
75-25-2	Bromoform	ND	4.7	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.95	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.5	ug/kg	
67-66-3	Chloroform	ND	4.7	0.95	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.95	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.95	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.95	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.95	ug/kg	
591-78-6	2-Hexanone	ND	24	9.5	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.5	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.5	ug/kg	
100-42-5	Styrene	ND	4.7	0.95	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.95	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.95	ug/kg	
108-88-3	Toluene	ND	4.7	0.95	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.95	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.5	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%	105%	80-121%
2037-26-5	Toluene-D8	105%	98%	71-130%
460-00-4	4-Bromofluorobenzene	117%	121%	59-148%
17060-07-0	1,2-Dichloroethane-D4	98%	99%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045311.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	6.11 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	23	ug/kg	
71-43-2	Benzene	ND	4.7	0.94	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.94	ug/kg	
75-25-2	Bromoform	ND	4.7	0.94	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.94	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.4	ug/kg	
67-66-3	Chloroform	ND	4.7	0.94	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.94	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.94	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.94	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.94	ug/kg	
591-78-6	2-Hexanone	ND	23	9.4	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.4	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.4	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.4	ug/kg	
100-42-5	Styrene	ND	4.7	0.94	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.94	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.94	ug/kg	
108-88-3	Toluene	ND	4.7	0.94	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.94	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.4	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.94	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022573.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.96 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.97	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.97	ug/kg	
75-25-2	Bromoform	ND	4.8	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.97	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.97	ug/kg	
75-15-0	Carbon disulfide	ND	4.8	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	4.8	0.97	ug/kg	
591-78-6	2-Hexanone	ND	24	9.7	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.7	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.7	ug/kg	
100-42-5	Styrene	ND	4.8	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.97	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.97	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.97	ug/kg	
108-88-3	Toluene	ND	4.8	0.97	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.97	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.4	ug/kg	
	m,p-Xylene	ND	9.7	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.8	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	113%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022574.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.32 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	40.5 J	45	22	ug/kg	J
71-43-2	Benzene	ND	4.5	0.90	ug/kg	
75-27-4	Bromodichloromethane	ND	4.5	0.90	ug/kg	
75-25-2	Bromoform	ND	4.5	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	4.5	0.90	ug/kg	
75-00-3	Chloroethane	ND	4.5	2.3	ug/kg	
67-66-3	Chloroform	ND	4.5	0.90	ug/kg	
75-15-0	Carbon disulfide	2.1 J	4.5	0.90	ug/kg	J
56-23-5	Carbon tetrachloride	ND	4.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.5	0.99	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.5	0.90	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.5	0.90	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.5	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.5	0.90	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.5	0.90	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.5	0.90	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.5	0.90	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.5	0.90	ug/kg	
100-41-4	Ethylbenzene	ND	4.5	0.90	ug/kg	
591-78-6	2-Hexanone	ND	22	9.0	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	22	9.0	ug/kg	
74-83-9	Methyl bromide	ND	4.5	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.5	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.0	4.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	22	9.0	ug/kg	
100-42-5	Styrene	ND	4.5	0.90	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.5	0.90	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.5	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.5	0.90	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.5	0.90	ug/kg	
108-88-3	Toluene	ND	4.5	0.90	ug/kg	
79-01-6	Trichloroethylene	ND	4.5	0.90	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.5	1.3	ug/kg	
	m,p-Xylene	ND	9.0	0.99	ug/kg	
95-47-6	o-Xylene	ND	4.5	0.90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	104%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	113%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022575.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.03 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.97	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.97	ug/kg	
75-25-2	Bromoform	ND	4.8	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.97	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.97	ug/kg	
75-15-0	Carbon disulfide	ND	4.8	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	4.8	0.97	ug/kg	
591-78-6	2-Hexanone	ND	24	9.7	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.7	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.7	ug/kg	
100-42-5	Styrene	ND	4.8	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.97	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.97	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.97	ug/kg	
108-88-3	Toluene	ND	4.8	0.97	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.97	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.4	ug/kg	
	m,p-Xylene	ND	9.7	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.8	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	104%		59-148%
17060-07-0	1,2-Dichloroethane-D4	109%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022576.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.67 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	30.9 J	51	26	ug/kg	J
71-43-2	Benzene	ND	5.1	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.1	1.0	ug/kg	
75-25-2	Bromoform	ND	5.1	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.1	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.1	2.7	ug/kg	
67-66-3	Chloroform	ND	5.1	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.1	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.1	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.1	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.1	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.1	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.1	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.1	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.1	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.1	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.1	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.1	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.1	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.1	1.0	ug/kg	
108-88-3	Toluene	ND	5.1	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.1	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.1	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.1	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022577.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	4.78 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	57	29	ug/kg	
71-43-2	Benzene	ND	5.7	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.7	1.1	ug/kg	
75-25-2	Bromoform	ND	5.7	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.7	3.0	ug/kg	
67-66-3	Chloroform	ND	5.7	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.7	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	1.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.7	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.7	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.7	1.1	ug/kg	
591-78-6	2-Hexanone	ND	29	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	29	11	ug/kg	
74-83-9	Methyl bromide	ND	5.7	2.1	ug/kg	
74-87-3	Methyl chloride	ND	5.7	2.3	ug/kg	
75-09-2	Methylene chloride	ND	11	5.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	29	11	ug/kg	
100-42-5	Styrene	ND	5.7	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.7	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.7	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.7	1.1	ug/kg	
108-88-3	Toluene	ND	5.7	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.7	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.7	1.6	ug/kg	
	m,p-Xylene	ND	11	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.7	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	118%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022578.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.17 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	23.0 J	46	23	ug/kg	J
71-43-2	Benzene	ND	4.6	0.91	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	0.91	ug/kg	
75-25-2	Bromoform	ND	4.6	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.91	ug/kg	
75-00-3	Chloroethane	ND	4.6	2.4	ug/kg	
67-66-3	Chloroform	ND	4.6	0.91	ug/kg	
75-15-0	Carbon disulfide	ND	4.6	0.91	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.6	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.6	0.91	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.6	0.91	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.91	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
100-41-4	Ethylbenzene	ND	4.6	0.91	ug/kg	
591-78-6	2-Hexanone	ND	23	9.1	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.1	ug/kg	
74-83-9	Methyl bromide	ND	4.6	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.6	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.1	4.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.1	ug/kg	
100-42-5	Styrene	ND	4.6	0.91	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.91	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.6	0.91	ug/kg	
108-88-3	Toluene	ND	4.6	0.91	ug/kg	
79-01-6	Trichloroethylene	ND	4.6	0.91	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.6	1.3	ug/kg	
	m,p-Xylene	ND	9.1	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.6	0.91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	118%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022579.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.63 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	82.8	54	27	ug/kg	
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	9.0 J	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND UJ	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	13.7 J	27	11	ug/kg	J
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	108%		59-148%
17060-07-0	1,2-Dichloroethane-D4	111%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022580.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.18 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	59.0	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.95	ug/kg	
75-25-2	Bromoform	ND	4.8	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.95	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.95	ug/kg	
75-15-0	Carbon disulfide	ND UJ	4.8	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.95	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
100-41-4	Ethylbenzene	5.0 J	4.8	0.95	ug/kg	
591-78-6	2-Hexanone	ND	24	9.5	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.5	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.5	ug/kg	
100-42-5	Styrene	ND	4.8	0.95	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.95	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.95	ug/kg	
108-88-3	Toluene	ND	4.8	0.95	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.95	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.3	ug/kg	
	m,p-Xylene	2.8 J	9.5	1.0	ug/kg	J
95-47-6	o-Xylene	ND	4.8	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	115%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022581.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.03 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg	
75-25-2	Bromoform	ND	5.0	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	2.6	ug/kg	
67-66-3	Chloroform	ND	5.0	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	1.8	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	1.0	ug/kg	
108-88-3	Toluene	ND	5.0	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022582.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.25 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	ND	5.5	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	109%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022568.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.43 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	58.5 L	53	26	ug/kg	
71-43-2	Benzene	ND	5.3	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg	
75-25-2	Bromoform	ND	5.3	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.3	2.7	ug/kg	
67-66-3	Chloroform	ND	5.3	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	NDUL	5.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	NDUL	5.3	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg	
591-78-6	2-Hexanone	NDUL	26	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	NDUL	26	11	ug/kg	
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
78-93-3	Methyl ethyl ketone	NDUL	26	11	ug/kg	
100-42-5	Styrene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.3	1.1	ug/kg	
108-88-3	Toluene	ND	5.3	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	6.6 K	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	103%		71-130%
460-00-4	4-Bromofluorobenzene	124%		59-148%
17060-07-0	1,2-Dichloroethane-D4	103%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022583.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.01 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	68.8	46	23	ug/kg	
71-43-2	Benzene	ND	4.6	0.91	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	0.91	ug/kg	
75-25-2	Bromoform	ND	4.6	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.91	ug/kg	
75-00-3	Chloroethane	ND	4.6	2.4	ug/kg	
67-66-3	Chloroform	ND	4.6	0.91	ug/kg	
75-15-0	Carbon disulfide	ND	4.6	0.91	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.6	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.6	0.91	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.6	0.91	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.91	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
100-41-4	Ethylbenzene	ND	4.6	0.91	ug/kg	
591-78-6	2-Hexanone	ND	23	9.1	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.1	ug/kg	
74-83-9	Methyl bromide	ND	4.6	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.6	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.1	4.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.1	ug/kg	
100-42-5	Styrene	ND	4.6	0.91	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.91	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.6	0.91	ug/kg	
108-88-3	Toluene	ND	4.6	0.91	ug/kg	
79-01-6	Trichloroethylene	ND	4.6	0.91	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.6	1.3	ug/kg	
	m,p-Xylene	ND	9.1	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.6	0.91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	104%		59-148%
17060-07-0	1,2-Dichloroethane-D4	115%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022584.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.75 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	49	25	ug/kg	
71-43-2	Benzene	ND	4.9	0.99	ug/kg	
75-27-4	Bromodichloromethane	ND	4.9	0.99	ug/kg	
75-25-2	Bromoform	ND	4.9	0.99	ug/kg	
108-90-7	Chlorobenzene	ND	4.9	0.99	ug/kg	
75-00-3	Chloroethane	ND	4.9	2.6	ug/kg	
67-66-3	Chloroform	ND	4.9	0.99	ug/kg	
75-15-0	Carbon disulfide	ND	4.9	0.99	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.9	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.9	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.9	0.99	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.9	0.99	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.9	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.9	0.99	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.9	0.99	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.9	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.9	0.99	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.9	0.99	ug/kg	
100-41-4	Ethylbenzene	ND	4.9	0.99	ug/kg	
591-78-6	2-Hexanone	ND	25	9.9	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	9.9	ug/kg	
74-83-9	Methyl bromide	ND	4.9	1.8	ug/kg	
74-87-3	Methyl chloride	ND	4.9	2.0	ug/kg	
75-09-2	Methylene chloride	ND	9.9	4.9	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	9.9	ug/kg	
100-42-5	Styrene	ND	4.9	0.99	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.9	0.99	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.9	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.9	0.99	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.9	0.99	ug/kg	
108-88-3	Toluene	ND	4.9	0.99	ug/kg	
79-01-6	Trichloroethylene	5.4	4.9	0.99	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.9	1.4	ug/kg	
	m,p-Xylene	ND	9.9	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.9	0.99	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	103%		71-130%
460-00-4	4-Bromofluorobenzene	119%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022585.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022585.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.24 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	ND	5.5	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022586.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.59 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	91%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	120%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044818.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.55 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	53	27	ug/kg	
71-43-2	Benzene	ND	5.3	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg	
75-25-2	Bromoform	ND	5.3	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.3	2.8	ug/kg	
67-66-3	Chloroform	ND	5.3	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg	
127-18-4	Tetrachloroethylene	6.4	5.3	1.1	ug/kg	
108-88-3	Toluene	ND	5.3	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-121%
2037-26-5	Toluene-D8	108%		71-130%
460-00-4	4-Bromofluorobenzene	136%		59-148%
17060-07-0	1,2-Dichloroethane-D4	104%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044819.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.53 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UL	64	32	ug/kg	
71-43-2	Benzene	ND	6.4	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	1.3	ug/kg	
75-25-2	Bromoform	ND	6.4	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.4	3.3	ug/kg	
67-66-3	Chloroform	ND	6.4	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.4	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	1.3	ug/kg	
591-78-6	2-Hexanone	ND UL	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND UL	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.4	2.6	ug/kg	
75-09-2	Methylene chloride	ND	13	6.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND UL	32	13	ug/kg	
100-42-5	Styrene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	1.3	ug/kg	
108-88-3	Toluene	ND	6.4	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.4	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.4	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	117%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044822.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.20 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	120%		59-148%
17060-07-0	1,2-Dichloroethane-D4	105%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044823.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.46 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	62	31	ug/kg	
71-43-2	Benzene	ND	6.2	1.2	ug/kg	
75-27-4	Bromodichloromethane	ND	6.2	1.2	ug/kg	
75-25-2	Bromoform	ND	6.2	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	6.2	1.2	ug/kg	
75-00-3	Chloroethane	ND	6.2	3.2	ug/kg	
67-66-3	Chloroform	ND	6.2	1.2	ug/kg	
75-15-0	Carbon disulfide	ND	6.2	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.2	1.6	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.2	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.2	1.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.2	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.2	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	6.2	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.2	1.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.2	1.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.2	1.2	ug/kg	
100-41-4	Ethylbenzene	ND	6.2	1.2	ug/kg	
591-78-6	2-Hexanone	ND	31	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	31	12	ug/kg	
74-83-9	Methyl bromide	ND	6.2	2.2	ug/kg	
74-87-3	Methyl chloride	ND	6.2	2.5	ug/kg	
75-09-2	Methylene chloride	ND	12	6.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	31	12	ug/kg	
100-42-5	Styrene	ND	6.2	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.2	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.2	1.6	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.2	1.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.2	1.2	ug/kg	
108-88-3	Toluene	ND	6.2	1.2	ug/kg	
79-01-6	Trichloroethylene	ND	6.2	1.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.2	1.7	ug/kg	
	m,p-Xylene	ND	12	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.2	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	115%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044824.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.23 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044825.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.13 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	67	33	ug/kg	
71-43-2	Benzene	ND	6.7	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.7	1.3	ug/kg	
75-25-2	Bromoform	ND	6.7	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.7	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.7	3.5	ug/kg	
67-66-3	Chloroform	ND	6.7	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.7	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.7	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.7	1.5	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.7	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.7	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.7	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.7	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.7	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.7	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.7	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.7	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.7	1.3	ug/kg	
591-78-6	2-Hexanone	ND	33	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	33	13	ug/kg	
74-83-9	Methyl bromide	ND	6.7	2.4	ug/kg	
74-87-3	Methyl chloride	ND	6.7	2.7	ug/kg	
75-09-2	Methylene chloride	ND	13	6.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	33	13	ug/kg	
100-42-5	Styrene	ND	6.7	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.7	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.7	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.7	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.7	1.3	ug/kg	
108-88-3	Toluene	ND	6.7	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.7	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.7	1.9	ug/kg	
	m,p-Xylene	ND	13	1.5	ug/kg	
95-47-6	o-Xylene	ND	6.7	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607S		
Lab Sample ID:	F51353-32	**Date Sampled:**	07/26/07
Matrix:	SO - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044826.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg	
75-25-2	Bromoform	ND	5.0	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	2.6	ug/kg	
67-66-3	Chloroform	ND	5.0	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	1.8	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	1.0	ug/kg	
108-88-3	Toluene	ND	5.0	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607S		
Lab Sample ID:	F51353-32	**Date Sampled:**	07/26/07
Matrix:	SO - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	113%		59-148%
17060-07-0	1,2-Dichloroethane-D4	121%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Form I Cover

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607W		
Lab Sample ID:	F51353-33	**Date Sampled:**	07/26/07
Matrix:	AQ - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0050228.D	1	08/06/07	KW	n/a	n/a	VC2031
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	0.49 J	2.0	0.38	ug/l	J
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607W		
Lab Sample ID:	F51353-33	**Date Sampled:**	07/26/07
Matrix:	AQ - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	105%		86-112%
460-00-4	4-Bromofluorobenzene	104%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0050227.D	1	08/06/07	KW	n/a	n/a	VC2031
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.38	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	104%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
16406 US 224 East
Findlay, OH 45840
419-425-6037
FAX: 419-425-6085

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F51454

DATE: March 24, 2008 REVISED 6/10/8 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5030B/8260B for aqueous matrices. A total of five aqueous samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW04	F51454-3
APGW03	F51454-2	APGW05	F51454-4
TMGW05	F51454-5		

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Laboratory Control Sample
	X	Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
	X	Internal Standards
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F51454

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: For aqueous samples cooled @ 4°C±2°C; pH<2 HCl, the maximum holding time is 14 days (7 days if no HCl added) from sample collection to analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 07/31/07, the VOCs were prepped and analyzed on 08/08/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check
The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration performed on 07/31/07 on instrument MSVOA6, target compounds chloroethane (22.0%), methylene chloride (123.0%; grossly exceeding), and trans-1,3-dichloropropene (21.2%), were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds chloroethane (r=0.9957), methylene chloride (r=0.9962), and trans-1,3-dichloropropene (0.9998), were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration verification performed on 07/31/07 @13:39 on instrument MSVOA6, target compounds acetone (22.5%), bromomethane (21.8%) and trans-1,3-dichloropropene (20.5%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone and trans-1,3-dichloropropene were non-detect for all samples; therefore, no qualifiers were applied based upon the high %Ds/%Drifts. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 08/08/07 @09:05 on instrument MSVOA6, target compound trans-1,3-dichloropropene (24.9%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Results for trans-1,3-dichloropropene were non-detect for all samples; therefore, no qualifiers were applied based upon this outlier. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG. The trip blank TB073107 (F51454-6) applies to the aqueous samples collected 07/31/07.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/08/07	VJ2198-MB	All target <½MRL	NA	NA	None
08/08/07	TB073107	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. The DoD aqueous LCS recovery limits are specified in Table D-4 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample VJ2198-BS was used as the aqueous LCS for the VOC analysis on 08/08/07. All percent recoveries were within criteria for all target compounds. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The DoD MS/MSD aqueous recovery limits follow the LCS criteria and are specified in Table D-4 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51534-1, a non-project related sample, was used for the aqueous MS/MSD analysis on 08/08/07. No qualifiers were applied based upon the non-related project sample.

VIII-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria: Dibromofluoromethane (87-116%) (DoD QSM = 85-115%)
1,2-Dichloroethane-d4 (76-127%) (DoD QSM = 70-120%)
Toluene-d8 (86-112%) (DoD QSM = 85-120%)
4-Bromofluorobenzene (84-120%) (DoD QSM = 75-120%)

- All criteria were met. No qualifiers were applied.

IX-Internal Standards (IS)

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F51454-5) is a field duplicate of sample APGW05 (F51454-4). Analytes detected in both samples are chloroform (1.2/1.4 ug/l) and tetrachloroethylene (0.64/2.1 ug/l). The %RPD for chloroform is 15% and for tetrachloroethylene is 107%. Tetrachloroethylene was qualified estimated for the duplicate pair based upon the high RPD.

XI-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: APGW05 (F51454-4), tetrachloroethylene

Conc. (µg/L) = (Ax)*(Is) *(DF)/(Ais)*(RRF)

where: Ax is the compound area
Ais is the corresponding internal standard area
Is is the corresponding internal standard concentration (µg/L)
DF is the dilution factor
RRF is the relative response factor.

Conc. µg/L = (21397 * 50 µg/L * 1) / (1548146 * 0.328) = 2.1 µg/L

Reported Conc. = 2.1 µg/L
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F51454

DATE: March 24, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3510C/8270C for aqueous matrices. The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of five aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW05	F51454-4
APGW03	F51454-2	TMGW05	F51454-5
APGW04	F51454-3		

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F51454

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For semivolatile (SVOC) and polynuclear aromatic hydrocarbons (PAH) compounds, the samples are cooled @4°C ± 2°C for aqueous samples with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 07/31/07, the SVOCs were extracted on 08/07/07 and analyzed on 08/17/07. Sample APGW03 (F51454-2) was re-extracted for confirmation analysis out of hold time on 08/20/07 and analyzed on 08/29/07. The original results were confirmed by the re-analysis and the original results were reported. For the aqueous samples collected 07/31/07, the PAHs by SIM were extracted on 08/07/07 and analyzed on 08/15/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 08/16/07 on instrument MSBNA03. Target compounds 2,4-dinitrophenol (25.1%) and 4,6-dinitro-2-methylphenol (18.1%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9992) and 4,6-dinitro-2-methylphenol (r=0.9992) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 08/21/07 on instrument MSBNA02. Target compounds Hexachlorocyclopentadiene (29.2%) and 4,6-dinitro-2-methylphenol (16.5%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds hexachlorocyclopentadiene (r=0.9990) and 4,6-dinitro-2-methylphenol (r=0.9984) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Sample APGW03 (F51454-2) was analyzed using this initial calibration for confirmation analysis. Results were reported from the original analysis.

- Initial calibration for the PAHs by SIM was performed on 08/14/07 on instrument MSBNA03, Target compounds benzo(b)fluoranthene (20.8%), benzo(k)fluoranthene (20.3%), benzo(a)pyrene (26.1%), Indeno(cd-1,2,3)pyrene (25.8%), dibenz(a,h)anthracene (25.2%) and benzo(g,h,i)pyrelene (17.0%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds benzo(b)fluoranthene (0.9985), benzo(k)fluoranthene (0.9994), benzo(a)pyrene (0.9986), Indeno(cd-1,2,3)pyrene (0.9974), dibenz(a,h)anthracene (0.9990) and benzo(g,h,i)pyrelene (0.9994) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this initial calibration.

- Initial calibration for the PAHs by was performed on 08/21/07 on instrument MSBNA01, All target compounds were within criteria (%RSD≤15%; RRF≥0.05). No qualifiers were applied. Sample APGW03 (F51454-2) was analyzed using this initial calibration for confirmation analysis. Results were reported from the original analysis.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For SVOC initial calibration verification performed on 08/16/07 @12:53 on instrument MSBNA03, 4-chloroaniline (35.2%) and 3-nitroaniline (36.1%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC initial calibration verification performed on 08/16/07 @13:24 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/17/07 @09:51 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this initial calibration verification.

- For SVOC initial calibration verification performed on 08/21/07 @15:20 on instrument MSBNA02, 4-chloroaniline (45.7%; grossly exceeding) and 3-nitroaniline (30.7%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 08/21/07 @15:48 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/29/07 @11:39 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. Sample APGW03 (F51454-2) applies to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 08/14/07 @08:56 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/15/07 @09:29 on instrument MSBNA03, all criteria were met for all target compounds. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this initial calibration verification.

- For PAH by SIM initial calibration verification performed on 08/21/07 @17:50 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM continuing calibration verification performed on 08/23/07 @12:37 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Sample APGW03 (F51454-2) applies to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/17/07	OP21774-MB	All SVOC target <½MRL	NA	NA	None
08/18/07	OP21774-MB	All SVOC target <½MRL	NA	NA	None
08/20/07	OP21774-MB	All SVOC target <½MRL	NA	NA	None
08/15/07	OP21782-MB	All PAH SIM target <½MRL	NA	NA	None

NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:
2-Fluorophenol (14-62%) – (DoD QSM = 20-110%)
Phenol – d5 (10-40%) – (DoD QSM = 10-115%)
2,4,6-Tribromophenol (33-118%) – (DoD QSM = 40-125%)
Nitrobenzene-d5 (42-108%) – (DoD QSM = 40-110%)
2-Fluorobiphenyl (40-106%) – (DoD QSM = 50-110%)
p-Terphenyl – d14 (39-121%) – (DoD QSM = 50-135%)

- The surrogate recovery for terphenyl-d14 (30.0%) was outside criteria for sample APGW03 (F51454-2). This sample was re-extracted (out of hold time) and analyzed to confirm the original analysis. The surrogate recovery for the re-extracted sample was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied to sample APGW03 (F51454-2) based upon this outlier.

- The surrogate recoveries for phenol-d5 were outside laboratory criteria for samples OP21774-MS and OP21774-MSD but within DoD surrogate recovery limits. No qualifiers will be applied.

- For all other samples, all criteria were met.

VII-Internal Standards
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD LCS aqueous recovery limits are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006).

- Sample OP21774-BS was used as the aqueous LCS for the SVOC analysis on 08/17/07. All criteria were met. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

- Sample OP21774-BS was used as the aqueous LCS for the SVOC analysis on 08/18/07. All criteria were met. All criteria were met. No qualifiers were applied. No samples reported apply to this LCS.

- Sample OP21782-BS was used as the aqueous LCS for the PAH SIM analysis on 08/15/07. The percent recovery for benzo(a)pyrene (72%) was outside laboratory criteria but within DoD LCS aqueous recovery limits. The spiked sample was non-detect for all target PAHs and was qualified bias low non-detect "UL". Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006).

- Sample APGW03 (F51454-2) was used for the MS/MSD for the aqueous SVOC analysis on 08/17/07. Benzoic acid (RPD=53%) was outside laboratory criteria. All other target SVOCs were within criteria. Accuracy was demonstrated in the matrix spike duplicate and the LCS (Section VIII). The spiked sample was non-detect for benzoic acid. No qualifier will be applied to the parent sample. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this MS/MSD.

- Sample APGW03 (F51454-2) was used for the aqueous MS/MSD for PAH SIM analysis on 08/15/07. benzo(a)pyrene (69%), benzo(b)fluoranethene (67%) and benzo(k)fluoranthene (65%) were outside laboratory criteria and within DoD QSM criteria. For all other target PAHs, all criteria were met. The LCS was within criteria for all target compounds (Section VIII). The spiked sample was non-detect for all target PAHs and was qualified bias low non-detect "UL" for benzo(a)pyrene, benzo(b)anthracene and benzo(k)fluoranthene based upon the low recoveries. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3) APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this MS/MSD.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F51454-5) is a field duplicate of APGW05 (F51454-4). Analytes were non-detect in both samples for both SVOC and PAH analytes; therefore, RPD values were not evaluated.

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: OP21774-BS, 1,4-dichlorobenzene

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (159658 * 40 * 1000 * 1) / (214857 * 1.562 * 1000 * 1) = 34.5 ng/mL
= 34.5 µg/L

Reported Value = 34.5 µg/L
% Difference = 0.0%
Values were within 10% difference.

Sample: OP21774-BS, chrysene

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (107201 * 4 * 1000 * 1) / (171722 * 1.241 * 1000 * 1) = 2.0 ng/mL
= 2.0 µg/L

Reported Value = 2.0 µg/L
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F51454

DATE: March 24, 2008 REVISED 6/10/8 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. Aqueous samples were analyzed for pesticides and PCBs using USEPA Method 3510C/8081A and 3510C/8082, respectively. A total of five aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW05	F51454-4
APGW03	F51454-2	TMGW05	F51454-5
APGW04	F51454-3		

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Samples
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F51454

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis (USEPA criteria).

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For aqueous samples collected 07/31/07, the pesticides were extracted on 08/07/07 and analyzed on 08/16/07 and 08/21/07. Samples APGW04 and APGW05 were re-extracted out of hold time on 08/23/07 and analyzed on 8/27/07 to confirm ND for pesticides. The PCBs were extracted 08/07/07 and analyzed 08/14/07 and 08/15/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)

Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- For analysis performed on 08/17/07 @10:23, endrin and 4,4'-DDT percent breakdowns were 7.2% and 3.3% on signal #1 and 6.0% and 2.7% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/21/07 @11:36, endrin and 4,4'-DDT percent breakdowns were 11.3% and 10.2% on signal #1 and 10.0% and 9.2% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/27/07 @10:16, endrin and 4,4'-DDT percent breakdowns were 12.2% and 9.5% on signal #1 and 12.1% and 8.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/14/07 @11:52, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.9% on signal #1 and 2.6% and 1.8% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/16/07 @11:09, endrin and 4,4'-DDT percent breakdowns were 3.0% and 2.5% on signal #1 and 3.0% and 2.3% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.995. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- For the pesticide initial calibration performed on 08/14/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/17/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1) and APGW03 (F51454-2) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/27/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples APGW04 (F51454-3) and APGW05 (F51454-4) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 08/13/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 08/15/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample APGW05 (F51454-4) was analyzed using this initial calibration.

IV-Continuing Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the initial calibration should be no greater than ±20%.

- For pesticide initial calibration verification performed on 08/17/07 @13:01 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/21/07 @11:53 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1) and APGW03 (F51454-2) were analyzed using this continuing calibration.

- For pesticide chlordane continuing calibration performed on 08/21/07 @12:09 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide toxaphene continuing calibration performed on 08/21/07 @12:26 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/21/07 @14:17 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/27/07 @13:36 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples APGW04 (F51454-3) and APGW05 (F51454-4) were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/27/07 @15:43 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/14/07 @14:58 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/16/07 @11:25 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this continuing calibration.

- For pesticide chlordane continuing calibration performed on 08/16/07 @11:49 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide toxaphene continuing calibration performed on 08/16/07 @12:04 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/16/07 @14:27 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 08/13/07 @14:16 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @19:40 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F514545-3), APGW05 (F51454-4), and TMGW05 (F51454-5) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @23:45 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 08/15/07 @12:42 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample APGW05 (F51454-4) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/15/07 @15:23 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
Pesticides	08/16/07	OP21769-MB	All target <½MRL	NA	NA	None
Pesticides	08/21/07	OP21769-MB	All target <½MRL	NA	NA	None
PCBs	08/14/07	OP21770-MB	All target <½MRL	NA	NA	None
PCBs	08/15/07	OP21770-MB	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:	Tetrachloro-m-xylene:	Pesticides: 42-127% (DoD QSM 25-140%)
	Decachlorobiphenyl:	Pesticides: 27-127% (DoD QSM 30-135%)
Aqueous Criteria:	Tetrachloro-m-xylene:	PCBs: 38-127% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 25-137% (DoD QSM 40-135%)

- For pesticides samples APGW04 (F51454-3) and APGW05 (F51454-4), decachlorobiphenyl (26.0% and 24.0%, respectively) were below DoD QSM criteria and laboratory criteria. Tetrachloro-m-xylene was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met for pesticides and PCBs analysis.

VII-Laboratory Control Samples

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21769-BS was used as the aqueous LCS for the pesticide analysis on 08/21/07. Compound endrin aldehyde (15%) was outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon the low recovery. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

- Sample OP21770-BS was used as the aqueous LCS for the PCB analysis on 08/14/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

VIII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51454-1 was used as the MS/MSD for the pesticide analysis on 08/21/07. Recoveries for compound endrin aldehyde (16% and 20%) were outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon the low recovery. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this MS/MSD.

- Sample F51454-3 was used as the MS/MSD for the PCB analysis on 08/14/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this MS/MSD.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F1454-5) is a field duplicate of AMPG05 (F51454-4). The samples were non-detect for all compounds. The RPD was not evaluated. No qualifiers were applied.

X-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- All chlorinated pesticides and PCBs were non-detect for this SDG. No confirmations were required.

Sample: OP27169-BS, endrin aldehyde

Conc. µg/L = (Amt * DF * Vt) / (CF * Vo)

where: Amt is the response on column (ng/mL) of the sample
CF = Calibration Factor (from initial calibration)
Vt is the volume of final extract (mL)
DF is the dilution factor
Vo is the volume of the sample extracted (mL)

Conc. µg/L = (910944 ng/mL * 1 * 10 mL) / (122700 * 1000 mL)
= 0.074 ng/mL = 0.074 µg/L
Reported Conc. = 0.074 µg/L
%D = 0.0%
Values were within 10% difference

Sample: OP21770-BS, Aroclor 1260

Conc. µg/L = (Ax * Vt * DF) / (CF * Vi * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
Vs = Volume of sample extracted (L).
DF = Dilution factor

Signal #1
Conc1 µg/L = (3311103 * 10000* 1) / (8640 *(1000000) * 1 * 1.00) = 3.83 µg/L
Conc2 µg/L = (3890147 * 10000* 1) / (10400 *(1000000) * 1 * 1.00) = 3.74 µg/L
Conc3 µg/L = (4090357 * 10000* 1) / (10650 *(1000000) * 1 * 1.00) = 3.84 µg/L
Conc4 µg/L = (2636058 * 10000* 1) / (7494 *(1000000) * 1 * 1.00) = 3.52µg/L
Conc5 µg/L = (6063516 * 10000* 1) / (17060 *(1000000) * 1 * 1.00) = 3.55 µg/L
Conc6 µg/L = (3475637 * 10000* 1) / (9910 *(1000000) * 1 * 1.00) = 3.51 µg/L
Average concentration = 3.7 µg/L

Signal #2
Conc1 µg/L = (446475 * 10000* 1) / (1109 *(1000000) * 1 * 1.00) = 4.02 µg/L
Conc2 µg/L = (526842 * 10000* 1) / (1347 *(1000000) * 1 * 1.00) = 3.91 µg/L
Conc3 µg/L = (490508 * 10000* 1) / (1258 *(1000000) * 1 * 1.00) = 3.90 µg/L
Conc4 µg/L = (331311 * 10000* 1) / (950 *(1000000) * 1 * 1.00) = 3.48 µg/L
Conc5 µg/L = (816006 * 10000* 1) / (2253 *(1000000) * 1 * 1.00) = 3.62 µg/L
Conc6 µg/L = (320426 * 10000* 1) / (918.7 *(1000000) * 1 * 1.00) = 3.49µg/L
Average concentration = 3.7 µg/L

Reported Value = 3.7 µg/L (from signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Perchlorate
Datachem Laboratories, Inc. SDG 07E-0697-01
(Accutest Laboratories, Inc., SDG F51454)

DATE: March 24, 2008 REVISED 6/10/8 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. The aqueous samples were analyzed for perchlorate analysis using liquid chromatography mass spectroscopy (LC/MS) SW-846 method 6850 in selective ion monitoring (SIM) mode. A total of five aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW05	F51454-4
APGW03	F51454-2	TMGW05	F51454-5
APGW04	F51454-3		

Data were reviewed and validated using a combination of project QAPP, *DOD Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006), *DoD Perchlorate Handbook August, Rev1, Change 1, 2007* (DoD, 2007), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial and Continuing Calibration
	X	Blank Analysis
	X	Internal Standards
	X	Laboratory Control Sample (LCS)
	X	Matrix Spike (MS) and Spike Duplicate (MSD)
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
PERCHLORATE REVIEW
SDG 07E-0697-01 (F51454)

I-Holding Times and Preservation

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. For perchlorate analysis, aqueous samples are received and stored at cool @4°C±2°C with a maximum holding time of 28 days from collection (DoD Perchlorate Handbook criteria).

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: The aqueous samples were collected on 07/31/07. The aqueous perchlorate samples were prepped on 08/17/07 and analyzed on 08/17/07. All holding time criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, $^{35}Cl^{16}O_3$, met the mass calibration criteria. No qualification was applied.

III-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

Perchlorate:	1- blank (<1/2MRL DoD Perchlorate Handbook)
	5 – standards (r≥0.995 DoD Perchlorate Handbook)
	ICV (±10%D DoD Perchlorate Handbook)
	CCV/ICS (±30%D DoD Perchlorate Handbook)
	LODV (±30%D DoD Perchlorate Handbook)

- The perchlorate samples were analyzed on 08/17/07 for the aqueous samples. Perchlorate was calibrated second order for on 08/17/07 with a coefficient of 0.9999. All ICV/CCV/ICS/LODV standards were within criteria. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this calibration.

IV-Blanks

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be detected in any of the associated blanks >MDL. The DoD Perchlorate Handbook criterion specifies all concentrations should be less than ½ MRL for method blanks. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/17/07	Perchlorate	BL-259204-1	<½MRL	NA	None

MRL = Method Reporting Limit.
NA = Not Applicable.

V-Internal Standards

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The DoD Handbook specifies retention times (RT) 1.0 ± 2% of last calibration standard and the ratio of RT of sample to standard should be 3.06 and fall between 2.3 and 3.8. The laboratory 83:85 mass ratio limit range is 2.15 to 4.00. The internal standard peak area responses should fall between 50% to 150% recoveries.

- All criteria were met. No qualifiers were applied.

VI-Laboratory Control Samples (LCS)

The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. DoD Perchlorate Handbook and laboratory aqueous limits are 85-115%.

- Sample QC-259204-1 was used as aqueous LCS for perchlorate analysis dated 08/17/07. All criteria were met. No qualifiers were applied.

VII-Matrix Spike (MS) and Spike Duplicate (MSD)

MS and MSD are generated to determine long-term accuracy and precision of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike samples at a frequency of one MS/MSD per 20 samples of similar matrix. MS/MSD recoveries and relative percent differences between MS recoveries should be within the specified limits. DoD Perchlorate Handbook aqueous limits are 75-125%; RPD≤20%. The laboratory limits are 80-120%; RPD≤15%.

- A non-project related sample was used for the MS/MSD analysis. No qualifiers will be applied based upon a non-project related MS/MSD sample pair.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F51454-5) is a field duplicate of APGW05 (F51454-4). The RPD was calculated to be 9.5%. No qualifiers will be applied the samples in this SDG.

IX-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever was greater) was qualified as estimated, "J." The following calculations were performed for verification.

Sample: APGW02 (F51454-1), Perchlorate

y (area ratio) = (Sample Area/Area EIC89) = (5578.1/68457.3) = 0.0814829 = ax^2 + bx + c

Setting y = 0,
x = [-b ± SQRT(b^2-4ac)] / (2a)

where: x is the amount ratio

a = 0.0256381 b = 1.32110 (set to zero = c-y) c = - 0.00509344 – 0.0814829 = -0.08657634

amount ratio ={-1.32110± [SQRT{(1.32110^2) – (4*0.0256381*-.08657634)}] / (2*0.0256381)
= (-1.32110±1.324456) / (0.0512762)
= 0.0655

Conc. µg/L = (Amount ratio * Is * DF)

where: Conc. = Sample concentration in ug/L
I_s = Amount of internal standard (µg/L).
DF = Dilution factor

Conc. µg/L = (Amount ratio * Is * DF)
= (0.0665* 5 µg/L * 1) = 0.327 µg/L

Reported concentration = 0.327 µg/L
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals (Total and Dissolved)
Accutest Laboratories, Inc., SDG F51454

DATE: March 24, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. Aqueous samples were analyzed for total and dissolved target analyte list (TAL) metals using USEPA SW-846 3010A/6010B for ICP metals and SW-846 7470A for mercury. The dissolved fractions have an "A" suffix for the laboratory ID. A total of five aqueous samples were validated. Sample TMGW05 was not analyzed for dissolved metals. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW04A	F51454-3A
APGW02A	F51454-1A	APGW05	F51454-4
APGW03	F51454-2	APGW05A	F51454-4A
APGW03A	F51454-2A	TMGW05	F51454-5
APGW04	F51454-3		

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
X		ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
	X	Laboratory Sample Duplicate
	X	Matrix Spike and Spike Duplicate
	X	ICP Serial Dilution
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F51454

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: For aqueous matrices, the samples are shipped cool @4°C±2°C and preserved to pH<2 with HNO_3 with a maximum holding time is 180 days for ICP metals and 28 days for mercury.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For aqueous samples collected 07/31/07, they were digested on 08/07/07 and analyzed on 08/08/07 for total arsenic, barium, chromium, cobalt, copper, iron and sodium for all samples and on 08/07/07 and for all other ICP total metals. The samples were digested on 08/28/07 and analyzed on 08/29/07 for ICP dissolved metals. The samples were digested on 08/06/07 and analyzed on 08/06/07 for total mercury. The samples were digested on 08/23/07 and analyzed on 08/23/07 for dissolved mercury. All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL) 3 – standards (r≥0.995) ICV/CCV (90-110%) (DoD QSM 90-110%) MRL (70-130%) (DoD QSM 80-120%) High Std. (95-105%)	Hg:	1 – blank (DoD QSM <½ MRL) 5 – standards (r≥0.995) ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%) MRL (80-120%) (DoD QSM 80-120%) High Std. (95-105%)

- TOTAL METALS – The aqueous samples were analyzed for ICP metals on 08/07/07 for arsenic, barium, chromium, cobalt, copper, iron and sodium for all samples and on 08/08/07 and for all other ICP metals. Mercury was analyzed for the aqueous samples on 08/06/07 with a correlation coefficient of 0.9997. Arsenic CCV17 (88.5%), Cobalt CCV17 (86.0%), Copper CCV17 (89.5%), and Iron CCV17 (85.8%) were outside criteria; however, no samples reported for these analytes were bracketed by these CCVs. No qualifiers were applied based upon these outliers. Chromium CCV18 (111.0%) and Sodium CCV18 (111.0%) were outside criteria. Samples reported for chromium and sodium with positive results were qualified bias high "K" for detects. All other ICV/CCV/High Standard criteria were met for all metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

- DISSOLVED METALS – The aqueous samples were analyzed for ICP metals on 8/29/07 (MA5941) for potassium and sodium and on 8/29/07 (MA5939) for all other ICP metals. Mercury was analyzed for aqueous samples on 8/23/07 with a correlation coefficient of 0.9999. All ICV/CCV/High Standard criteria were met for all metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL (µg/L)	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
08/06/07	Hg	1.0	Within criteria	None	None
08/23/07	Hg (Dis)	1.0	Within criteria	None	None
08/07/07	ICP-Sb	6.0	37%	All Dissolved Fractions (Dis)	UL
08/08/07	ICP-As, Co, Cu, and Fe	Various	All within criteria	None	None
08/29/07	ICP-Al (Dis)	200	69%	APGW03 (Dis)	L, UL
08/29/07	ICP-K and Na	Various	All within Criteria	None	None

III-Blanks

Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to these samples.

- The instrument has demonstrated baseline drift for antimony during the analysis of dissolved metals samples. The amount detected in the CCBs range from 0.48 to 16.2 ug/L for antimony. The laboratory increased the MRL by a factor of 4 for the CCBs from 6.0 ug/L to 24 ug/L. There is no evidence of volume change or dilutions to warrant the increase in the MRL. The ability to accurately report values at the original MRL level of 6.0 ug/L is severely challenged. Antimony was non-detect for all associated samples and reported as non-detect at the elevated MRL. Antimony was qualified estimated non-detect "UJ" for the dissolved "A" fractions based on professional judgment for all associated samples APGW02 (F51454-1A), APGW03 (F51454-2A), APGW04 (F51454-3A), and APGW05 (F51454-4A).

- The instrument has demonstrated baseline drift for beryllium during the analysis of total metals samples. The amount in the CCBs range from -0.22 ug/L to 5.7 ug/L for beryllium. The laboratory increased the MRL by a factor of 2 for the CCBs from 4.0 ug/L to 8.0 ug/L. There is no evidence of volume change or dilutions to warrant the increase in the MRL. The ability to accurately report values at the original MRL level of 4.0 ug/L is challenged. Beryllium was qualified estimated "J" for detects and "UJ" for non-detects for the total fractions based on professional judgment for all associated samples APGW02 (F51454-1), APGW04 (F51454-3), and APGW05 (F51454-4).

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/29/07	Sb (Dis)	ICB/CCBs	16.2	81.0	None
08/29/07	K, Na (Dis)	ICB/CCBs	<2*MDL	NA	None
08/06/07	Hg (Tot)	ICB/CCBs	<2*MDL	NA	None
08/23/07	Hg (Dis)	ICB/CCBs	<2*MDL	NA	None
08/07/07	ICP-Be (Tot)	ICB/CCBs	5.7	18.5	APGW02, APGW03, APDW04, APGW05
08/07/07	ICP-As, Co, Cu, Fe (Tot)	ICB/CCBs	<2*MDL	NA	None
08/06/07	Hg (Tot)	MP12651-MB	<½MRL	NA	None
08/07/07	ICP (Tot)	MP12666-MB	<½MRL	NA	None
08/23/07	Hg (Dis)	MP12800-MB	<½MRL	NA	None
08/29/07	ICP (Dis)	MP12832-MB	<½MRL	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".

IV-ICP Interference Check Sample (ICS)

The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- The ending ICS for dissolved calcium (78.2%) was outside control limits. All sample results for dissolved calcium were "J" qualified based upon the low recovery.

- The ending ICS for dissolved copper (121.2%) was outside control limits. No samples for copper were reported bracketed by this ICS; therefore, no qualifiers were applied based upon this outlier.

V-Laboratory Control Samples (LCS)
The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS results must fall within the control limits. The DoD QSM aqueous LCS recovery limits are specified in Table D-18 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12666-BS was used as aqueous LCS for ICP total metals analysis on 08/07/07. Sample MP12832-BS was used as aqueous LCS for ICP dissolved metals analysis on 08/29/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this LCS.

- Sample MP12651-BS was used as aqueous LCS for total mercury analysis performed on 08/06/07. Sample MP12800-BS was used as aqueous LCS for dissolved mercury analysis performed on 08/23/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F51454-5) apply to this LCS.

VI-Laboratory Duplicate Sample Analysis
Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Non-project related samples were used as aqueous laboratory duplicates for mercury (total and dissolved) and ICP (total and dissolved) analyses. No qualifiers will be applied based upon non-project related samples.

VII-Matrix Spike/Spike Duplicate
MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-18 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Non-project related samples were used as aqueous matrix spike and matrix spike duplicate for mercury (total and dissolved) and ICP (total and dissolved) analyses. No qualifiers will be applied based upon non-project related samples.

VIII-ICP Serial Dilution
An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- Non-project related samples were used for ICP serial dilution. No qualifiers will be applied based upon non-project related samples.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F51454-5) is a field duplicate of APGW05 (F51454-4). **Table 4** is a summary of the field duplicate results. The duplicate pair were qualified estimated "J" for where RPDs exceeded criteria (>35% RPD).

Table 4 Field Duplicate Summary

Analyte	APGW05	TMGW05	RPD	Qualifier
Aluminum	45300	2870	176%	J
Barium	654	103 J	146%	J
Beryllium	6.5 J	2.2 U	NC	J
Calcium	54700	48800	11.4%	None
Chromium	91.9	7.9 J	168%	J
Cobalt	30.8 J	1.0 U	NC	J
Copper	28.4	1.2 U	NC	J
Iron	47500	1850	185%	J
Lead	48.7	2.5 J	180%	J
Magnesium	25600	16900	40.9%	J
Mercury	0.18 J	0.11 U	NC	None
Nickel	60.2	3.2 J	180%	J
Potassium	5760 J	1640 J	111%	J
Silver	1.3 J	1.2 J	8.0%	None
Sodium	7200 J	5850 J	20.7%	None
Vanadium	71.6	4.9 J	174%	J
Zinc	254	10 J	185%	J

NC – not calculated, J – estimated value RPD >35%

X-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

- The total and dissolved fractions were compared. The total metals should be greater than the dissolved fractions. All detected compounds found in the sample and its dissolved pair are noted in **Table 5** with the associated %D. Compounds that were non-detect "U" for either the total and dissolved samples were excluded from the total/dissolved concentration assessment. If the dissolved concentration is greater than the MRL and is greater than its total concentration by 10%, then both results have been flagged with a "J." If the %D >50%, then both samples were rejected "R". All criteria were met. No qualifiers were applied.

Table 5 Total/Dissolved Hits Summary

Sample ID	Compound	MRL (µg/L)	Total Fraction (µg/L)	Dissolved Fraction (µg/L)	%D	Qualifier
APGW02	Aluminum	200	39800	6160	NA	None
APGW02	Barium	200	404	97.1 J	NA	None
APGW02	Beryllium	4.0	4.7 J	1.0 U	NA	None
APGW02	Calcium	1000	59300	37500	NA	None
APGW02	Chromium	10	72.4	10.9	NA	None
APGW02	Cobalt	50	29.0 J	4.6 J	NA	None
APGW02	Copper	25	33.8	3.8 J	NA	None
APGW02	Iron	300	54300	8270	NA	None
APGW02	Lead	5.0	24.8	4.4 J	NA	None
APGW02	Magnesium	5000	33200	15800	NA	None
APGW02	Manganese	15	1320	197	NA	None
APGW02	Nickel	40	49.3	6.7 J	NA	None
APGW02	Potassium	10000	7320 J	3260 J	NA	None
APGW02	Selenium	10	4.6 J	4.0 U	NA	None
APGW02	Silver	10	0.96 J	0.77 U	NA	None
APGW02	Sodium	10000	7480 J	6770 J	NA	None
APGW02	Vanadium	50	98.6	14.7 J	NA	None
APGW02	Zinc	20	166	21.0	NA	None
APGW03	Aluminum	200	93100	79 U	NA	None
APGW03	Barium	200	1150	55.2 J	NA	None
APGW03	Beryllium	4.0	12.4	1.0 U	NA	None
APGW03	Calcium	1000	56300	40100	NA	None
APGW03	Chromium	10	234	2.6 J	NA	None
APGW03	Cobalt	50	62.7	1.0 U	NA	None
APGW03	Copper	25	124	1.2 U	NA	None
APGW03	Iron	300	129000	15 U	NA	None
APGW03	Lead	5.0	558	2.1 U	NA	None
APGW03	Magnesium	5000	38600	15000	NA	None
APGW03	Manganese	15	2600	107	NA	None
APGW03	Mercury	1.0	0.21 J	0.11 U	NA	None
APGW03	Nickel	40	143	1.0 U	NA	None
APGW03	Potassium	10000	11900	2440 J	NA	None
APGW03	Selenium	10	7.1 J	4.0 U	NA	None
APGW03	Silver	10	0.93 J	0.77 U	NA	None
APGW03	Sodium	10000	8770 J	6760 J	NA	None
APGW03	Vanadium	50	163	1.1 U	NA	None
APGW03	Zinc	20	873	5.0 U	NA	None
APGW04	Aluminum	200	28100	2870	NA	None
APGW04	Barium	200	449	90.7 J	NA	None
APGW04	Beryllium	4.0	5.2 J	1.0 U	NA	None
APGW04	Calcium	1000	45900	41100	NA	None
APGW04	Chromium	10	115	11.0	NA	None
APGW04	Cobalt	50	20.5 J	1.8 J	NA	None
APGW04	Copper	25	28.2	1.2 U	NA	None
APGW04	Iron	300	37200	2830	NA	None
APGW04	Lead	5.0	21.3	2.1 U	NA	None
APGW04	Magnesium	5000	21300	16100	NA	None
APGW04	Manganese	15	545	51.9	NA	None
APGW04	Nickel	40	40.4	4.1 J	NA	None
APGW04	Potassium	10000	4520 J	2720 J	NA	None
APGW04	Selenium	10	4.2 J	4.0 U	NA	None
APGW04	Silver	10	0.88 J	0.77 U	NA	None
APGW04	Sodium	10000	6930 J	7140 J	2.9	None
APGW04	Vanadium	50	48.4 J	5.0 J	NA	None
APGW04	Zinc	20	176	12.2 J	NA	None
APGW05	Aluminum	200	45300	2180	NA	None
APGW05	Barium	200	654	81.9 J	NA	None
APGW05	Beryllium	4.0	6.5 J	1.0 U	NA	None

Table 5 Total/Dissolved Hits Summary

Sample ID	Compound	MRL (µg/L)	Total Fraction (µg/L)	Dissolved Fraction (µg/L)	%D	Qualifier
APGW05	Calcium	1000	54700	44100	NA	None
APGW05	Chromium	10	91.9	6.8 J	NA	None
APGW05	Cobalt	50	30.8 J	1.1 J	NA	None
APGW05	Copper	25	28.4	1.2 U	NA	None
APGW05	Iron	300	47500	1450	NA	None
APGW05	Lead	5.0	48.7	2.1 U	NA	None
APGW05	Magnesium	5000	25600	15200	NA	None
APGW05	Manganese	15	1170	27.0	NA	None
APGW05	Mercury	1.0	0.18 J	0.11 U	NA	None
APGW05	Nickel	40	60.2	2.7 J	NA	None
APGW05	Potassium	10000	5760 J	2550 J	NA	None
APGW05	Silver	10	1.3 J	0.77 U	NA	None
APGW05	Sodium	10000	7200 J	6700 J	NA	None
APGW05	Vanadium	50	71.6	3.5 J	NA	None
APGW05	Zinc	20	254	6.7 J	NA	None

J = Estimated value <MRL and >MDL.
U = Value Non-detect as <MDL.
NA = Not Applicable.

ICP Sample: APGW03 (F51454-2), Chromium (total)

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (233.9 µg/L)*(50 mL)*(1) / (50 mL) = 234 µg/L

Reported concentration = 234 µg/L
%D = 0.0%
Values were within 10% difference.

CVAA Sample: APGW03 (F51454-2), Mercury (total)

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (0.211 µg/L)*(50 mL)*(1) / (50 mL) = 0.211 µg/L

Reported concentration = 0.21 µg/L
%D = 0.0%.
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Report of Analysis

Client Sample ID:	APGW02		
Lab Sample ID:	F51454-1A	**Date Sampled:**	07/31/07
Matrix:	AQ - Groundwater Filtered	**Date Received:**	08/01/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
	Aluminum	6160	200	79	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
UJ	Antimony	3.3 U	6.0	3.3	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Barium	97.1 J	200	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Beryllium	1.0 U	4.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Calcium	37500	1000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Chromium	10.9	10	0.92	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Cobalt	4.6 J	50	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Copper	3.8 J	25	1.2	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Iron	8270	300	15	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Lead	4.4 J	5.0	2.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Magnesium	15800	5000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Manganese	197	15	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Mercury	0.11 U	1.0	0.11	ug/l	1	08/23/07	08/23/07	LM	SW846 7470A [1]	SW846 7470A [3]
	Nickel	6.7 J	40	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Potassium	3260 J	10000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Silver	0.77 U	10	0.77	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Sodium	6770 J	10000	500	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Vanadium	14.7 J	50	1.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Zinc	21.0	20	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5930
(2) Instrument QC Batch: MA5939
(3) Prep QC Batch: MP12800
(4) Prep QC Batch: MP12832

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	APGW04		
Lab Sample ID:	F51454-3A	**Date Sampled:**	07/31/07
Matrix:	AQ - Groundwater Filtered	**Date Received:**	08/01/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
	Aluminum	2870	200	79	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
UJ	Antimony	3.3 U	6.0	3.3	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Barium	90.7 J	200	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Beryllium	1.0 U	4.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Calcium	41100	1000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Chromium	11.0	10	0.92	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Cobalt	1.8 J	50	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Copper	1.2 U	25	1.2	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Iron	2830	300	15	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Magnesium	16100	5000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Manganese	51.9	15	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Mercury	0.11 U	1.0	0.11	ug/l	1	08/23/07	08/23/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	4.1 J	40	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Potassium	2720 J	10000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Silver	0.77 U	10	0.77	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Sodium	7140 J	10000	500	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Vanadium	5.0 J	50	1.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Zinc	12.2 J	20	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5930
(2) Instrument QC Batch: MA5939
(3) Prep QC Batch: MP12800
(4) Prep QC Batch: MP12832

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	APGW05		
Lab Sample ID:	F51454-4A	**Date Sampled:**	07/31/07
Matrix:	AQ - Groundwater Filtered	**Date Received:**	08/01/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
	Aluminum	2180	200	79	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
UJ	Antimony	3.3 U	6.0	3.3	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Barium	81.9 J	200	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Beryllium	1.0 U	4.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Calcium	44100	1000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Chromium	6.8 J	10	0.92	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Cobalt	1.1 J	50	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Copper	1.2 U	25	1.2	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Iron	1450	300	15	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Magnesium	15200	5000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
	Manganese	27.0	15	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Mercury	0.11 U	1.0	0.11	ug/l	1	08/23/07	08/23/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	2.7 J	40	1.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Potassium	2550 J	10000	100	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Silver	0.77 U	10	0.77	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Sodium	6700 J	10000	500	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Vanadium	3.5 J	50	1.1	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]
J	Zinc	6.7 J	20	5.0	ug/l	1	08/28/07	08/29/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5930
(2) Instrument QC Batch: MA5939
(3) Prep QC Batch: MP12800
(4) Prep QC Batch: MP12832

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Shaw Environmental, Inc.
16406 US 224 East
Findlay, OH 45840
419-425-6037
FAX: 419-425-6085

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerin
Accutest Laboratories, Inc., SDG F51454

DATE: March 24, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 31, 2007. Aqueous samples were analyzed for explosives, nitroglycerin, and PETN using USEPA SW-846 3535A/8330A. A total of five aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
APGW02	F51454-1	APGW05	F51454-4
APGW03	F51454-2	TMGW05	F51454-5
APGW04	F51454-3		

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
X		Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F51454

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/31/07, the coolers were received by the primary laboratory (Accutest) on 08/01/07 at 1.2°C, 1.4°C, 2.0°C, 3.2°C, and 4.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/02/07 at 4.0°C properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples at 2.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 07/31/07, the explosives were extracted on 08/06/07 and analyzed on 08/07/07 and 08/08/07. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/07/07	OP21754-MB	PETN & NG <½MRL	NA	NA	None
08/08/07	OP21754-MB	All target explosives <½MRL	NA	NA	None
08/09/07	OP21754-MB	All target explosives <½MRL	NA	NA	None

MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient must be ≥0.995 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For the explosives initial calibration performed on 10/18/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. No samples reported apply to this initial calibration.

- For the explosives initial calibration performed on 01/19/07 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F1454-5) apply to this initial calibration.

- For the PETN and nitroglycerin initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F1454-5) apply to this initial calibration.

IV-Continuing Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For explosives initial calibration verification performed on 10/18/06 @17:39 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/19/06 @13:44 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration verification performed on 08/08/07 @13:48 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample APGW02 (F51454-1) applies to this initial verification calibration.

- For explosives continuing calibration performed on 08/08/07 @18:51 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/08/07 @23:54 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/09/07 @10:50 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/09/07 @15:53 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/09/07 @10:48 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/09/07 @12:28 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin initial calibration verification performed on 03/15/07 @12:35 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/07/07 @14:11 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/07/07 @15:38 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-System Monitoring Compound (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria: 3,4-dinitrotoluene (70-136%)

- All criteria were met. No qualifiers were applied.

VI-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-12 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21754-BS was used as aqueous LCS for explosives analyzed on 08/08/07. The target compounds o-nitrotoluene (74%), m-nitrotoluene (64%), and p-nitrotoluene (76%) were outside laboratory criteria but within DoD QSM criteria. The samples were non-detect for all target explosives and were qualified bias low non-detect "UL". Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

- Sample OP21754-BS was used as aqueous LCS for explosives analyzed on 08/09/07. The target compounds m-nitrotoluene (66%) and p-nitrotoluene (78%) were outside laboratory criteria but within DoD QSM criteria. No qualifiers were applied. No samples reported apply to this LCS.

- Sample OP21754-BS2 was used as aqueous LCS for PETN and nitroglycerin analyzed on 08/07/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-12 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample TMGW05 (F51454-5) was used as the aqueous MS/MSD for the explosive analysis on 08/08/07. Percent recoveries for target compound 1,3-dinitrobenzene (131%, 136%) were outside laboratory criteria but within DoD QSM criteria. The parent sample was non-detect for 1,3-dinitrobenzene. No qualifier will be applied based upon the biased high outlier. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this MS/MSD.

- Sample APGW05 (F51454-4) was used as the aqueous MS/MSD for the PETN and nitroglycerin analysis on 08/07/07. All criteria were met. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4), and TMGW05 (F51454-5) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Sample TMGW05 (F51454-5) is a field duplicate of APGW05 (F51454-4). Analytes were non-detect in both samples for explosives, PETN and nitroglycerin; therefore, RPD values were not evaluated.

IX-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J". All positive values must have less than or equal to 40% %D between the primary and secondary columns.

- All explosives, PETN, and nitroglycerin were non-detect. No confirmations were required.

Sample: OP21754-BS, RDX

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (2097957 * 10 * 1) / (3.512 * 1000) = 6.0 µg/L (Signal #1)

Reported Value = 6.0 µg/L
% Difference = 0.0%
Values were within 10% difference

Sample: OP21754-BS2, nitroglycerin

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (3226003 * 10 * 1) / (1228 * 1000) = 26.3 µg/L (Signal #1)

Reported Value = 26.3 µg/L
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Appendix B

Boring Logs

LOG OF BORING No. APSB10

PROJECT: RFAAP Area P — PROJECT NO.: 123461
CLIENT: USACE Baltimore District
PROJECT LOCATION:
LOCATION: RFAAP Area P — ELEVATION: 1699.64 NAVD 88
DRILLER: Bedford Well Drilling — LOGGED BY: Chris Jones
DRILLING METHOD: Direct Push — DATE: 7/26/2007
DEPTH TO - WATER> INITIAL: ▽ NA — AFTER 24 HOURS: ▽ BOC — CAVING> ℄ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0					
	Brownish gray, moist, Poorly-graded GRAVEL				
	.5				
	Brown, moist, fine-grained, Silty SAND		10A		
1.5					
3					
	4				
	Brown, moist, fine-grained, Silty SAND		10B		
4.5					
6					
	Boring terminated at 6 ft.				
7.5					
9					
10.5					

TEST RESULTS
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
Penetration - ▨
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. APSB09

PROJECT: RFAAP Area P **PROJECT NO.:** 123461
CLIENT: USACE Baltimore District
PROJECT LOCATION:
LOCATION: RFAAP Area P **ELEVATION:** 1698.72 NAVD 88
DRILLER: Bedford Well Drilling **LOGGED BY:** Chris Jones
DRILLING METHOD: Direct Push **DATE:** 7/26/2007
DEPTH TO - WATER> INITIAL: ▽ NA **AFTER 24 HOURS:** ▽ BOC **CAVING>** ⊏ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS
0	Brownish gray, Poorly-graded GRAVEL					Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50
1.5	Brown, moist, fine to medium grained, Poorly-graded SAND with silt		1			
4.5	Brown, moist, fine to medium grained, Silty SAND		4			
7.5	Boring terminated at 8 ft.					
9						
10.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. APSB06

PROJECT: RFAAP Area P | PROJECT NO.: 123461
CLIENT: USACE Baltimore District
PROJECT LOCATION:
LOCATION: RFAAP Area P | ELEVATION: 1702.95 NAVD88
DRILLER: Bedford Well Drilling | LOGGED BY: Chris Jones
DRILLING METHOD: Direct Push | DATE: 7/26/2007
DEPTH TO - WATER> INITIAL: NA | AFTER 24 HOURS: BOC | CAVING> BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS
0						Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50
	Dark brown, moist, SILT					
1.5			06A			
3						
4	Brown, moist, SILT trace clay					
4.5			06B			
6	Boring terminated at 6 ft.					
7.5						
9						
10.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. APSB07

PROJECT: RFAAP Area P **PROJECT NO.:** 123461
CLIENT: USACE Baltimore District
PROJECT LOCATION:
LOCATION: RFAAP Area P **ELEVATION:** 1702.95 NAVD88
DRILLER: Bedford Well Drilling **LOGGED BY:** Chris Jones
DRILLING METHOD: Direct Push **DATE:** 7/26/2007
DEPTH TO - WATER> INITIAL: ▽ NA **AFTER 24 HOURS:** ▽ BOC **CAVING>** ⊂ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS
0						Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50
	Brownish-gray, moist, Poorly-graded GRAVEL		07A			
	.5					
	Brown, moist, SILT					
1.5			07B			
3						
	4					
4.5	Brown, moist, SILT with sand					
	5					
6	Brown, moist, fine-grained, Poorly-Graded SAND					
7.5						
	Boring terminated at 8 ft.					
9						
10.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. APSB08

PROJECT: RFAAP Area P | PROJECT NO.: 123461
CLIENT: USACE Baltimore District
PROJECT LOCATION:
LOCATION: RFAAP Area P | ELEVATION: 1700.68 NAVD88
DRILLER: Bedford Well Drilling | LOGGED BY: Chris Jones
DRILLING METHOD: Direct Push | DATE: 7/26/2007
DEPTH TO - WATER> INITIAL: ▽ 5 | AFTER 24 HOURS: ▽ BOC | CAVING> ℄ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS
0	Brownish gray, moist, Poorly-graded GRAVEL		08A			Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50
.5	Brown, moist SILT trace clay					
1.5						
3						
	No Recovery		08B			
4.5						
▽ 5	Brown, wet, Poorly-graded GRAVEL and sand					
6	Brown, very moist, Silty SAND					
7.5						
	Boring terminated at 8 ft.					
9						
10.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

PROJECT: RFAAP Area P
CLIENT: USACE Baltimore District

Monitoring Well No. APGW05
Project No. 123461

LOCATION: RFAAP Area P		ELEVATION: 1701.25 NAVD 88	
DRILLER: Bedford Well Drilling		DATE DRILLED: 7/26/2007	LOGGED BY: Chris Jones
DRILL RIG: NA	DEPTH TO WATER>	FIRST: 15	COMPL.: 15

Elevation/ Depth (Ft)	Sample Number	Sample Recovery (in/in)	Graphic Log	Soil Classification	SOIL DESCRIPTION	Piezometer Schematic
1701 — 0					Advanced Macrocore to locate water	
1698 — 3						
1695 — 6						Set 10' of 0.10 slot screen
1692 — 9						
1689 — 12						
1686 — 15					Groundwater encountered @ 15 ft	
					Refusal @ 16.5 ft	
1683 — 18						
1680 — 21						

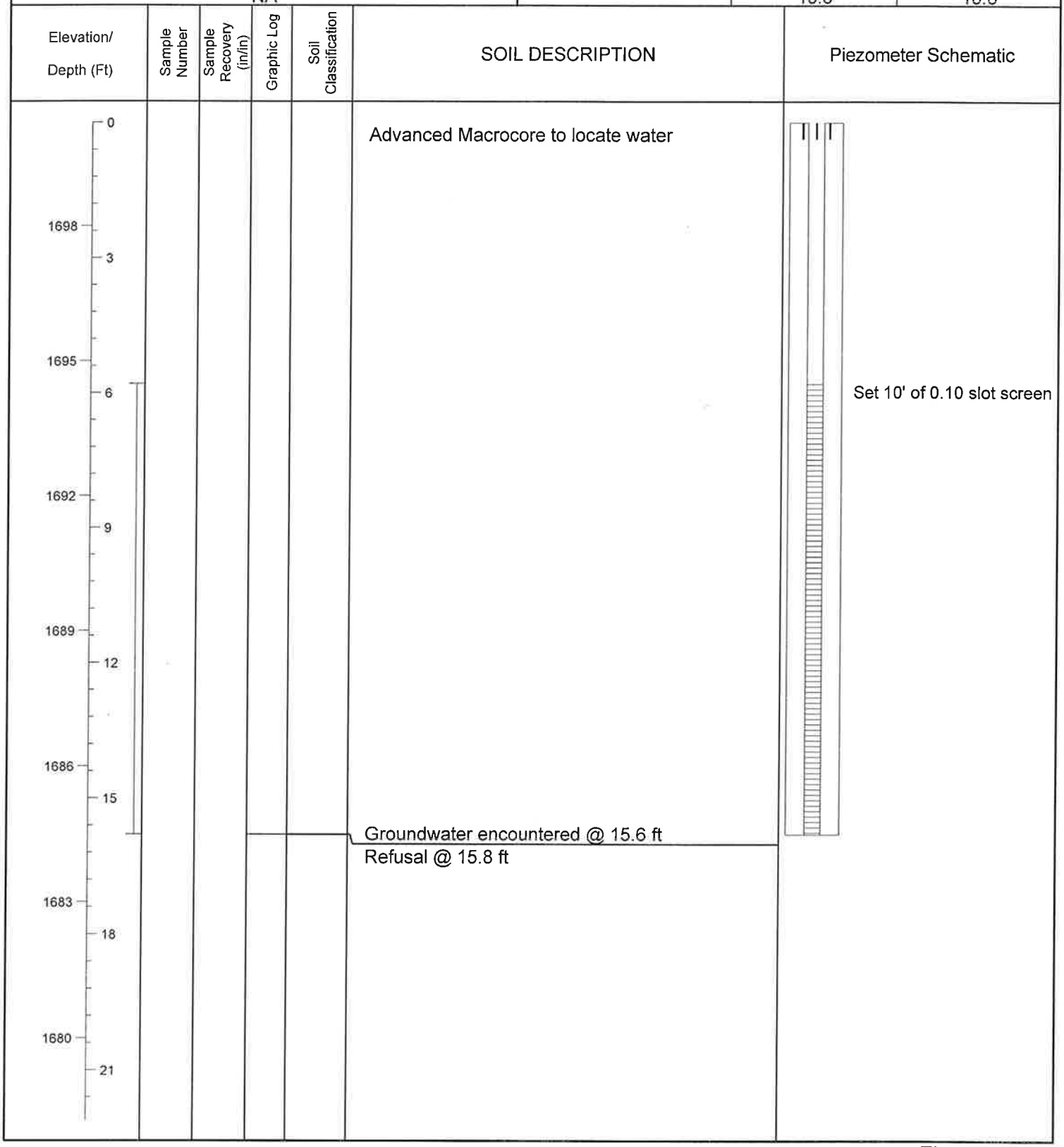
This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Shaw Group

PROJECT: RFAAP Area P
CLIENT: USACE Baltimore District

Monitoring Well No. APGW04
Project No. 123461

LOCATION: RFAAP Area P		ELEVATION: 1700.29 NAVD 88	
DRILLER: Bedford Well Drilling		DATE DRILLED: 7/26/2007	LOGGED BY: Chris Jones
DRILL RIG: NA	DEPTH TO WATER>	FIRST: 15.6	COMPL.: 15.6



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

PROJECT: RFAAP Area P
CLIENT: USACE Baltimore District

Monitoring Well No. APGW03
Project No. 123461

LOCATION: RFAAP Area P		ELEVATION: 1702.25 NAVD 88	
DRILLER: Bedford Well Drilling		DATE DRILLED: 7/26/2007	LOGGED BY: Chris Jones
DRILL RIG: NA	DEPTH TO WATER>	FIRST: NA	COMPL.: NA

Elevation/ Depth (Ft)	Sample Number	Sample Recovery (in/in)	Graphic Log	Soil Classification	SOIL DESCRIPTION	Piezometer Schematic
0 / 1701					Advanced Macrocore to locate water	
3 / 1698						
6 / 1695						Set 10' of 0.10 slot screen
9 / 1692						
12 / 1689						
15 / 1686					Refusal @ 16.58 ft	
18 / 1683						
21						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Shaw Group

PROJECT: RFAAP Area P
CLIENT: USACE Baltimore District

Monitoring Well No. APGW02
Project No. 123461

LOCATION: RFAAP Area P		ELEVATION: 1702.31 NAVD 88	
DRILLER: Bedford Well Drilling		DATE DRILLED: 7/26/2007	LOGGED BY: Chris Jones
DRILL RIG: NA	DEPTH TO WATER>	FIRST: NA	COMPL.: NA

Elevation/ Depth (Ft)	Sample Number	Sample Recovery (in/in)	Graphic Log	Soil Classification	SOIL DESCRIPTION	Piezometer Schematic
0 / 1701 / 3 / 1698 / 6 / 1695 / 9 / 1692 / 12 / 1689 / 15 / 1686 / 18 / 1683 / 21					Advanced Macrocore to locate water Refusal @ 18 ft	Set 10' of 0.10 slot screen

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Appendix C

GPS Coordinates

Appendix C
2002 RFI/RI Sample Location Coordinates and Elevations

Site ID	Northing	Easting	Elevation
AREA P			
APSB06	3600210.75	10889330.38	1702.95
APSB07	3600253.09	10889308.34	1701.07
APSB08	3600296.84	10889342.55	1700.68
APSB09	3600402.89	10889344.04	1698.72
APSB10	3600397.16	10889363.02	1699.64
APSD01	3600449.00	10889344.03	1695.73
APGW02	3600244.98	10889331.64	1702.31
APGW03	3600366.54	10889326.24	1702.25
APGW04	3600425.01	10889312.81	1700.29
APGW05	3600422.26	10889370.83	1701.25

Appendix C
2002 RFI/RI Sample Location Coordinates and Elevations

Site ID	Northing	Easting	Elevation

* Coordinates are in VA State Plane (NAD 1983)

**Elevations are feet above mean sea level (NAVD 88)

Appendix D

Fate and Transport

CONTAMINANT FATE AND TRANSPORT

D.1 TRANSFORMATION AND FATE OF CONTAMINANTS

When contaminants are exposed to the environment, the potential for transformations of the chemical exists. The endpoint of the transformation process is referenced as the “fate” of the chemical. The ultimate "fate" refers to the expected final state that an element, compound, or group of compounds will achieve following release to the environment. The fate processes for organic contaminants may include sorption, volatilization, hydrolysis, and abiotic and biotic degradation, while the fate processes for inorganic contaminants may include ion exchange, chemical speciation, and oxidation/reduction. These fate processes dictate how contaminants will be transported in the environment. Contaminants can be transported with little attenuation or retardation due to these fate processes, or they can be delayed or transformed so that little migration occurs. Various fate processes, as well as the properties that may affect the fate of contaminants, are discussed below.

D.1.1 Contaminant Properties Affecting Fate

The physical and chemical properties of contaminants play a large role in determining their fate after release to the environment. The following section provides a discussion of several of these key properties.

D.1.1.1 Specific Gravity

Specific gravity is the ratio of the density of a compound to the density of water. It is a measure of the tendency of a compound to float (specific gravity <1) or sink (specific gravity >1) in water. Contaminants that are immiscible in water can exist as separate phase liquids and are referred to as Light Non-Aqueous Phase Liquids (LNAPLs) if their specific gravity is less than one, or Dense Non-Aqueous Phase Liquids (DNAPLs) if their specific gravity is greater than one.

D.1.1.2 Water Solubility

The solubility of a compound in water is the maximum or saturated concentration of the compound in pure water at a specific temperature. Compounds with high solubility in water tend to remain in the aqueous phase and not partition to soil or sediment, are less likely to volatilize from water, and are generally more likely to biodegrade. Conversely, compounds with a low water solubility tend to partition to soil or sediment, volatilize more readily from water, and are less likely to be biodegradable. The solubility of inorganic chemicals varies widely from insoluble to greater than 100,000 mg/L, depending on temperature, pH, ORP, and the concentrations of dissolved constituents such as humic and fulvic acids.

D.1.1.3 Vapor Pressure

Vapor pressure is a property of a chemical in its pure state, which indicates how readily it will volatilize to the atmosphere. Volatilization from water is dependent upon vapor pressure and Henry’s Law Constant. Vapor pressures for chemicals in their pure states range from 0.001 to 760 mm mercury (mm Hg) for liquids to less than 10^{-10} mm Hg for solids.

D.1.1.4 Henry's Law Constant

The Henry's Law Constant of a compound is essentially the air/water partition coefficient. In dimensional form, the Henry's Law Constant is the ratio of the vapor pressure to the water

solubility (in atm-m^3/mole). The Henry's Law Constant indicates how a chemical will partition between air and water at equilibrium, and can be used to calculate the rate of volatilization of a chemical from water.

D.1.1.5 Organic Carbon/Water Partition Coefficient

The organic carbon/water partition coefficient (K_{oc}) is a measure of the tendency for a chemical to be sorbed to the organic fraction of soil and sediment. Normal K_{oc} values range from 1 to 10^7 L/kg, with higher values indicating greater sorption potential by the soil and lower values indicating high leaching capabilities for the contaminants from the waste source into surface runoff and groundwater.

D.1.1.6 Octanol/Water Partition Coefficient

The octanol/water partition coefficient (K_{ow}) is a measure of the distribution of a compound at equilibrium between n-octanol and water. The octanol/water partition coefficient, K_{ow}, gives an indication of how a compound will preferentially distribute into a solvent or water, and is a measure of how hydrophobic a compound is. A chemical with a high K_{ow} is hydrophobic and may be relatively immobile in an aqueous system (e.g., contaminant sorbs to soil particles), but may be mobilized in the presence of an organic solvent.

D.1.2 Fate of Organic Contaminants

D.1.2.1 Sorption

Sorption and desorption are two major mechanisms affecting the fate of contaminants in the subsurface. Sorption includes both adsorption and absorption. Adsorption is defined as the accumulation occurring at an interface, while absorption is the partitioning between two phases (Knox et al., 1993).

Sorption is the process by which a compound is retained onto a solid particle rather than remaining dissolved in solution. The sorption of contaminants to the soil matrix is an important factor affecting their transport in terrestrial environments. The sorption of contaminants to suspended sediments and bottom sediment is an important factor affecting chemical transport in aquatic environments.

In general, sorption reactions may be classified as either sorbent or solvent-motivated. Sorbent-motivated sorption occurs when an attraction between the sorbent (subsurface material) and the solute (contaminant), and the contaminant accumulates at the surface due to the affinity of the surface for the contaminant. An example of sorbent-motivated sorption would be a highly polar or ionizable contaminant interaction with the cation exchange sites of clay minerals. This type of sorption typically occurs with inorganics and is more commonly referred to as ion exchange. Solvent-motivated sorption occurs when the contaminant is hydrophobic, such as nonpolar organics, which prefer nonpolar phases to the polar water phase. Hydrophobic contaminants will accumulate at an interface or partition into a nonpolar phase (e.g., associate with the organic content of the subsurface medium) rather than partition into the water phase. The sorption of most neutral organic constituents falls into the category of hydrophobic, or solvent-motivated sorption (Knox et al., 1993). The best indicators of the partitioning of a compound between soil and water are the organic carbon/water partition coefficient (K_{oc}), the soil/water distribution coefficient (K_d), the octanol/water partition coefficient (K_{ow}), and the retardation factor (R).

For nonionic organic chemicals and aquifer materials, sorption is largely controlled by the clay and organic carbon content of the soil. The distribution of an organic chemical between water

and a specific soil matrix is characterized by the organic carbon/water partition coefficient, K_{oc}. This coefficient, which is based on the specific organic carbon content of the soil, is typically measured empirically using a linear adsorption isotherm where the partitioning between the two phases is determined by the following equation (Olsen and Davis, 1990):

$$K_d = \frac{C_s}{C_w} \qquad \textit{Equation 1}$$

where:

K_d = Soil/water distribution coefficient (L/kg)
C_s = Mass of the solute on the solid phase per unit mass of the solid phase (mg/kg)
C_w = Mass of the solute per unit volume of solution (mg/L)

The soil/water distribution coefficient, K_d, obtained from the above equation is then normalized to correct for variations in the organic carbon content of differing soil matrices to calculate K_{oc}:

$$K_{oc} = \frac{K_d}{f_{oc}} \qquad \textit{Equation 2}$$

where:

K_{oc} = Organic carbon/water partition coefficient (L/kg)
K_d = Soil/water distribution coefficient (L/kg)
f_{oc} = Fraction of organic carbon in the soil

The normalization of the adsorption coefficient to ascertain K_{oc} correlates well with other adsorption coefficient estimation methods which use other properties of the chemical such as water solubility or octanol/water partitioning (Callahan et al., 1979).

If the empirical K_d or K_{oc} value for the chemical is not available, the most widely accepted method of estimating the organic carbon/water partition coefficient involves the octanol/water partition coefficient, K_{ow}. The octanol/water partition coefficient, K_{ow}, has been correlated to water solubility, the organic carbon/water partition coefficient, and bioconcentration factors for aquatic life and represents the extent of partitioning by a chemical between organic and aqueous phases (Lyman et al., 1990). The relationship between K_{oc} and K_{ow} is expressed as a regression equation:

$$\log K_{oc} = a \log K_{ow} + b \qquad \textit{Equation 3}$$

where a and b are constants derived from specific data sets which represent differing classes of chemicals such as pesticides, aromatic compounds, and chlorinated hydrocarbons. Chemicals with low K_{ow} (i.e., less than 10 L/kg) are considered relatively hydrophilic and tend to have high water solubilities and small K_{oc} values. Conversely, hydrophobic compounds typically have K_{ow} values greater than 10^4 L/kg (Lyman et al., 1990). In general, the more hydrophobic a contaminant is, the more likely the contaminant will be sorbed to soil.

From Equation 1, when C_s is equal to zero, K_d also equals zero. Under this condition, no adsorption or retardation of the chemical occurs. This implies that the contaminant moves at the same velocity as the groundwater and in this case, the contaminant is termed a conservative or nonreactive solute. However, the velocity of the contaminant front can be substantially different for solutes that are adsorbed within the soil matrix. The retardation factor is defined as the ratio of the groundwater flow velocity to the contaminant front velocity:

$$R = 1 + \rho_b \frac{K_d}{n_e} \qquad \textit{Equation 4}$$

where:

R	=	Retardation factor (dimensionless)
θ_b	=	Bulk density of the soil (g/mL)
K_d	=	Distribution coefficient (mL/g)
n_e	=	Effective porosity of the soil (dimensionless)

The retardation factor indicates the extent of retardation of contaminant migration in groundwater due to adsorption. A retardation factor of 1.0 indicates that the contaminant has little tendency to bind to soils and, hence, moves freely in the groundwater. By contrast, the larger the R, the greater the tendency for a contaminant to bind to the soil matrix and the slower it will move in the groundwater. The retardation factor cannot fall below 1.0.

Other factors which affect the adsorption of chemicals to the soil matrix include temperature, pH of the soil and water, particle size distribution, and surface area of solids. The value of the distribution coefficient K_d usually decreases with increasing temperature because adsorption is an exothermic process. Neutral and slightly polarized organic compounds are somewhat affected by pH. Chemicals that tend to ionize are significantly affected by pH (Lyman et al., 1990). When the pH of the groundwater is approximately 1.0 to 1.5 units above the negative log of the acid dissociation constant (pK_a), adsorption becomes significant. A comparison of the pK_a of an organic acid with the pH of the groundwater indicates the potential importance of the dissociation of the organic compound in determining the degree of partitioning. The size of affected soil particles also plays a role in a contaminant's sorption characteristics. Particles of small size, such as particles of fine silt or clay, will have a greater tendency to adsorb chemicals.

D.1.2.2 Volatilization

Volatilization is a process whereby a compound changes state from the aqueous phase to the vapor phase. Compounds that do not adsorb onto soil/sediment or dissolve in water have the greatest tendency to volatilize. The volatility of a compound can be evaluated from its K_{oc} and by assessing its Henry's Law Constant. The value of K_{oc} indicates the degree of sorption of a compound to soil/sediment. A compound with a high K_{oc} value will have a reduced volatility because the compound sorbs extensively to the soil/sediment surface. The Henry's Law Constant can be considered the partition coefficient of the contaminant between the aqueous phase and the gas phase. A Henry's Law Constant of greater than 10^{-3} atm-m^3/mol indicates a high volatility, and a Henry's Law Constant of less than 10^{-5} atm-m^3/mol indicates a low volatility. **Table D-1** provides a rough outline of relative volatility of a solute according to its Henry's Law Constant.

Table D-1
Volatility of Compounds Based on Henry's Law Constants

Volatility	Henry's Law Constant
Volatilization is very slow, at a rate controlled by slow diffusion through air	$< 10^{-5}$ atm-m^3/mol
Volatilization is not rapid but significant	10^{-5} atm-m^3/mol to 10^{-3} atm-m^3/mol
Volatilization is rapid	$> 10^{-3}$ atm-m^3/mol

The Henry's Law Constant is related to other physical properties of the compound, the most important of which are vapor pressure and water solubility. Compounds exhibiting a high vapor pressure and low water solubility tend to have high volatilization rates. In fact, in the absence of literature values, Henry's Law Constants can be estimated from the following equation (Olsen and Davis, 1990):

$$H = \frac{(V_p)(MW)(16.04)}{(WS)(T)} \qquad \textit{Equation 5}$$

where:

V_p = Vapor pressure of the chemical (mm Hg)
MW = Molecular weight of the chemical (g/mol)
WS = Solubility in water (mg/L)
T = Temperature (^oK)
H = Henry's Law Constant ([mg/L]/[mg/L])

From this equation, it is evident that the volatilization of a compound to air will depend on its vapor pressure, water solubility, and temperature. Other important factors affecting volatilization include wind speed, the depth of the aquifer, and the geology of the unsaturated zone.

D.1.2.3 Hydrolysis

Hydrolysis is the reaction of a compound with water. It usually involves the introduction of a hydroxyl (-OH) group into an organic compound, usually at a point of unbalanced charge distribution (Cherry et al., 1983). The hydrolysis reaction can displace halogens, and may be catalyzed by the presence of acids, bases, or metal ions. Therefore, the rate of hydrolysis is pH and metal-ion concentration dependent. Surface effects also may affect the rate of hydrolysis. Halogenated aliphatics are susceptible to hydrolysis, with reactions proceeding most rapidly for monohalogenated compounds, and much more slowly as the number of halogen ions increases (Fetter, 1993).

Hydrolysis applies to a limited number of chemicals. These contain hydrolyzable groups, such as esters, aliphatic halogens, amides, carbamates, and phosphate esters (Howard, 1991). Compounds that are not susceptible include: alkanes, alkenes, aldehydes, amines, and carboxy-containing compounds (Olsen and Davis, 1990).

D.1.2.4 Abiotic Degradation

Abiotic degradation is the chemical degradation of compounds without the assistance of biological activities. In the natural environment, the most common abiotic degradation processes are hydrolysis and hydroxyl radical reactions. Other abiotic degradation processes include direct photolysis, dehydrohalogenation, and oxidation.

Hydrolysis, as mentioned above, is a chemical reaction in which compounds react with water molecules in the environment, resulting in the introduction of a hydroxyl group (-OH) and the loss of a leaving group (-X), typically a halogen.

$$RX + H_2O \rightarrow ROH + HX \ (or\ H^+, X^-) \qquad Equation\ 6$$

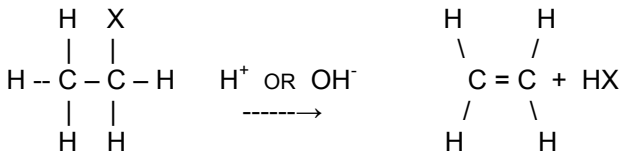
These reactions are catalyzed mainly by hydronium (H_3O^+) and/or hydroxyl ions (OH^-). Therefore, as mentioned above, hydrolysis reactions are pH dependent. Selected metals may also catalyze a hydrolysis reaction (Olsen and Davis, 1990).

Hydroxyl radical reactions are reactions with hydroxyl radicals photochemically generated from sunlight. These reactions may occur mostly in the atmosphere and to a lesser degree in surface water. Once the free radicals are formed, they will react with organic molecules to form an intermediate organic-free radical, which usually reacts further with other compounds. For most chemicals in the atmosphere, reaction with photochemically-generated hydroxyl radicals is the most common degradation process. For many chemicals, experimental reaction rate constants for reactions involving hydroxyl radicals are available in the scientific literature and are used to calculate an estimated half-life by assuming an average hydroxyl radical concentration of $5x10^5$ molecules/cm^3 in non-smog conditions (Howard, 1991).

Occasionally, other reactions besides hydroxyl radical reactions occur in the atmosphere such as ozone oxidation and direct photolysis. Direct photolysis is a photochemical alteration of the compound as a result of the compound absorbing direct sunlight. The possibility of direct photolysis in air or water can be partially assessed by examining the UV spectrum of the chemical. If the chemical does not absorb sunlight at wavelengths greater than 290 nm, the chemical cannot directly photolyze.

Dehydrohalogenation is an elimination reaction in which an alkyl derivative will eliminate HX to form an alkene, where X is commonly a halogen, hydroxyl radical, or ester group:

Equation 7



D.1.2.5 Biotic Degradation

Biodegradation is the process in which the chemical degradation of a compound is assisted by soil microorganisms (e.g., fungi, bacteria). Reactions include oxidation, reduction, hydrolysis, and sometimes rearrangement of the molecule. Though biodegradation may occur very slowly for some compounds, the eventual mineralization of almost every organic compound in the

terrestrial and aquatic environment can be attributed to biodegradation (Alexander, 1978). A typical range of half lives for different degradation rates are summarized in **Table D-2**.

Rates of biotic degradation depend on many factors. Microorganisms require a carbon source (e.g., organic matter), an electron acceptor (e.g., oxygen, nitrate), nutrients (e.g., nitrogen, phosphorus), and various trace elements in order to maintain existing cells and produce new cells. Many environmental factors can also serve to limit the occurrence of microbial metabolism in the subsurface. These factors include pH, temperature, toxics, substrate concentration, and the presence of microbes. Most bacteria find the optimum pH range to be 6.5 to 7.5 and are not able to survive at pH values greater than 9.5 or below 4.0 (Knox et al., 1993). Microbial activity generally increases with increasing temperature. The presence of certain compounds may also be toxic to microorganisms. Heavy metals, acids, bases, or high concentrations of the substrate can serve to limit microbial activity. Finally, for biotic degradation to occur in the subsurface, microbes capable of metabolizing (or cometabolizing) the substrate must be present.

Table D-2
Rate of Biodegradation Based on Half Lives

Biodegradation Rate	Approximate Biodegradation Half-Life
Fast	1 day to 7 days
Moderately Fast	7 days to 4 weeks
Slow	4 weeks to 6 months
Resistant	6 months to 1 year

Complete biotic degradation of organic chemicals by microorganisms, utilizing enzymes to facilitate degradation, ultimately produces microbial cells, water, and carbon dioxide, which eventually lead to mineralization of the compound. Whether or not a chemical is transformed by enzymes depends on the configuration alignment of the enzyme with the organic chemical during the reaction. If an ideal configuration of the enzyme with organic chemicals occurs, the reaction will occur. Persistent chemicals have less favorable alignments, and non-reacting or recalcitrant chemicals fail to bond or produce favorable alignments.

Biotic degradation can be either aerobic or anaerobic. An aerobic reaction occurs in the presence of oxygen. Aerobic reactions occur in oxygen-rich environments such as surface soil (i.e., 0 to 6 inches bgs) and upper layers of sediment. An aerobic reaction is usually an oxidation reaction. An anaerobic reaction occurs in the absence of oxygen. Anaerobic reactions occur in such places as the saturated zone in terrestrial environments and the bottom layer of sediment in aquatic environments. Because of the lack of oxygen in these environments, an anaerobic reaction usually favors dehydrohalogenation reactions or reductive reactions.

D.1.3 Fate of Inorganic Contaminants

D.1.3.1 Ion Exchange

Metals in soil are generally immobile, particularly under neutral or alkaline conditions, and tend to sorb to soil particles. As described in *Section D.1.2.1*, sorption can be considered as either

sorbent- or solvent-motivated. Solvent-motivated sorption (partitioning) typically occurs for nonpolar, hydrophobic organic chemicals in groundwater by accumulation occurring on the organic content of the media. Ion exchange is sorbent-motivated sorption and occurs for inorganic chemicals due to an affinity of the solid surface for the compound. Typically, the sorbent surface contains a charge deficiency and requires the accumulation of ions near the solid/liquid interface to neutralize the surface charge. In subsurface media, the mineral fraction most commonly involved in ion exchange is the clay fraction (Knox et al., 1993). Ion exchange occurs when the sorbent charge deficiency can be neutralized more efficiently by ions in solution than by those ions currently adsorbed. For example, if sodium ions (monovalent) have accumulated and calcium ions (divalent) suddenly appear, the excess surface charge can be more efficiently neutralized by the calcium ions than by sodium. Thus, the sodium ions will desorb, the calcium ions will adsorb, and an exchange of ions occurs. The cation exchange capacity of a given aquifer material indicates the probable type and amount of clay minerals present, and can be used as an indication of the ability of a soil to attenuate cations found in the groundwater (Makeig, 1982).

D.1.3.2 Chemical Speciation

Most inorganic chemicals occur in more than one ionic form, or species, in soils and groundwater. These species, which form as a result of hydrolysis, oxidation/reduction, and complexation reactions, may have different valences and mobilities in groundwater due to different affinities for adsorption and different solubility controls. Simple ionic species often combine with ligands to form ionic or neutral-charge aqueous complexes. The major inorganic ligands in groundwater are generally Cl^-, HCO_3^{-2}, CO_2, and SO_4^{-2}, and in some cases, NH_3, NO_3^- and F^- (Cherry et al., 1983). Environmental conditions which affect speciation of inorganic chemicals include pH, redox potential, and inorganic ligands.

D.1.3.3 Oxidation/Reduction

Oxidation and reduction ("redox") refers to the transfer of electrons and the resultant species change of ions or compounds. Oxidation is the loss of electrons, while reduction is the gain of electrons. Redox processes are important because they can cause changes in the mobility of many inorganic compounds. The ability of a redox reaction to occur is a function of the redox potential. The redox potential is defined in terms of the negative logarithm of the free-electron activity and is referred to as pE. The redox potential can also be expressed in terms of volts (E_h). Low values of pE indicate high electron activity and favor electron-rich species (reduced). High values of pE indicate low electron activity and favor electron-poor species (oxidized).

D.2 TRANSPORT OF CONTAMINANTS

Contaminant transport refers to the mechanisms and rates of migration of contaminants away from the source area. Migration pathways often include air, water, soil, and the interfaces between the phases of the contaminant (i.e., solid, liquid, or gas). Mechanisms controlling the movement of contaminants include advection, dispersion, diffusion, volatilization, and sorption. These mechanisms are dictated by the physical and chemical nature of the environmental media and their interaction with the potential COCs. Water pathways include surface water, storm water runoff, groundwater, infiltration/percolation, and precipitation. The air pathways include uptake into the atmosphere and deposition from it either in a dry or wet form. The soil pathways include sediment and soil transported by erosion or by site activities such as construction and movement through the vadose zone as soil gas. Transport across an interface is primarily due to

partitioning. The degree of partitioning will depend on the volatility, solubility, and sorptive capacity of the phases. The primary transport mechanisms across the water-air and soil-air interfaces are volatilization and sorption, while transport across the soil-water interface is controlled by sorption/desorption and dissolution (solubilization).

D.2.1 Advection

Contaminant transport by advection occurs when the contaminant is moved in and with the bulk flow of either water or the atmosphere. The primary advective transport pathway at Building 4343 is migration into surface water.

D.2.2 Diffusion

Transport by diffusion is the result of a concentration gradient in the contaminant plume or the soil gas within the vadose zone. The rate of diffusion is expressed by the diffusivity coefficient, which is affected by temperature, pressure, density, and soil porosity. Diffusion in soil is strongly dependent on the effective porosity of the soil. Residual clays have high porosity but low effective (interconnected) porosity. Transport due to diffusion in clays is usually minimal.

D.2.3 Volatilization

Volatilization occurs when a liquid changes its phase to a gas. This is primarily a mechanism for organic contaminants migrating from the soil or surface water to the air. Volatilization is a mass transfer process that is limited by a compound's solubility in water, molecular weight, vapor pressure, K_{oc} value, and by the local temperature.

D.2.4 Sorption

As discussed previously, sorption is a general term used in place of the specific terms absorption or adsorption. Adsorption describes the process whereby a contaminant is bound to the surface of a medium, whereas absorption occurs when the contaminant is bound within the medium. The distinction between the two is not always relevant, but the fact that a contaminant has been sorbed indicates that it has been bound to its new medium and will be transported with this new medium. This transport mechanism may be significant when a high concentration of suspended solids is found in water samples.

Desorption is the release (leaching) of a contaminant from the sorbent phase. Sorption/desorption is a primary mechanism of transport for water and soil pathways. In a water-soil environment, soil is the adsorbent and the contaminants are the adsorbates. Sorption/desorption of organic and inorganic compounds within soil-water systems is assessed by several physical and chemical properties of both the compound and the soil or sediment (*Section D.1.2.1*).

Appendix E

Human Health Risk Assessment

Appendix E-1

RAGS Tables

Table E.1-1
Selection of Exposure Pathways - Area P

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis
Current	Surface Soil	Surface Soil	Area P	Maintenance Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Industrial Worker	Adult	Ingestion	On-site	None
						Dermal	On-site	None
				Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None
		Air	Area P	Maintenance Worker	Adult	Inhalation	On-site	Quant
				Industrial Worker	Adult	Inhalation	On-site	None
				Trespasser	Adolescent	Inhalation	On-site	None
	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)	Area P	None	None	None	On-site	None
	Sediment	Sediment	Area P	Maintenance Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Industrial Worker	Adult	Ingestion	On-site	None
						Dermal	On-site	None
				Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None
	Groundwater	Groundwater	Area P	None	None	None	On-site	None
		Air	Volatile groundwater COPCs released to ambient air	Maintenance Worker	Adult	Inhalation	On-site	Quant

Table E.1-1
Selection of Exposure Pathways - Area P

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis
Future	Surface Soil	Surface Soil	Area P	Maintenance Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Industrial Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None
		Air	Area P	Maintenance Worker	Adult	Inhalation	On-site	Quant
				Industrial Worker	Adult	Inhalation	On-site	Quant
				Trespasser	Adolescent	Inhalation	On-site	None
	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)	Area P	Maintenance Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Industrial Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Excavation Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Resident	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
					Child	Ingestion	On-site	Quant
						Dermal	On-site	Quant

Table E.1-1
Selection of Exposure Pathways - Area P

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis
Future (cont.)	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)		Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None
		Air	Area P	Maintenance Worker	Adult	Inhalation	On-site	Quant
				Industrial Worker	Adult	Inhalation	On-site	Quant
				Excavation Worker	Adult	Inhalation	On-site	Quant
				Resident	Adult	Inhalation	On-site	Quant
					Child	Inhalation	On-site	Quant
				Trespasser	Adolescent	Inhalation	On-site	None
	Sediment	Sediment	Area P	Maintenance Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Industrial Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Excavation Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Resident	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
					Child	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None

Table E.1-1
Selection of Exposure Pathways - Area P

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis
Future (cont.)	Groundwater	Groundwater	Area P	Maintenance Worker	Adult	Ingestion	On-site	None
						Dermal	On-site	None
				Industrial Worker	Adult	Ingestion	On-site	Quant
						Dermal	On-site	None
				Excavation Worker	Adult	Ingestion	On-site	None
						Dermal	On-site	Quant
				Resident	Adult	Ingestion	On-site	Quant
						Dermal	On-site	Quant
					Child	Ingestion	On-site	Quant
						Dermal	On-site	Quant
				Trespasser	Adolescent	Ingestion	On-site	None
						Dermal	On-site	None
		Homegrown fruits and vegetables	Area P	Resident	Adult	Ingestion	On-site	Quant
					Child	Ingestion	On-site	Quant
		Air	Volatile groundwater COPCs released to ambient air	Maintenance Worker	Adult	Inhalation	On-site	Quant
			Indoor Vapors	Industrial Worker	Adult	Inhalation	On-site	Quant
			Trench Vapors	Excavation Worker	Adult	Inhalation	On-site	Quant
			Volatiles at Showerhead	Resident	Adult	Inhalation	On-site	Quant
					Child	Inhalation	On-site	None

Table E.1-1
Selection of Exposure Pathways - Area P

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis
Future (cont.)	Groundwater	Air (cont.)	Indoor Vapors	Resident	Adult	Inhalation	On-site	Quant
					Child	Inhalation	On-site	Quant
			Volatile groundwater COPCs released to ambient air	Trespasser	Adolescent	Inhalation	On-site	None
		Surface water	New River	Recreational User	Adult	Ingestion	Off-site	Quant
						Dermal	Off-site	Quant
					Adolescent	Ingestion	Off-site	Quant
						Dermal	Off-site	Quant

Table E.1-1
Selection of Exposure Pathways - Area P

Rationale for Selection or Exclusion of Exposure Pathway
Maintenance workers could contact surface soil at Area P and be exposed to COPCs via incidental ingestion.
Maintenance workers could contact surface soil at Area P and be exposed to COPCs via dermal absorption.
There are no workers currently exposed to surface soil at Area P on a daily basis.
There are no workers currently exposed to surface soil at Area P on a daily basis.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Maintenance workers could be exposed to airborne volatiles or particulate matter released from surface soil at Area P.
There are no workers currently exposed to airborne volatiles or particulates from surface soil at Area P on a daily basis.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Currently excavation or construction activities are not occurring at Area P.
Maintenance workers could contact sediment at Area P and be exposed to COPCs via incidental ingestion.
Maintenance workers could contact sediment at Area P and be exposed to COPCs via dermal absorption.
There are no workers currently exposed to sediment at Area P on a daily basis.
There are no workers currently exposed to sediment at Area P on a daily basis.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Groundwater is not currently being used at Area P. Therefore, there is currently no direct exposure to groundwater.
Volatiles could be released from groundwater into ambient air. Maintenance workers could be exposed via inhalation.

Table E.1-1
Selection of Exposure Pathways - Area P

Rationale for Selection or Exclusion of Exposure Pathway
Maintenance workers could contact surface soil at Area P and be exposed to COPCs via incidental ingestion.
Maintenance workers could contact surface soil at Area P and be exposed to COPCs via dermal absorption.
Industrial workers could contact surface soil at Area P and be exposed to COPCs via incidental ingestion.
Industrial workers could contact surface soil at Area P and be exposed to COPCs via dermal absorption.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Maintenance workers could be exposed to airborne volatiles or particulate matter released from surface soil at Area P.
Industrial workers could be exposed to airborne volatiles or particulate matter released from surface soil at Area P.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Maintenance workers could contact soil at Area P and be exposed to COPCs via incidental ingestion.
Maintenance workers could contact soil at Area P and be exposed to COPCs via dermal absorption.
Industrial workers could contact soil at Area P and be exposed to COPCs via incidental ingestion.
Industrial workers could contact soil at Area P and be exposed to COPCs via dermal absorption.
Excavation workers could contact soil at Area P and be exposed to COPCs via incidental ingestion.
Excavation workers could contact soil at Area P and be exposed to COPCs via dermal absorption.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via dermal absorption.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via dermal absorption.

Table E.1-1
Selection of Exposure Pathways - Area P

Rationale for Selection or Exclusion of Exposure Pathway
Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Maintenance workers could be exposed to airborne volatiles or particulate matter released from soils at Area P.
Industrial workers could be exposed to airborne volatiles or particulate matter released from soils at Area P.
Excavation workers could be exposed to airborne volatiles or particulate matter released from soils at Area P.
If Area P were to be further developed for residential purposes, residents could be exposed to airborne volatiles or particulate matter released from total soil.
If Area P were to be further developed for residential purposes, residents could be exposed to airborne volatiles or particulate matter released from total soil.
Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Maintenance workers could contact sediment at Area P and be exposed to COPCs via incidental ingestion.
Maintenance workers could contact sediment at Area P and be exposed to COPCs via dermal absorption.
Industrial workers could contact sediment at Area P and be exposed to COPCs via incidental ingestion.
Industrial workers could contact sediment at Area P and be exposed to COPCs via dermal absorption.
Excavation workers could contact sediment at Area P and be exposed to COPCs via incidental ingestion.
Excavation workers could contact sediment at Area P and be exposed to COPCs via dermal absorption.
Adult residents could contact sediment at Area P and be exposed to COPCs via incidental ingestion during wading.
Adult residents could contact sediment at Area P and be exposed to COPCs via dermal absorption during wading.
Child residents could contact sediment at Area P and be exposed to COPCs via incidental ingestion during wading.
Child residents could contact sediment at Area P and be exposed to COPCs via dermal absorption during wading.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.

Table E.1-1
Selection of Exposure Pathways - Area P

Rationale for Selection or Exclusion of Exposure Pathway
Maintenance workers would not contact groundwater at Area P.
Maintenance workers would not contact groundwater at Area P.
If Area P were to be further developed for industrial purposes and groundwater wells were installed at the site, site workers could be exposed to COPCs in groundwater via ingestion.
Although site worker dermal exposures to groundwater could occur, the exposed body surface area of a worker (i.e., hands and arms) would be small and exposures would be infrequent.
Based on the depth to groundwater, excavation workers could contact groundwater at Area P. Exposures to groundwater via incidental ingestion would be expected to be negligible in comparison with exposures via dermal absorption.
Based on the depth to groundwater, excavation workers could contact groundwater at Area P.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via dermal absorption.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
If Area P were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via dermal absorption.
Due to security at the installation, trespasser exposures are unlikely.
Due to security at the installation, trespasser exposures are unlikely.
Residents could ingest COPCs in groundwater that had been taken up by homegrown fruits and vegetables.
Residents could ingest COPCs in groundwater that had been taken up by homegrown fruits and vegetables.
Volatiles could be released from groundwater into ambient air. Maintenance workers could be exposed via inhalation.
Volatiles in groundwater could potentially migrate into buildings via vapor intrusion.
Volatiles in groundwater could potentially migrate into a construction or utility trench via vapor intrusion.
If groundwater wells were installed for residential purposes, adult residents could contact volatiles in groundwater via showering.
Children are assumed to bathe rather than shower. Therefore, inhalation exposure is assessed using only indoor air.

Table E.1-1
Selection of Exposure Pathways - Area P

Rationale for Selection or Exclusion of Exposure Pathway
Volatiles in groundwater could potentially migrate into residences via vapor intrusion.
Volatiles in groundwater could potentially migrate into residences via vapor intrusion.
Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
Groundwater at Area P discharges to the New River. If COPCs from Area P groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via ingestion during recreational activities at New River.
Groundwater at Area P discharges to the New River. If COPCs from Area P groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via dermal absorption during recreational activities at New River.
Groundwater at Area P discharges to the New River. If COPCs from Area P groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via ingestion during recreational activities at New River.
Groundwater at Area P discharges to the New River. If COPCs from Area P groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via dermal absorption during recreational activities at New River.

Table E.1-2
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Surface Soil - Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	11097-69-1	Aroclor 1254	4.02E-02	4.03E-01	mg/kg	APSB06A	2/5	1.80E-02 - 1.80E-02	4.03E-01	N/A	1.10E-01 (N)	N/A	N/A	Yes	ASL
Surface Soil	127-18-4	Tetrachloroethene	6.40E-03	6.40E-03	mg/kg	APSB08A	1/5	4.70E-03 - 5.20E-03	6.40E-03	N/A	5.70E-01 (C)	N/A	N/A	No	BSL
	79-01-6	Trichloroethene	5.40E-03	5.40E-03	mg/kg	APSB07A	1/5	4.70E-03 - 5.30E-03	5.40E-03	N/A	2.80E+00 (C)	N/A	N/A	No	BSL
	7429-90-5	Aluminum	3.62E+03	1.32E+04	mg/kg	PSB5 (RVFS*84)	10/10	N/A	1.32E+04	N/A	7.70E+03 (N)	N/A	N/A	Yes	ASL
	7440-36-0	Antimony	1.05E+01	1.05E+01	mg/kg	PSB2 (RVFS*78)	1/10	2.00E-01 - 7.14E+00	1.05E+01	N/A	3.10E+00 (N)	N/A	N/A	Yes	ASL
	7440-38-2	Arsenic	9.23E-01	4.30E+00 K	mg/kg	APSB08A	10/10	N/A	4.30E+00	N/A	3.90E-01 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	5.27E+01 J	2.57E+02	mg/kg	PSB4 (RVFS*82)	10/10	N/A	2.57E+02	N/A	1.50E+03 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	4.30E-01	9.70E-01 L	mg/kg	APSB06A	8/10	5.00E-01 - 5.00E-01	9.70E-01	N/A	1.60E+01 (N)	N/A	N/A	No	BSL
	7440-43-9	Cadmium	1.80E-01 L	3.90E-01 L	mg/kg	APSB08A	2/10	5.20E-02 - 7.00E-01	3.90E-01	N/A	7.00E+00 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	1.18E+03 J	1.60E+05	mg/kg	PSB2 (RVFS*78)	10/10	N/A	1.60E+05	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-47-3	Chromium (total)	7.63E+00	5.96E+01	mg/kg	PSB1 (RVFS*76)	10/10	N/A	5.96E+01	N/A	2.80E+02 (C)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	2.65E+00	1.26E+01	mg/kg	PSB1 (RVFS*76)	10/10	N/A	1.26E+01	N/A	2.30E+00 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	5.00E+00 J	3.47E+02	mg/kg	PSB2 (RVFS*78)	10/10	N/A	3.47E+02	N/A	3.10E+02 (N)	N/A	N/A	Yes	ASL
	7439-89-6	Iron	6.88E+03	2.49E+04	mg/kg	PSB1 (RVFS*76)	10/10	N/A	2.49E+04	N/A	5.50E+03 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	4.90E+00 J	1.50E+02	mg/kg	PSB5 (RVFS*84)	10/10	N/A	1.50E+02	N/A	4.00E+02 (N)	N/A	N/A	No	BSL
	7439-95-4	Magnesium	1.62E+03 J	8.30E+04	mg/kg	PSB2 (RVFS*78)	10/10	N/A	8.30E+04	N/A	N/A	1.00E+06	RDA	No	BSL
	7439-96-5	Manganese	1.30E+02	1.24E+03 J	mg/kg	APSB08A	10/10	N/A	1.24E+03	N/A	1.80E+02 (N)	N/A	N/A	Yes	ASL
	7439-97-6	Mercury	1.00E-02 J	9.10E-02	mg/kg	APSB08A	5/10	5.00E-02 - 5.00E-02	9.10E-02	N/A	2.30E+00 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	6.60E+00 J	3.34E+01	mg/kg	PSB1 (RVFS*76)	10/10	N/A	3.34E+01	N/A	1.60E+02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	9.32E+02	1.74E+03	mg/kg	PSB5 (RVFS*84)	8/8	N/A	1.74E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7782-49-2	Selenium	2.40E+00 J	5.60E+00 J	mg/kg	APSB08A	5/10	2.50E-01 - 2.50E-01	5.60E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-22-4	Silver	6.92E-01	1.79E+00	mg/kg	PSB2 (RVFS*78)	2/10	7.30E-02 - 5.89E-01	1.79E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-23-5	Sodium	1.79E+02	2.81E+02	mg/kg	PSB2 (RVFS*78)	5/8	2.60E+01 - 2.80E+01	2.81E+02	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-62-2	Vanadium (5)	1.15E+01 J	4.14E+01	mg/kg	PSB5 (RVFS*84)	10/10	N/A	4.14E+01	N/A	3.90E+01 (N)	N/A	N/A	Yes	ASL
	7440-66-6	Zinc	3.65E+01 J	1.06E+03 J	mg/kg	APSB08A	10/10	N/A	1.06E+03	N/A	2.30E+03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.

(4) Rationale Codes
Selection Reason:
Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason:
Below Screening and/or ARAR/TBC Level (BSL)

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

(5) The screening value for vanadium and compounds was used.

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
Surface Soil	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	5.90E-01 (C)	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.10E+00 (C)	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	3.40E+00 (C)	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	2.50E+01 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	8.70E+00 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.00E+02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	4.50E-01 (C)	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	9.30E-01 (C)	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	2.20E+02 (N)	No
	541-73-1	1,3-Dichlorobenzene (4)			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.6E+00 (C)	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	6.10E-01 (N)	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.6E+00 (C)	No
	90-12-0	1-Methylnaphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.20E+01 (C)	No
	93-76-5	2,4,5-T			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	N/A	6.10E+01 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/5	1.40E-02 - 1.60E-02	1.60E-02	N/A	4.90E+01 (N)	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+02 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	3.60E+00 (N)	No
	94-75-7	2,4-D			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	N/A	6.90E+01 (N)	No
	94-82-6	2,4-DB			mg/kg		0/5	7.10E-02 - 7.90E-02	7.90E-02	N/A	4.90E+01 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+01 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.20E+02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	N/A	1.20E+01 (N)	No
	121-14-2	2,4-Dinitrotoluene (5)			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	7.10E-01 (C)	No
	606-20-2	2,6-Dinitrotoluene (5)			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	7.10E-01 (C)	No
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	1.50E+01 (N)	No
	78-93-3	2-Butanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	N/A	2.80E+03 (N)	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.30E+02 (N)	No
	95-57-8	2-Chlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.90E+01 (N)	No
	591-78-6	2-Hexanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	N/A	N/A	NTX
	91-57-6	2-Methylnaphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.10E+01 (N)	No
	88-74-4	2-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	88-72-2	2-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	2.90E+00 (C)	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	N/A	6.10E+00 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	N/A	3&4-Methylphenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+01 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.10E+00 (C)	No
	99-09-2	3-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.80E+00 (N)	No
	99-08-1	3-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	1.20E+02 (N)	No
	72-54-8	4,4'-DDD			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	2.00E+00 (C)	No
	72-55-9	4,4'-DDE			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	1.40E+00 (C)	No
	50-29-3	4,4'-DDT			mg/kg		0/5	3.60E-03 - 7.60E-03	7.60E-03	N/A	1.70E+00 (C)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	6.10E-01 (N)	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	1.50E+01 (N)	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	N/A	5.30E+02 (N)	No
	100-01-6	4-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.80E+01 (N)	No
	100-02-7	4-Nitrophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	N/A	N/A	NTX
	99-99-0	4-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	2.40E+01 (N)	No
	83-32-9	Acenaphthene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.40E+02 (N)	No
	208-96-8	Acenaphthylene (6)			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	67-64-1	Acetone			mg/kg		0/5	4.70E-02 - 5.30E-02	5.30E-02	N/A	6.10E+03 (N)	No
	309-00-2	Aldrin			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	2.90E-02 (C)	No
	319-84-6	alpha-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	7.70E-02 (C)	No
	5103-71-9	alpha-Chlordane (7)			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	120-12-7	Anthracene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+03 (N)	No
	12674-11-2	Aroclor 1016			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	3.90E-01 (N)	No
	11104-28-2	Aroclor 1221			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	1.70E-01 (C)	No
	11141-16-5	Aroclor 1232			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	1.70E-01 (C)	No
	53469-21-9	Aroclor 1242			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	12672-29-6	Aroclor 1248			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	11096-82-5	Aroclor 1260			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	71-43-2	Benzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.10E+00 (C)	No
	56-55-3	Benzo(a)anthracene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	50-32-8	Benzo(a)pyrene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-02 (C)	Yes
	205-99-2	Benzo(b)fluoranthene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	191-24-2	Benzo(g,h,i)perylene (6)			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.70E+02 (N)	No
	207-08-9	Benzo(k)fluoranthene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E+00 (C)	No
	65-85-0	Benzoic Acid			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	N/A	2.40E+04 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	100-51-6	Benzyl alcohol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+03 (N)	No
	319-85-7	beta-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	2.70E-01 (C)	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+01 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.90E-01 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.50E+00 (C)	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	3.50E+01 (C)	No
	75-27-4	Bromodichloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.00E+01 (C)	No
	74-83-9	Bromomethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	7.90E-01 (N)	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	2.60E+02 (C)	No
	86-74-8	Carbazole			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	75-15-0	Carbon disulfide			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	6.70E+01 (N)	No
	56-23-5	Carbon tetrachloride			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	2.50E-01 (C)	No
	108-90-7	Chlorobenzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	3.10E+01 (N)	No
	75-00-3	Chloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.50E+03 (N)	No
	67-66-3	Chloroform			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	3.00E-01 (C)	No
	74-87-3	Chloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.70E+00 (C)	No
	218-01-9	Chrysene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E+01 (C)	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	7.80E+01 (N)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.70E+00 (C)	No
	121-82-4	Cyclonite			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	5.50E+00 (C)	No
	75-99-0	Dalapon			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	N/A	1.80E+02 (N)	No
	319-86-8	delta-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-02 (C)	Yes
	132-64-9	Dibenzofuran			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	124-48-1	Dibromochloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	5.80E+00 (C)	No
	1918-00-9	Dicamba			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	N/A	1.80E+02 (N)	No
	120-36-5	Dichloroprop			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	3.00E-02 (C)	No
	84-66-2	Diethyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	4.90E+03 (N)	No
	131-11-3	Dimethylphthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	84-74-2	Di-n-butyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	6.10E+02 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	959-98-8	Endosulfan I (8)			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	3.70E+01 (N)	No
	33213-65-9	Endosulfan II (8)			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	3.70E+01 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	3.70E+01 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	72-20-8	Endrin			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	7421-93-4	Endrin aldehyde (9)			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	53494-70-5	Endrin ketone (9)			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	100-41-4	Ethylbenzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	5.70E+00 (C)	No
	206-44-0	Fluoranthene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.30E+02 (N)	No
	86-73-7	Fluorene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.30E+02 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	5103-74-2	gamma-Chlordane (7)			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	76-44-8	Heptachlor			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.10E-01 (C)	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.30E-02 (C)	No
	118-74-1	Hexachlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.00E-01 (C)	No
	87-68-3	Hexachlorobutadiene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.70E+01 (N)	No
	67-72-1	Hexachloroethane			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	2691-41-0	HMX			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	3.80E+02 (N)	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	78-59-1	Isophorone			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	5.10E+02 (C)	No
	N/A	m+p-Xylenes			mg/kg		0/5	9.50E-03 - 1.10E-02	1.10E-02	N/A	6.00E+01 (N)	No
	94-74-6	MCPA			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+00 (N)	No
	93-65-2	MCPP			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	72-43-5	Methoxychlor			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	N/A	3.10E+01 (N)	No
	75-09-2	Methylene chloride			mg/kg		0/5	9.50E-03 - 1.10E-02	1.10E-02	N/A	1.10E+01 (C)	No
	91-20-3	Naphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.90E+00 (C)	No
	98-95-3	Nitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	N/A	3.10E+00 (N)	No
	55-63-0	Nitroglycerin			mg/kg		0/5	1.70E+00 - 1.80E+00	1.80E+00	N/A	6.10E-01 (N)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.90E-02 (C)	Yes
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	9.90E+01 (C)	No
	95-48-7	o-Cresol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+02 (N)	No
	95-47-6	o-Xylene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	5.30E+02 (N)	No
	106-47-8	p-Chloroaniline			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	9.00E+00 (C)	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	N/A	3.00E+00 (C)	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/5	1.70E+00 - 1.80E+00	1.80E+00	N/A	N/A	NTX
	85-01-8	Phenanthrene (6)			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	108-95-2	Phenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+03 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	129-00-0	Pyrene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	100-42-5	Styrene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	6.50E+02 (N)	No
	479-45-8	Tetryl			mg/kg		0/5	4.30E-01 - 4.50E-01	4.50E-01	N/A	2.40E+01 (N)	No
	7440-28-0	Thallium			mg/kg		0/10	6.20E+00 - 1.20E+01	1.20E+01	N/A	5.10E-01 (N)	Yes
	108-88-3	Toluene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	5.00E+02 (N)	No
	8001-35-2	Toxaphene			mg/kg		0/5	9.00E-02 - 9.70E-02	9.70E-02	N/A	4.40E-01 (C)	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.10E+01 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	1.70E+00 (C)	No
	75-25-2	Tribromomethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	6.10E+01 (C)	No
	75-01-4	Vinyl Chloride			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	N/A	6.00E-02 (C)	No

(1) Maximum concentration used for screening.
(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.
(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.
(4) The screening value for 1,4-dichlorobenzene was used.
(5) The screening value for dinitrotoluene mixture was used.
(6) The screening value for pyrene was used.
(7) The screening value for chlordane was used.
(8) The screening value for endosulfan was used.
(9) The screening value for endrin was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-4
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Total Soil - Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Total Soil	11097-69-1	Aroclor 1254	4.02E-02	4.03E-01	mg/kg	APSB06A	2/10	1.80E-02 - 1.90E-02	4.03E-01	N/A	1.10E-01 (N)	N/A	N/A	Yes	ASL
	127-18-4	Tetrachloroethene	6.40E-03	6.40E-03	mg/kg	APSB08A	1/10	4.70E-03 - 6.70E-03	6.40E-03	N/A	5.70E-01 (C)	N/A	N/A	No	BSL
	79-01-6	Trichloroethene	5.40E-03	5.40E-03	mg/kg	APSB07A	1/10	4.70E-03 - 6.70E-03	5.40E-03	N/A	2.80E+00 (C)	N/A	N/A	No	BSL
	7429-90-5	Aluminum	3.62E+03	1.82E+04	mg/kg	PSB3 (RVFS*81)	20/20	N/A	1.82E+04	N/A	7.70E+03 (N)	N/A	N/A	Yes	ASL
	7440-36-0	Antimony	1.05E+01	1.05E+01	mg/kg	PSB2 (RVFS*78)	1/20	2.00E-01 - 7.14E+00	1.05E+01	N/A	3.10E+00 (N)	N/A	N/A	Yes	ASL
	7440-38-2	Arsenic	6.18E-01	4.30E+00 K	mg/kg	APSB08A	20/20	N/A	4.30E+00	N/A	3.90E-01 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	4.46E+01 J	2.57E+02	mg/kg	PSB4 (RVFS*82)	20/20	N/A	2.57E+02	N/A	1.50E+03 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	3.70E-01	9.70E-01 L	mg/kg	APSB06A	15/20	5.00E-01 - 5.00E-01	9.70E-01	N/A	1.60E+01 (N)	N/A	N/A	No	BSL
	7440-43-9	Cadmium	1.80E-01 L	3.90E-01 L	mg/kg	APSB08A	2/20	5.20E-02 - 7.00E-01	3.90E-01	N/A	7.00E+00 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	8.15E+02	1.60E+05	mg/kg	PSB2 (RVFS*78)	20/20	N/A	1.60E+05	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-47-3	Chromium (total)	7.63E+00	5.96E+01	mg/kg	PSB1 (RVFS*76)	20/20	N/A	5.96E+01	N/A	2.80E+02 (C)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	2.65E+00	1.35E+01	mg/kg	PSB1 (RVFS*77)	20/20	N/A	1.35E+01	N/A	2.30E+00 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	3.10E+00 J	3.47E+02	mg/kg	PSB2 (RVFS*78)	20/20	N/A	3.47E+02	N/A	3.10E+02 (N)	N/A	N/A	Yes	ASL
	7439-89-6	Iron	6.88E+03	2.75E+04	mg/kg	PSB1 (RVFS*77)	20/20	N/A	2.75E+04	N/A	5.50E+03 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	2.70E+00 J	1.50E+02	mg/kg	PSB5 (RVFS*84)	17/20	1.05E+01 - 1.05E+01	1.50E+02	N/A	4.00E+02 (N)	N/A	N/A	No	BSL
	7439-95-4	Magnesium	1.39E+03 J	8.30E+04	mg/kg	PSB2 (RVFS*78)	20/20	N/A	8.30E+04	N/A	N/A	1.00E+06	RDA	No	BSL
	7439-96-5	Manganese	1.30E+02	1.24E+03 J	mg/kg	APSB08A	20/20	N/A	1.24E+03	N/A	1.80E+02 (N)	N/A	N/A	Yes	ASL
	7439-97-6	Mercury	1.00E-02 J	9.10E-02	mg/kg	APSB08A	9/20	1.10E-02 - 5.00E-02	9.10E-02	N/A	2.30E+00 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	5.70E+00 J	3.34E+01	mg/kg	PSB1 (RVFS*76)	20/20	N/A	3.34E+01	N/A	1.60E+02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	6.26E+02	1.92E+03	mg/kg	PSB1 (RVFS*77)	16/16	N/A	1.92E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7782-49-2	Selenium	2.00E+00 J	6.05E+00 J	mg/kg	APSB06B	10/20	2.50E-01 - 2.50E-01	6.05E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-22-4	Silver	6.80E-01	1.79E+00	mg/kg	PSB2 (RVFS*78)	4/20	7.30E-02 - 5.89E-01	1.79E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-23-5	Sodium	1.79E+02	2.81E+02	mg/kg	PSB2 (RVFS*78)	10/18	2.60E+01 - 2.85E+01	2.81E+02	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-62-2	Vanadium (5)	1.08E+01 J	4.98E+01	mg/kg	PSB1 (RVFS*77)	20/20	N/A	4.98E+01	N/A	3.90E+01 (N)	N/A	N/A	Yes	ASL
	7440-66-6	Zinc	2.59E+01 J	1.06E+03 J	mg/kg	APSB08A	20/20	N/A	1.06E+03	N/A	2.30E+03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.

(4) Rationale Codes
Selection Reason:
Toxicity Information Available (TX) Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason:
Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for vanadium and compounds was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
Total Soil	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	5.90E-01 (C)	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.10E+00 (C)	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	3.40E+00 (C)	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	2.50E+01 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	8.70E+00 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.00E+02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	4.50E-01 (C)	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	9.30E-01 (C)	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	2.20E+02 (N)	No
	541-73-1	1,3-Dichlorobenzene (4)			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.60E+00 (C)	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	6.10E-01 (N)	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	2.60E+00 (C)	No
	90-12-0	1-Methylnaphthalene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.20E+01 (C)	No
	93-76-5	2,4,5-T			mg/kg		0/10	7.10E-03 - 7.90E-03	7.90E-03	N/A	6.10E+01 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/10	1.40E-02 - 1.60E-02	1.60E-02	N/A	4.90E+01 (N)	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+02 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	3.60E+00 (N)	No
	94-75-7	2,4-D			mg/kg		0/10	3.60E-02 - 3.90E-02	3.90E-02	N/A	6.90E+01 (N)	No
	94-82-6	2,4-DB			mg/kg		0/10	7.10E-02 - 7.90E-02	7.90E-02	N/A	4.90E+01 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+01 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.20E+02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/kg		0/10	8.80E-01 - 9.90E-01	9.90E-01	N/A	1.20E+01 (N)	No
	121-14-2	2,4-Dinitrotoluene (5)			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	7.10E-01 (C)	No
	606-20-2	2,6-Dinitrotoluene (5)			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	7.10E-01 (C)	No
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	1.50E+01 (N)	No
	78-93-3	2-Butanone			mg/kg		0/10	2.35E-02 - 3.30E-02	3.30E-02	N/A	2.80E+03 (N)	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.30E+02 (N)	No
	95-57-8	2-Chlorophenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.90E+01 (N)	No
	591-78-6	2-Hexanone			mg/kg		0/10	2.35E-02 - 3.30E-02	3.30E-02	N/A	N/A	NTX
	91-57-6	2-Methylnaphthalene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.10E+01 (N)	No
	88-74-4	2-Nitroaniline			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	88-72-2	2-Nitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	2.90E+00 (C)	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/10	7.10E-03 - 7.90E-03	7.90E-03	N/A	6.10E+00 (N)	No
	N/A	3&4-Methylphenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+01 (N)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.10E+00 (C)	No
	99-09-2	3-Nitroaniline			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.80E+00 (N)	No
	99-08-1	3-Nitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	1.20E+02 (N)	No
	72-54-8	4,4'-DDD			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	2.00E+00 (C)	No
	72-55-9	4,4'-DDE			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	1.40E+00 (C)	No
	50-29-3	4,4'-DDT			mg/kg		0/10	3.50E-03 - 7.60E-03	7.60E-03	N/A	1.70E+00 (C)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	6.10E-01 (N)	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	1.50E+01 (N)	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/10	2.35E-02 - 3.30E-02	3.30E-02	N/A	5.30E+02 (N)	No
	100-01-6	4-Nitroaniline			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	1.80E+01 (N)	No
	100-02-7	4-Nitrophenol			mg/kg		0/10	8.80E-01 - 9.90E-01	9.90E-01	N/A	N/A	NTX
	99-99-0	4-Nitrotoluene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	2.40E+01 (N)	No
	83-32-9	Acenaphthene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.40E+02 (N)	No
	208-96-8	Acenaphthylene (6)			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	67-64-1	Acetone			mg/kg		0/10	4.70E-02 - 6.70E-02	6.70E-02	N/A	6.10E+03 (N)	No
	309-00-2	Aldrin			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	2.90E-02 (C)	No
	319-84-6	alpha-BHC			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	7.70E-02 (C)	No
	5103-71-9	alpha-Chlordane (7)			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	120-12-7	Anthracene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+03 (N)	No
	12674-11-2	Aroclor 1016			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	3.90E-01 (N)	No
	11104-28-2	Aroclor 1221			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	1.70E-01 (C)	No
	11141-16-5	Aroclor 1232			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	1.70E-01 (C)	No
	53469-21-9	Aroclor 1242			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	12672-29-6	Aroclor 1248			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	11096-82-5	Aroclor 1260			mg/kg		0/10	1.80E-02 - 9.40E-02	9.40E-02	N/A	2.20E-01 (C)	No
	71-43-2	Benzene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.10E+00 (C)	No
	56-55-3	Benzo(a)anthracene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	50-32-8	Benzo(a)pyrene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-02 (C)	Yes
	205-99-2	Benzo(b)fluoranthene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	191-24-2	Benzo(g,h,i)perylene (6)			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.70E+02 (N)	No
	207-08-9	Benzo(k)fluoranthene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E+00 (C)	No
	65-85-0	Benzoic Acid			mg/kg		0/10	8.80E-01 - 9.90E-01	9.90E-01	N/A	2.40E+04 (N)	No
	100-51-6	Benzyl alcohol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+03 (N)	No
	319-85-7	beta-BHC			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	2.70E-01 (C)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+01 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.90E-01 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.50E+00 (C)	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	3.50E+01 (C)	No
	75-27-4	Bromodichloromethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.00E+01 (C)	No
	74-83-9	Bromomethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	7.90E-01 (N)	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	2.60E+02 (C)	No
	86-74-8	Carbazole			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	75-15-0	Carbon disulfide			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	6.70E+01 (N)	No
	56-23-5	Carbon tetrachloride			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	2.50E-01 (C)	No
	108-90-7	Chlorobenzene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	3.10E+01 (N)	No
	75-00-3	Chloroethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.50E+03 (N)	No
	67-66-3	Chloroform			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	3.00E-01 (C)	No
	74-87-3	Chloromethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.70E+00 (C)	No
	218-01-9	Chrysene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E+01 (C)	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	7.80E+01 (N)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.70E+00 (C)	No
	121-82-4	Cyclonite			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	5.50E+00 (C)	No
	75-99-0	Dalapon			mg/kg		0/10	3.60E-02 - 3.90E-02	3.90E-02	N/A	1.80E+02 (N)	No
	319-86-8	delta-BHC			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-02 (C)	Yes
	132-64-9	Dibenzofuran			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	124-48-1	Dibromochloromethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	5.80E+00 (C)	No
	1918-00-9	Dicamba			mg/kg		0/10	7.10E-03 - 7.90E-03	7.90E-03	N/A	1.80E+02 (N)	No
	120-36-5	Dichloroprop			mg/kg		0/10	3.60E-02 - 3.90E-02	3.90E-02	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	3.00E-02 (C)	No
	84-66-2	Diethyl phthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	4.90E+03 (N)	No
	131-11-3	Dimethylphthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	84-74-2	Di-n-butyl phthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	6.10E+02 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/10	3.50E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	959-98-8	Endosulfan I (8)			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	3.70E+01 (N)	No
	33213-65-9	Endosulfan II (8)			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	3.70E+01 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	3.70E+01 (N)	No
	72-20-8	Endrin			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	7421-93-4	Endrin aldehyde (9)			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	53494-70-5	Endrin ketone (9)			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	100-41-4	Ethylbenzene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	5.70E+00 (C)	No
	206-44-0	Fluoranthene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.30E+02 (N)	No
	86-73-7	Fluorene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	2.30E+02 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	5103-74-2	gamma-Chlordane (7)			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	76-44-8	Heptachlor			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	1.10E-01 (C)	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/10	1.80E-03 - 1.90E-03	1.90E-03	N/A	5.30E-02 (C)	No
	118-74-1	Hexachlorobenzene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.00E-01 (C)	No
	87-68-3	Hexachlorobutadiene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.70E+01 (N)	No
	67-72-1	Hexachloroethane			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	2691-41-0	HMX			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	3.80E+02 (N)	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/kg		0/10	5.60E-02 - 6.30E-02	6.30E-02	N/A	1.50E-01 (C)	No
	78-59-1	Isophorone			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	5.10E+02 (C)	No
	N/A	m+p-Xylenes			mg/kg		0/10	9.50E-03 - 1.30E-02	1.30E-02	N/A	6.00E+01 (N)	No
	94-74-6	MCPA			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+00 (N)	No
	93-65-2	MCPP			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	72-43-5	Methoxychlor			mg/kg		0/10	3.50E-03 - 3.90E-03	3.90E-03	N/A	3.10E+01 (N)	No
	75-09-2	Methylene chloride			mg/kg		0/10	9.50E-03 - 1.30E-02	1.30E-02	N/A	1.10E+01 (C)	No
	91-20-3	Naphthalene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	3.90E+00 (C)	No
	98-95-3	Nitrobenzene			mg/kg		0/10	2.00E-01 - 2.30E-01	2.30E-01	N/A	3.10E+00 (N)	No
	55-63-0	Nitroglycerin			mg/kg		0/10	1.60E+00 - 1.85E+00	1.85E+00	N/A	6.10E-01 (N)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	6.90E-02 (C)	Yes
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	9.90E+01 (C)	No
	95-48-7	o-Cresol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	3.10E+02 (N)	No
	95-47-6	o-Xylene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	5.30E+02 (N)	No
	106-47-8	p-Chloroaniline			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	9.00E+00 (C)	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/kg		0/10	8.80E-01 - 9.90E-01	9.90E-01	N/A	3.00E+00 (C)	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/10	1.60E+00 - 1.85E+00	1.85E+00	N/A	N/A	NTX
	85-01-8	Phenanthrene (6)			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	108-95-2	Phenol			mg/kg		0/10	1.80E-01 - 2.00E-01	2.00E-01	N/A	1.80E+03 (N)	No
	129-00-0	Pyrene			mg/kg		0/10	2.80E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	100-42-5	Styrene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	6.50E+02 (N)	No
	479-45-8	Tetryl			mg/kg		0/10	4.00E-01 - 4.65E-01	4.65E-01	N/A	2.40E+01 (N)	No
	7440-28-0	Thallium			mg/kg		0/20	6.20E+00 - 1.30E+01	1.30E+01	N/A	5.10E-01 (N)	Yes

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at Area P

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	108-88-3	Toluene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	5.00E+02 (N)	No
	8001-35-2	Toxaphene			mg/kg		0/10	8.80E-02 - 9.70E-02	9.70E-02	N/A	4.40E-01 (C)	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.10E+01 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	1.70E+00 (C)	No
	75-25-2	Tribromomethane			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	6.10E+01 (C)	No
	75-01-4	Vinyl Chloride			mg/kg		0/10	4.70E-03 - 6.70E-03	6.70E-03	N/A	6.00E-02 (C)	No

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.

(4) The screening value for 1,4-dichlorobenzene was used.

(5) The screening value for dinitrotoluene mixture was used.

(6) The screening value for pyrene was used.

(7) The screening value for chlordane was used.

(8) The screening value for endosulfan was used.

(9) The screening value for endrin was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-6
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Sediment - Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	NA	2,3,7,8-TCDD-TE	5.11E-06	5.11E-06	mg/kg	APSD01	1/1	N/A	5.11E-06	N/A	4.50E-05 (C)	N/A	N/A	No	BSL
Sediment	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	3.76E-05	3.76E-05	mg/kg	APSD01	1/1	N/A	3.76E-05	N/A	N/A	N/A	N/A	No	TEQ
	35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.78E-04	1.78E-04	mg/kg	APSD01	1/1	N/A	1.78E-04	N/A	N/A	N/A	N/A	No	TEQ
	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.14E-06 J	1.14E-06 J	mg/kg	APSD01	1/1	N/A	1.14E-06	N/A	N/A	N/A	N/A	No	TEQ
	70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	9.38E-07 B	9.38E-07 B	mg/kg	APSD01	1/1	N/A	9.38E-07	N/A	N/A	N/A	N/A	No	TEQ
	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.53E-06 J	1.53E-06 J	mg/kg	APSD01	1/1	N/A	1.53E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	7.63E-07 J	7.63E-07 J	mg/kg	APSD01	1/1	N/A	7.63E-07	N/A	N/A	N/A	N/A	No	TEQ
	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	4.08E-06 J	4.08E-06 J	mg/kg	APSD01	1/1	N/A	4.08E-06	N/A	N/A	N/A	N/A	No	TEQ
	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	4.19E-06 J	4.19E-06 J	mg/kg	APSD01	1/1	N/A	4.19E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	2.38E-07 J	2.38E-07 J	mg/kg	APSD01	1/1	N/A	2.38E-07	N/A	N/A	N/A	N/A	No	TEQ
	40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	8.75E-07 J	8.75E-07 J	mg/kg	APSD01	1/1	N/A	8.75E-07	N/A	N/A	N/A	N/A	No	TEQ
	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	9.65E-07 J	9.65E-07 J	mg/kg	APSD01	1/1	N/A	9.65E-07	N/A	N/A	N/A	N/A	No	TEQ
	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	9.65E-08 J	9.65E-08 J	mg/kg	APSD01	1/1	N/A	9.65E-08	N/A	N/A	N/A	N/A	No	TEQ
	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	5.09E-07 B	5.09E-07 B	mg/kg	APSD01	1/1	N/A	5.09E-07	N/A	N/A	N/A	N/A	No	TEQ
	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.91E-07 J	1.91E-07 J	mg/kg	APSD01	1/1	N/A	1.91E-07	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzofuran	9.59E-05 J	9.59E-05 J	mg/kg	APSD01	1/1	N/A	9.59E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzo-p-dioxin	3.04E-04	3.04E-04	mg/kg	APSD01	1/1	N/A	3.04E-04	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzofuran	2.34E-05 J	2.34E-05 J	mg/kg	APSD01	1/1	N/A	2.34E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzo-p-dioxin	2.73E-05	2.73E-05	mg/kg	APSD01	1/1	N/A	2.73E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzofuran	5.80E-06 J	5.80E-06 J	mg/kg	APSD01	1/1	N/A	5.80E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzo-p-dioxin	3.27E-06 J	3.27E-06 J	mg/kg	APSD01	1/1	N/A	3.27E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Tetrachlorodibenzofuran	3.48E-06 J	3.48E-06 J	mg/kg	APSD01	1/1	N/A	3.48E-06	N/A	N/A	N/A	N/A	No	TEQ
	3268-87-9	Octachlorodibenzodioxin	2.18E-03	2.18E-03	mg/kg	APSD01	1/1	N/A	2.18E-03	N/A	N/A	N/A	N/A	No	TEQ
	39001-02-0	Octachlorodibenzofuran	1.15E-04	1.15E-04	mg/kg	APSD01	1/1	N/A	1.15E-04	N/A	N/A	N/A	N/A	No	TEQ
	11097-69-1	Aroclor 1254	4.20E-02 J	4.20E-02 J	mg/kg	APSD01	1/1	N/A	4.20E-02	N/A	1.10E+00 (N)	N/A	N/A	No	BSL
	11096-82-5	Aroclor 1260	4.18E-02 J	4.18E-02 J	mg/kg	APSD01	1/1	N/A	4.18E-02	N/A	2.20E+00 (C)	N/A	N/A	No	BSL
	56-55-3	Benzo(a)anthracene	1.62E-02 J	1.62E-02 J	mg/kg	APSD01	1/1	N/A	1.62E-02	N/A	1.50E+00 (C)	N/A	N/A	No	BSL
	50-32-8	Benzo(a)pyrene	1.80E-02 J	1.80E-02 J	mg/kg	APSD01	1/1	N/A	1.80E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	205-99-2	Benzo(b)fluoranthene	2.47E-02 J	2.47E-02 J	mg/kg	APSD01	1/1	N/A	2.47E-02	N/A	1.50E+00 (C)	N/A	N/A	No	BSL
	191-24-2	Benzo(g,h,i)perylene (5)	1.51E-02 J	1.51E-02 J	mg/kg	APSD01	1/1	N/A	1.51E-02	N/A	1.70E+03 (N)	N/A	N/A	No	BSL
	207-08-9	Benzo(k)fluoranthene	1.52E-02 J	1.52E-02 J	mg/kg	APSD01	1/1	N/A	1.52E-02	N/A	1.50E+01 (C)	N/A	N/A	No	BSL
	218-01-9	Chrysene	2.11E-02 J	2.11E-02 J	mg/kg	APSD01	1/1	N/A	2.11E-02	N/A	1.50E+02 (C)	N/A	N/A	No	BSL
	1918-00-9	Dicamba	1.45E-02 K	1.45E-02 K	mg/kg	APSD01	1/1	N/A	1.45E-02	N/A	1.80E+03 (N)	N/A	N/A	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	1.51E-02 J	1.51E-02 J	mg/kg	APSD01	1/1	N/A	1.51E-02	N/A	1.50E+00 (C)	N/A	N/A	No	BSL
	7429-90-5	Aluminum	8.30E+03	8.30E+03	mg/kg	APSD01	1/1	N/A	8.30E+03	N/A	7.70E+04 (N)	N/A	N/A	No	BSL
	7440-38-2	Arsenic	1.50E+00	1.50E+00	mg/kg	APSD01	1/1	N/A	1.50E+00	N/A	3.90E+00 (C)	N/A	N/A	No	BSL
	7440-39-3	Barium	1.32E+02	1.32E+02	mg/kg	APSD01	1/1	N/A	1.32E+02	N/A	1.50E+04 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	8.40E-01	8.40E-01	mg/kg	APSD01	1/1	N/A	8.40E-01	N/A	1.60E+02 (N)	N/A	N/A	No	BSL
	7440-43-9	Cadmium	6.40E-02 J	6.40E-02 J	mg/kg	APSD01	1/1	N/A	6.40E-02	N/A	7.00E+01 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	1.26E+03	1.26E+03	mg/kg	APSD01	1/1	N/A	1.26E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-47-3	Chromium (total)	1.34E+01	1.34E+01	mg/kg	APSD01	1/1	N/A	1.34E+01	N/A	2.80E+03 (C)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	1.01E+01	1.01E+01	mg/kg	APSD01	1/1	N/A	1.01E+01	N/A	2.30E+01 (N)	N/A	N/A	No	BSL

Table E.1-6
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Sediment - Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	7440-50-8	Copper	9.80E+00	9.80E+00	mg/kg	APSD01	1/1	N/A	9.80E+00	N/A	3.10E+03 (N)	N/A	N/A	No	BSL
	7439-89-6	Iron	1.95E+04	1.95E+04	mg/kg	APSD01	1/1	N/A	1.95E+04	N/A	5.50E+04 (N)	N/A	N/A	No	BSL
	7439-92-1	Lead	1.25E+02	1.25E+02	mg/kg	APSD01	1/1	N/A	1.25E+02	N/A	4.00E+02 (N)	N/A	N/A	No	BSL
	7439-95-4	Magnesium	1.81E+03	1.81E+03	mg/kg	APSD01	1/1	N/A	1.81E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7439-96-5	Manganese	1.47E+03	1.47E+03	mg/kg	APSD01	1/1	N/A	1.47E+03	N/A	1.80E+03 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	9.00E+00	9.00E+00	mg/kg	APSD01	1/1	N/A	9.00E+00	N/A	1.60E+03 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	1.06E+03	1.06E+03	mg/kg	APSD01	1/1	N/A	1.06E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7782-49-2	Selenium	6.40E+00 K	6.40E+00 K	mg/kg	APSD01	1/1	N/A	6.40E+00	N/A	3.90E+02 (N)	N/A	N/A	No	BSL
	7440-62-2	Vanadium (6)	1.91E+01	1.91E+01	mg/kg	APSD01	1/1	N/A	1.91E+01	N/A	3.90E+02 (N)	N/A	N/A	No	BSL
	7440-66-6	Zinc	5.04E+02	5.04E+02	mg/kg	APSD01	1/1	N/A	5.04E+02	N/A	2.30E+04 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1, then adjusted by a factor of 10 for sediment exposures.
See text for derivation of Nutrient RDAs.

(4) Rationale Codes Selection Reason: Toxicity Information Available (TX); Above Screening Levels (ASL); No Toxicity Information (NTX)
Deletion Reason: Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for pyrene was used as a surrogate.

(6) The screening value for vanadium and compounds was used.

Definitions: N/A = Not Applicable or Not Available; SQL = Sample Quantitation Limit; COPC = Chemical of Potential Concern; ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered; MCL = Federal Maximum Contaminant Level; SMCL = Secondary Maximum Contaminant Level; J = Estimated Value; C = Carcinogenic; N = Non-Carcinogenic; RDA = Recommended Daily Allowance

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran			mg/kg		0/1	5.61E-07 - 5.61E-07	5.61E-07	N/A	N/A	TEQ
	NA	Total Tetrachlorodibenzo-p-dioxin			mg/kg		0/1	1.30E-06 - 1.30E-06	1.30E-06	N/A	N/A	TEQ
Sediment	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.20E+03 (N)	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+00 (N)	No
	90-12-0	1-Methylnaphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	2.20E+02 (C)	No
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.60E+01 (N)	No
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.50E+02 (N)	No
	88-72-2	2-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.90E+01 (C)	No
	NA	3&4-Methylphenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.10E+02 (N)	No
	99-08-1	3-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.20E+03 (N)	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.50E+02 (N)	No
	99-99-0	4-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.40E+02 (N)	No
	100-51-6	Benzyl alcohol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.10E+04 (N)	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	7.80E+02 (N)	No
	121-82-4	Cyclonite			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	5.50E+01 (C)	No
	2691-41-0	HMX			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.80E+03 (N)	No
	NA	m+p-Xylenes			mg/kg		0/1	1.70E-02 - 1.70E-02	1.70E-02	N/A	6.00E+02 (N)	No
	55-63-0	Nitroglycerin			mg/kg		0/1	1.50E+00 - 1.50E+00	1.50E+00	N/A	6.10E+00 (N)	No
	95-47-6	o-Xylene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.30E+03 (N)	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/1	1.50E+00 - 1.50E+00	1.50E+00	N/A	N/A	NTX
	479-45-8	Tetryl			mg/kg		0/1	3.70E-01 - 3.70E-01	3.70E-01	N/A	2.40E+02 (N)	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.10E+02 (N)	No
	7440-36-0	Antimony			mg/kg		0/1	2.90E-01 - 2.90E-01	2.90E-01	N/A	3.10E+01 (N)	No
	7439-97-6	Mercury (4)			mg/kg		0/1	7.00E-03 - 7.00E-03	7.00E-03	N/A	7.80E+00 (N)	No
	7440-22-4	Silver			mg/kg		0/1	5.00E-02 - 5.00E-02	5.00E-02	N/A	3.90E+02 (N)	No
	7440-23-5	Sodium			mg/kg		0/1	4.60E+01 - 4.60E+01	4.60E+01	N/A	N/A	NTX
	7440-28-0	Thallium			mg/kg		0/1	6.50E+00 - 6.50E+00	6.50E+00	N/A	5.10E+00 (N)	Yes
	93-76-5	2,4,5-T			mg/kg		0/1	7.70E-03 - 7.70E-03	7.70E-03	N/A	6.10E+02 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/1	1.50E-02 - 1.50E-02	1.50E-02	N/A	4.90E+02 (N)	No
	94-75-7	2,4-D			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	N/A	6.90E+02 (N)	No
	94-82-6	2,4-DB			mg/kg		0/1	7.70E-02 - 7.70E-02	7.70E-02	N/A	4.90E+02 (N)	No
	72-54-8	4,4'-DDD			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	2.00E+01 (C)	No
	72-55-9	4,4'-DDE			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.40E+01 (C)	No
	50-29-3	4,4'-DDT			mg/kg		0/1	3.70E-02 - 3.70E-02	3.70E-02	N/A	1.70E+01 (C)	No
	309-00-2	Aldrin			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	2.90E-01 (C)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	319-84-6	alpha-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	7.70E-01 (C)	No
	5103-71-9	alpha-Chlordane (5)			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	1.60E+01 (C)	No
	319-85-7	beta-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	2.70E+00 (C)	No
	75-99-0	Dalapon			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	N/A	1.80E+03 (N)	No
	319-86-8	delta-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	5.20E+00 (C)	No
	120-36-5	Dichloroprop			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	3.00E-01 (C)	No
	959-98-8	Endosulfan I (6)			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	3.70E+02 (N)	No
	33213-65-9	Endosulfan II (6)			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	3.70E+02 (N)	No
	1031-07-8	Endosulfan sulfate (6)			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	3.70E+02 (N)	No
	72-20-8	Endrin			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.80E+01 (N)	No
	7421-93-4	Endrin aldehyde (7)			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.80E+01 (N)	No
	53494-70-5	Endrin ketone (7)			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.80E+01 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	5.20E+00 (C)	No
	5103-74-2	gamma-Chlordane (5)			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	1.60E+01 (C)	No
	76-44-8	Heptachlor			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	1.10E+00 (C)	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	N/A	5.30E-01 (C)	No
	94-74-6	MCPA			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.10E+01 (N)	No
	93-65-2	MCPP			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+01 (N)	No
	72-43-5	Methoxychlor			mg/kg		0/1	3.70E-02 - 3.70E-02	3.70E-02	N/A	3.10E+02 (N)	No
	8001-35-2	Toxaphene			mg/kg		0/1	4.70E-01 - 4.70E-01	4.70E-01	N/A	4.40E+00 (C)	No
	12674-11-2	Aroclor 1016			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	3.90E+00 (N)	No
	11104-28-2	Aroclor 1221			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.70E+00 (C)	No
	11141-16-5	Aroclor 1232			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	1.70E+00 (C)	No
	53469-21-9	Aroclor 1242			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	2.20E+00 (C)	No
	12672-29-6	Aroclor 1248			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	N/A	2.20E+00 (C)	No
	131-11-3	Dimethylphthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	N/A	NTX
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	8.70E+01 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.00E+03 (N)	No
	541-73-1	1,3-Dichlorobenzene (8)			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.60E+01 (C)	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	2.60E+01 (C)	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+03 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+01 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.80E+02 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.20E+03 (N)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	51-28-5	2,4-Dinitrophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	N/A	1.20E+02 (N)	No
	121-14-2	2,4-Dinitrotoluene (9)			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	7.10E+00 (C)	No
	606-20-2	2,6-Dinitrotoluene (9)			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	7.10E+00 (C)	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.30E+03 (N)	No
	95-57-8	2-Chlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.90E+02 (N)	No
	91-57-6	2-Methylnaphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	3.10E+02 (N)	No
	88-74-4	2-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/1	7.70E-03 - 7.70E-03	7.70E-03	N/A	6.10E+01 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	1.10E+01 (C)	No
	99-09-2	3-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	1.80E+01 (N)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	6.10E+00 (N)	No
	100-01-6	4-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	1.80E+02 (N)	No
	100-02-7	4-Nitrophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	N/A	N/A	NTX
	83-32-9	Acenaphthene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	3.40E+03 (N)	No
	208-96-8	Acenaphthylene (10)			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	1.70E+03 (N)	No
	120-12-7	Anthracene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	1.70E+04 (N)	No
	65-85-0	Benzoic Acid			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	N/A	2.40E+05 (N)	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.80E+02 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.90E+00 (C)	No
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.50E+01 (C)	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	3.50E+02 (C)	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	2.60E+03 (C)	No
	86-74-8	Carbazole			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/1	6.00E-02 - 6.00E-02	6.00E-02	N/A	1.50E-01 (C)	No
	132-64-9	Dibenzofuran			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	84-66-2	Diethyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	4.90E+04 (N)	No
	84-74-2	Di-n-butyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	6.10E+03 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	N/A	NTX
	206-44-0	Fluoranthene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	2.30E+03 (N)	No
	86-73-7	Fluorene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	2.30E+03 (N)	No
	118-74-1	Hexachlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.00E+00 (C)	No
	87-68-3	Hexachlorobutadiene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+01 (N)	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.70E+02 (N)	No
	67-72-1	Hexachloroethane			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.10E+01 (N)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	78-59-1	Isophorone			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	5.10E+03 (C)	No
	91-20-3	Naphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	3.90E+01 (C)	No
	98-95-3	Nitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.10E+01 (N)	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	6.90E-01 (C)	No
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	9.90E+02 (C)	No
	95-48-7	o-Cresol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	3.10E+03 (N)	No
	106-47-8	p-Chloroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	N/A	9.00E+01 (C)	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	N/A	3.00E+01 (C)	No
	85-01-8	Phenanthrene (10)			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	1.70E+03 (N)	No
	108-95-2	Phenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	1.80E+04 (N)	No
	129-00-0	Pyrene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	N/A	1.70E+03 (N)	No
	71-55-6	1,1,1-Trichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	9.00E+03 (N)	No
	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.90E+00 (C)	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.10E+01 (C)	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	3.40E+01 (C)	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	2.50E+02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	4.50E+00 (C)	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	9.30E+00 (C)	No
	78-93-3	2-Butanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	N/A	2.80E+04 (N)	No
	591-78-6	2-Hexanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	N/A	N/A	NTX
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	N/A	5.30E+03 (N)	No
	67-64-1	Acetone			mg/kg		0/1	8.30E-02 - 8.30E-02	8.30E-02	N/A	6.10E+04 (N)	No
	71-43-2	Benzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.10E+01 (C)	No
	75-27-4	Bromodichloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.00E+02 (C)	No
	74-83-9	Bromomethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	7.90E+00 (N)	No
	75-15-0	Carbon disulfide			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	6.70E+02 (N)	No
	56-23-5	Carbon tetrachloride			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	2.50E+00 (C)	No
	108-90-7	Chlorobenzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	3.10E+02 (N)	No
	75-00-3	Chloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.50E+04 (N)	No
	67-66-3	Chloroform			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	3.00E+00 (C)	No
	74-87-3	Chloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.70E+01 (C)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.70E+01 (C)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	124-48-1	Dibromochloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.80E+01 (C)	No
	100-41-4	Ethylbenzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.70E+01 (C)	No
	75-09-2	Methylene chloride			mg/kg		0/1	1.70E-02 - 1.70E-02	1.70E-02	N/A	1.10E+02 (C)	No
	100-42-5	Styrene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	6.50E+03 (N)	No
	127-18-4	Tetrachloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.70E+00 (C)	No
	108-88-3	Toluene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	5.00E+03 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	1.70E+01 (C)	No
	75-25-2	Tribromomethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	6.10E+02 (C)	No
	79-01-6	Trichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	2.80E+01 (C)	No
	75-01-4	Vinyl Chloride			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	N/A	6.00E-01 (C)	No

(1) Maximum concentration used for screening.
(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.
(3) Screening toxicity values from USEPA Regional Screening Level Table (September 2008) and.
based on a risk level of 1.0E-06 and a hazard index of 0.1, then adjusted by a factor of 10 for sediment exposures.
See text for derivation of Nutrient RDAs.
(4) The screening value for methyl mercury was used.
(5) The screening value for chlordane was used.
(6) The screening value for endosulfan was used.
(7) The screening value for endrin was used.
(8) The screening value for 1,4-dichlorobenzene was used.
(9) The screening value for dinitrotoluene mixture was used.
(10) The screening value for pyrene was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-8a
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Radford Army Ammunition Plant, Area P - Unfiltered Groundwater

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Unfiltered Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	67-66-3	Chloroform	7.10E-04 J	1.90E-03	mg/l	APGW04	4/4	N/A	1.90E-03	N/A	1.90E-04 (C)	N/A	N/A	Yes	ASL
Unfiltered	127-18-4	Tetrachloroethene	1.30E-03	2.00E-03	mg/l	APGW02	4/4	N/A	2.00E-03	N/A	1.10E-04 (C)	N/A	N/A	Yes	ASL
Groundwater	7429-90-5	Aluminum	2.81E+01	9.31E+01	mg/l	APGW03	4/4	N/A	9.31E+01	N/A	3.70E+00 (N)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	4.04E-01	1.15E+00	mg/l	APGW03	4/4	N/A	1.15E+00	N/A	7.30E-01 (N)	N/A	N/A	Yes	ASL
	7440-70-2	Calcium	4.59E+01	5.93E+01	mg/l	APGW02	4/4	N/A	5.93E+01	N/A	N/A	5.00E+02	RDA	No	BSL
	7440-47-3	Chromium VI	7.24E-02 K	2.34E-01 K	mg/l	APGW03	4/4	N/A	2.34E-01	N/A	1.10E-02 (N)	N/A	N/A	Yes	ASL
	7440-48-4	Cobalt	2.05E-02 J	6.27E-02	mg/l	APGW03	4/4	N/A	6.27E-02	N/A	1.10E-03 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	2.82E-02	1.24E-01	mg/l	APGW03	4/4	N/A	1.24E-01	N/A	1.50E-01 (N)	N/A	N/A	No	BSL
	7439-89-6	Iron	3.72E+01	1.29E+02	mg/l	APGW03	4/4	N/A	1.29E+02	N/A	2.60E+00 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	2.13E-02	5.58E-01	mg/l	APGW03	4/4	N/A	5.58E-01	N/A	N/A	1.50E-02	MCL	Yes	ASL
	7439-95-4	Magnesium	2.13E+01	3.86E+01	mg/l	APGW03	4/4	N/A	3.86E+01	N/A	N/A	1.75E+02	RDA	No	BSL
	7439-96-5	Manganese	5.45E-01	2.60E+00	mg/l	APGW03	4/4	N/A	2.60E+00	N/A	8.80E-02 (N)	N/A	N/A	Yes	ASL
	7439-97-6	Mercury (5)	1.80E-04 J	2.10E-04 J	mg/l	APGW03	2/4	1.10E-04 - 1.10E-04	2.10E-04	N/A	1.10E-03 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	4.04E-02	1.43E-01	mg/l	APGW03	4/4	N/A	1.43E-01	N/A	7.30E-02 (N)	N/A	N/A	Yes	ASL
	7440-09-7	Potassium	4.52E+00 J	1.19E+01	mg/l	APGW03	4/4	N/A	1.19E+01	N/A	N/A	1.00E+03	RDA	No	BSL
	7782-49-2	Selenium	4.20E-03 J	7.10E-03	mg/l	APGW03	3/4	4.00E-03 - 4.00E-03	7.10E-03	N/A	1.80E-02 (N)	N/A	N/A	No	BSL
	7440-22-4	Silver	8.80E-04 J	1.30E-03 J	mg/l	APGW05	4/4	N/A	1.30E-03	N/A	1.80E-02 (N)	N/A	N/A	No	BSL
	7440-23-5	Sodium	6.93E+00 K	8.77E+00 K	mg/l	APGW03	4/4	N/A	8.77E+00	N/A	N/A	2.00E+01	RDA	No	BSL
	7440-62-2	Vanadium (6)	4.84E-02 J	1.63E-01	mg/l	APGW03	4/4	N/A	1.63E-01	N/A	1.80E-02 (N)	N/A	N/A	Yes	ASL
	7440-66-6	Zinc	1.66E-01	8.73E-01	mg/l	APGW03	4/4	N/A	8.73E-01	N/A	1.10E+00 (N)	N/A	N/A	No	BSL
	14797-73-0	Perchlorate	3.27E-04	3.90E-04	mg/l	APGW05	4/4	N/A	3.90E-04	N/A	2.60E-03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
See text for derivation of Nutrient RDAs.

(4) Rationale Codes Selection Reason: Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)

Deletion Reason: Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for mercury, inorganics salts was used.

(6) The screening value for vanadium and compounds was used.

Definitions: N/A = Not Applicable or Not Available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J, K = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-8b
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Radford Army Ammunition Plant, Area P - Filtered Groundwater

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Filtered Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Filtered Groundwater	7429-90-5	Aluminum	2.18E+00	6.16E+00	mg/L	APGW02-Diss	3/4	7.90E-02 - 7.90E-02	6.16E+00	N/A	3.70E+00 (N)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	5.52E-02 J	9.71E-02 J	mg/L	APGW02-Diss	4/4	N/A	9.71E-02	N/A	7.30E-01 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	3.75E+01 J	4.41E+01 J	mg/L	APGW05-Diss	4/4	N/A	4.41E+01	N/A	N/A	5.00E+02	RDA	No	BSL
	7440-47-3	Chromium	2.60E-03 J	1.10E-02	mg/L	APGW04-Diss	4/4	N/A	1.10E-02	N/A	1.10E-02 (N)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	1.10E-03 J	4.60E-03 J	mg/L	APGW02-Diss	3/4	1.00E-03 - 1.00E-03	4.60E-03	N/A	1.10E-03 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	3.80E-03 J	3.80E-03 J	mg/L	APGW02-Diss	1/4	1.20E-03 - 1.20E-03	3.80E-03	N/A	1.50E-01 (N)	N/A	N/A	No	BSL
	7439-89-6	Iron	1.45E+00	8.27E+00	mg/L	APGW02-Diss	3/4	1.50E-02 - 1.50E-02	8.27E+00	N/A	2.60E+00 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	4.40E-03 J	4.40E-03 J	mg/L	APGW02-Diss	1/4	2.10E-03 - 2.10E-03	4.40E-03	N/A	N/A	1.50E-02	MCL	No	BSL
	7439-95-4	Magnesium	1.50E+01	1.61E+01	mg/L	APGW04-Diss	4/4	N/A	1.61E+01	N/A	N/A	1.75E+02	RDA	No	BSL
	7439-96-5	Manganese	2.70E-02	1.97E-01	mg/L	APGW02-Diss	4/4	N/A	1.97E-01	N/A	8.80E-02 (N)	N/A	N/A	Yes	ASL
	7440-02-0	Nickel	2.70E-03 J	6.70E-03 J	mg/L	APGW02-Diss	3/4	1.00E-03 - 1.00E-03	6.70E-03	N/A	7.30E-02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	2.44E+00 J	3.26E+00 J	mg/L	APGW02-Diss	4/4	N/A	3.26E+00	N/A	N/A	1.00E+03	RDA	No	BSL
	7440-23-5	Sodium	6.70E+00 J	7.14E+00 J	mg/L	APGW04-Diss	4/4	N/A	7.14E+00	N/A	N/A	2.00E+01	RDA	No	BSL
	7440-62-2	Vanadium	3.50E-03 J	1.47E-02 J	mg/L	APGW02-Diss	3/4	1.10E-03 - 1.10E-03	1.47E-02	N/A	1.80E-02 (N)	N/A	N/A	No	BSL
	7440-66-6	Zinc	6.70E-03 J	2.10E-02	mg/L	APGW02-Diss	3/4	5.00E-03 - 5.00E-03	2.10E-02	N/A	1.10E+00 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
See text for derivation of Nutrient RDAs.

(4) Rationale Codes Selection Reason: Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)

Deletion Reason: Below or Equal to Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for mercury, inorganics salts was used.

(6) The screening value for vanadium and compounds was used.

Definitions: N/A = Not Applicable or Not Available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J, K = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at Area P

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	99-35-4	1,3,5-Trinitrobenzene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	1.10E-01 (N)	No
Groundwater	99-65-0	1,3-Dinitrobenzene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	3.70E-04 (N)	No
	90-12-0	1-Methylnaphthalene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	2.30E-03 (C)	No
	118-96-7	2,4,6-Trinitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	1.80E-03 (N)	No
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	7.30E-03 (N)	No
	88-72-2	2-Nitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	3.10E-04 (C)	No
	NA	3&4-Methylphenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.80E-02 (N)	No
	99-08-1	3-Nitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	7.30E-02 (N)	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	7.30E-03 (N)	No
	99-99-0	4-Nitrotoluene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	4.20E-03 (C)	No
	100-51-6	Benzyl alcohol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.80E+00 (N)	No
	156-59-2	cis-1,2-Dichloroethene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.70E-02 (N)	No
	121-82-4	Cyclonite			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	6.10E-04 (C)	No
	2691-41-0	HMX			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	1.80E-01 (N)	No
	NA	m+p-Xylenes			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.00E-02 (N)	No
	55-63-0	Nitroglycerin			mg/l		0/4	2.10E-03 - 2.60E-03	2.60E-03	N/A	3.70E-04 (N)	Yes
	95-47-6	o-Xylene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.40E-01 (N)	No
	78-11-5	Pentaerythritol tetranitrate			mg/l		0/4	2.10E-03 - 2.60E-03	2.60E-03	N/A	N/A	NTX
	479-45-8	Tetryl			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	1.50E-02 (N)	No
	156-60-5	trans-1,2-Dichloroethene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.10E-02 (N)	No
	7440-36-0	Antimony			mg/l		0/4	6.60E-03 - 6.60E-03	6.60E-03	N/A	1.50E-03 (N)	Yes
	7440-38-2	Arsenic			mg/l		0/4	3.70E-03 - 3.70E-03	3.70E-03	N/A	4.50E-05 (C)	Yes
	7440-41-7	Beryllium			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	7.30E-03 (N)	No
	7440-43-9	Cadmium			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.80E-03 (N)	No
	7440-28-0	Thallium			mg/l		0/4	6.50E-03 - 6.50E-03	6.50E-03	N/A	2.40E-04 (N)	Yes
	93-76-5	2,4,5-T			mg/l		0/4	2.20E-04 - 2.80E-04	2.80E-04	N/A	3.70E-02 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/l		0/4	2.20E-04 - 2.80E-04	2.80E-04	N/A	2.90E-02 (N)	No
	94-75-7	2,4-D			mg/l		0/4	1.70E-03 - 2.10E-03	2.10E-03	N/A	3.70E-02 (N)	No
	94-82-6	2,4-DB			mg/l		0/4	2.20E-03 - 2.80E-03	2.80E-03	N/A	2.90E-02 (N)	No
	72-54-8	4,4'-DDD			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	2.80E-04 (C)	No
	72-55-9	4,4'-DDE			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	2.00E-04 (C)	No
	50-29-3	4,4'-DDT			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	2.00E-04 (C)	No
	309-00-2	Aldrin			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	4.00E-06 (C)	Yes
	319-84-6	alpha-BHC			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	1.10E-05 (C)	Yes
	5103-71-9	alpha-Chlordane (4)			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	1.90E-04 (C)	No
	319-85-7	beta-BHC			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	3.70E-05 (C)	Yes

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at Area P

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	75-99-0	Dalapon			mg/l		0/4	1.10E-03 - 1.40E-03	1.40E-03	N/A	1.10E-01 (N)	No
	319-86-8	delta-BHC			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	6.10E-05 (C)	No
	1918-00-9	Dicamba			mg/l		0/4	2.20E-04 - 2.80E-04	2.80E-04	N/A	1.10E-01 (N)	No
	120-36-5	Dichloroprop			mg/l		0/4	1.10E-03 - 1.40E-03	1.40E-03	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	4.20E-06 (C)	Yes
	959-98-8	Endosulfan I (5)			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	2.20E-02 (N)	No
	33213-65-9	Endosulfan II (5)			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	2.20E-02 (N)	No
	1031-07-8	Endosulfan sulfate (5)			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	2.20E-02 (N)	No
	72-20-8	Endrin			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	1.10E-03 (N)	No
	7421-93-4	Endrin aldehyde (6)			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	1.10E-03 (N)	No
	53494-70-5	Endrin ketone (6)			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	1.10E-03 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	6.10E-05 (C)	No
	5103-74-2	gamma-Chlordane (4)			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	1.90E-04 (C)	No
	76-44-8	Heptachlor			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	1.50E-05 (C)	Yes
	1024-57-3	Heptachlor epoxide			mg/l		0/4	5.30E-05 - 5.30E-05	5.30E-05	N/A	7.40E-06 (C)	Yes
	94-74-6	MCPA			mg/l		0/4	5.60E-02 - 7.00E-02	7.00E-02	N/A	1.80E-03 (N)	Yes
	93-65-2	MCPP			mg/l		0/4	5.60E-02 - 7.00E-02	7.00E-02	N/A	3.70E-03 (N)	Yes
	72-43-5	Methoxychlor			mg/l		0/4	1.10E-04 - 1.10E-04	1.10E-04	N/A	1.80E-02 (N)	No
	8001-35-2	Toxaphene			mg/l		0/4	2.60E-03 - 2.60E-03	2.60E-03	N/A	6.10E-05 (C)	Yes
	12674-11-2	Aroclor 1016			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	2.60E-04 (N)	Yes
	11104-28-2	Aroclor 1221			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	6.80E-06 (C)	Yes
	11141-16-5	Aroclor 1232			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	6.80E-06 (C)	Yes
	53469-21-9	Aroclor 1242			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	3.40E-05 (C)	Yes
	12672-29-6	Aroclor 1248			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	3.40E-05 (C)	Yes
	11097-69-1	Aroclor 1254			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	3.40E-05 (C)	Yes
	11096-82-5	Aroclor 1260			mg/l		0/4	5.30E-04 - 5.30E-04	5.30E-04	N/A	3.40E-05 (C)	Yes
	131-11-3	Dimethylphthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	120-82-1	1,2,4-Trichlorobenzene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	8.20E-04 (N)	Yes
	95-50-1	1,2-Dichlorobenzene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.70E-02 (N)	No
	541-73-1	1,3-Dichlorobenzene (7)			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	4.30E-04 (C)	Yes
	106-46-7	1,4-Dichlorobenzene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	4.30E-04 (C)	Yes
	95-95-4	2,4,5-Trichlorophenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.70E-01 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.70E-03 (N)	Yes
	120-83-2	2,4-Dichlorophenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.10E-02 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	7.30E-02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/l		0/4	2.50E-02 - 2.60E-02	2.60E-02	N/A	7.30E-03 (N)	Yes

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at Area P

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	121-14-2	2,4-Dinitrotoluene (8)			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	9.90E-05 (C)	Yes
	606-20-2	2,6-Dinitrotoluene (8)			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	9.90E-05 (C)	Yes
	91-58-7	2-Chloronaphthalene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	2.90E-01 (N)	No
	95-57-8	2-Chlorophenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.80E-02 (N)	No
	91-57-6	2-Methylnaphthalene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.50E-02 (N)	No
	88-74-4	2-Nitroaniline			mg/l		0/4	1.00E-02 - 1.10E-02	1.10E-02	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/l		0/4	2.20E-04 - 2.80E-04	2.80E-04	N/A	3.70E-03 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/l		0/4	1.00E-02 - 1.10E-02	1.10E-02	N/A	1.50E-04 (C)	Yes
	99-09-2	3-Nitroaniline			mg/l		0/4	1.00E-02 - 1.10E-02	1.10E-02	N/A	1.10E-03 (N)	Yes
	534-52-1	4,6-Dinitro-o-cresol			mg/l		0/4	1.00E-02 - 1.10E-02	1.10E-02	N/A	3.70E-04 (N)	Yes
	100-01-6	4-Nitroaniline			mg/l		0/4	1.00E-02 - 1.10E-02	1.10E-02	N/A	3.20E-03 (C)	Yes
	100-02-7	4-Nitrophenol			mg/l		0/4	2.50E-02 - 2.60E-02	2.60E-02	N/A	N/A	NTX
	83-32-9	Acenaphthene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	2.20E-01 (N)	No
	208-96-8	Acenaphthylene (9)			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.10E-01 (N)	No
	120-12-7	Anthracene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.10E+00 (N)	No
	56-55-3	Benzo(a)anthracene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-05 (C)	Yes
	50-32-8	Benzo(a)pyrene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-06 (C)	Yes
	205-99-2	Benzo(b)fluoranthene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-05 (C)	Yes
	191-24-2	Benzo(g,h,i)perylene (9)			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	1.10E-01 (N)	No
	207-08-9	Benzo(k)fluoranthene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-04 (C)	No
	65-85-0	Benzoic Acid			mg/l		0/4	2.50E-02 - 2.60E-02	2.60E-02	N/A	1.50E+01 (N)	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.10E-02 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.20E-05 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.20E-04 (C)	Yes
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	4.80E-03 (C)	Yes
	85-68-7	Butyl benzyl phthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.50E-02 (C)	No
	86-74-8	Carbazole			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	218-01-9	Chrysene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-03 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-06 (C)	Yes
	132-64-9	Dibenzofuran			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	84-66-2	Diethyl phthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	2.90E+00 (N)	No
	84-74-2	Di-n-butyl phthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.70E-01 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	206-44-0	Fluoranthene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.50E-01 (N)	No
	86-73-7	Fluorene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.50E-01 (N)	No

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at Area P

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	118-74-1	Hexachlorobenzene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	4.20E-05 (C)	Yes
	87-68-3	Hexachlorobutadiene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	8.60E-04 (C)	Yes
	77-47-4	Hexachlorocyclopentadiene			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	2.20E-02 (N)	No
	67-72-1	Hexachloroethane			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	3.70E-03 (N)	Yes
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/l		0/4	2.00E-04 - 2.10E-04	2.10E-04	N/A	2.90E-05 (C)	Yes
	78-59-1	Isophorone			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	7.10E-02 (C)	No
	91-20-3	Naphthalene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.40E-04 (C)	Yes
	98-95-3	Nitrobenzene			mg/l		0/4	2.10E-04 - 2.60E-04	2.60E-04	N/A	3.40E-04 (N)	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	9.60E-06 (C)	Yes
	86-30-6	n-Nitrosodiphenylamine			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.40E-02 (C)	No
	95-48-7	o-Cresol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.80E-01 (N)	No
	106-47-8	p-Chloroaniline			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.20E-03 (C)	Yes
	59-50-7	p-Chloro-m-cresol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/l		0/10	5.60E-05 - 2.60E-02	2.60E-02	N/A	5.60E-04 (C)	Yes
	85-01-8	Phenanthrene (9)			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.10E-01 (N)	No
	108-95-2	Phenol			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	1.10E+00 (N)	No
	129-00-0	Pyrene			mg/l		0/4	1.00E-03 - 1.10E-03	1.10E-03	N/A	1.10E-01 (N)	No
	71-55-6	1,1,1-Trichloroethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	9.10E-01 (N)	No
	79-34-5	1,1,2,2-Tetrachloroethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	6.70E-05 (C)	Yes
	79-00-5	1,1,2-Trichloroethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.40E-04 (C)	Yes
	75-34-3	1,1-Dichloroethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.40E-03 (C)	No
	75-35-4	1,1-Dichloroethene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.40E-02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.50E-04 (C)	Yes
	78-87-5	1,2-Dichloropropane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.90E-04 (C)	Yes
	78-93-3	2-Butanone			mg/l		0/4	5.00E-03 - 5.00E-03	5.00E-03	N/A	7.10E-01 (N)	No
	591-78-6	2-Hexanone			mg/l		0/4	1.00E-02 - 1.00E-02	1.00E-02	N/A	N/A	NTX
	101-55-3	4-Bromophenyl phenylether			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/l		0/4	5.00E-03 - 5.30E-03	5.30E-03	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/l		0/4	5.00E-03 - 5.00E-03	5.00E-03	N/A	2.00E-01 (N)	No
	67-64-1	Acetone			mg/l		0/4	2.50E-02 - 2.50E-02	2.50E-02	N/A	2.20E+00 (N)	No
	71-43-2	Benzene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.10E-04 (C)	Yes
	75-27-4	Bromodichloromethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.10E-03 (C)	No
	74-83-9	Bromomethane			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	8.70E-04 (N)	Yes
	75-15-0	Carbon disulfide			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	1.00E-01 (N)	No
	56-23-5	Carbon tetrachloride			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.00E-04 (C)	Yes
	108-90-7	Chlorobenzene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	9.10E-03 (N)	No

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at Area P

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	75-00-3	Chloroethane			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.10E+00 (N)	No
	74-87-3	Chloromethane			mg/l		0/4	2.00E-03 - 2.00E-03	2.00E-03	N/A	1.80E-03 (C)	Yes
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.30E-04 (C)	Yes
	124-48-1	Dibromochloromethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	8.00E-04 (C)	Yes
	100-41-4	Ethylbenzene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.50E-03 (C)	No
	75-09-2	Methylene chloride			mg/l		0/4	5.00E-03 - 5.00E-03	5.00E-03	N/A	4.80E-03 (C)	Yes
	100-42-5	Styrene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.60E-01 (N)	No
	108-88-3	Toluene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.30E-01 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.30E-04 (C)	Yes
	75-25-2	Tribromomethane			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	8.50E-03 (C)	No
	79-01-6	Trichloroethene			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.70E-03 (C)	No
	75-01-4	Vinyl Chloride			mg/l		0/4	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.60E-05 (C)	Yes

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
See text for derivation of Nutrient RDAs.

(4) The screening value for chlordane was used.

(5) The screening value for endosulfan was used.

(6) The screening value for endrin was used.

(7) The screening value for 1,4-dichlorobenzene was used.

(8) The screening value for dinitrotoluene mixture was used.

(9) The screening value for pyrene was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-10
Medium-Specific Exposure Point Concentration Summary for Area P Surface Soil

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Surface Soil	Aroclor 1254	mg/kg	2.22E-01	N/A	N/A	4.03E-01	4.03E-01	mg/kg	Max	Test (7)
	Aluminum	mg/kg	9.34E+03	No	1.13E+04 (N)	1.32E+04	1.13E+04	mg/kg	95% Student's-t	Test (4)
	Antimony [5]	mg/kg	1.05E+01	N/A	3.83E+00 (NP)	1.05E+01	3.83E+00	mg/kg	95% UCL-Bst	Test (8)
	Arsenic	mg/kg	2.07E+00	No	2.70E+00 (N)	4.30E+00	2.70E+00	mg/kg	95% Student's-t	Test (4)
	Cobalt	mg/kg	7.99E+00	No	9.87E+00 (N)	1.26E+01	9.87E+00	mg/kg	95% Student's-t	Test (4)
	Copper	mg/kg	6.75E+01	No	1.64E+02 (G)	3.47E+02	1.64E+02	mg/kg	95% Approx. Gamma	Test (6)
	Iron	mg/kg	1.57E+04	No	1.95E+04 (N)	2.49E+04	1.95E+04	mg/kg	95% Student's-t	Test (4)
	Manganese	mg/kg	6.02E+02	No	8.28E+02 (N)	1.24E+03	8.28E+02	mg/kg	95% Student's-t	Test (4)
	Vanadium	mg/kg	2.41E+01	No	3.04E+01 (N)	4.14E+01	3.04E+01	mg/kg	95% Student's-t	Test (4)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM (t) (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

[5] Infrequent detection resulted in ProUCL modeling error for this constituent, therefore the distribution was assumed to be non-parametric and the UCL was determined using a non-ProUCL bootstrap method with random numbers for NDs (see text for details).

Table E.1-11
Medium-Specific Exposure Point Concentration Summary for Area P Total Soil

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Total Soil	Aroclor 1254 [5]	mg/kg	2.22E-01	N/A	9.10E-02 (NP)	4.03E-01	9.10E-02	mg/kg	95% UCL-Bst	Test (8)
	Aluminum	mg/kg	1.00E+04	No	1.17E+04 (N)	1.82E+04	1.17E+04	mg/kg	95% Student's-t	Test (4)
	Antimony [5]	mg/kg	1.05E+01	N/A	3.05E+00 (NP)	1.05E+01	3.05E+00	mg/kg	95% UCL-Bst	Test (8)
	Arsenic	mg/kg	1.65E+00	No	2.04E+00 (G)	4.30E+00	2.04E+00	mg/kg	95% Approx. Gamma	Test (6)
	Cobalt	mg/kg	8.19E+00	No	9.45E+00 (N)	1.35E+01	9.45E+00	mg/kg	95% Student's-t	Test (4)
	Copper	mg/kg	4.36E+01	No	9.16E+01 (L)	3.47E+02	9.16E+01	mg/kg	95% Cheby-MVUE	Test (5)
	Iron	mg/kg	1.60E+04	No	1.87E+04 (N)	2.75E+04	1.87E+04	mg/kg	95% Student's-t	Test (4)
	Manganese	mg/kg	4.88E+02	No	6.36E+02 (G)	1.24E+03	6.36E+02	mg/kg	95% Approx. Gamma	Test (6)
	Vanadium	mg/kg	2.60E+01	No	3.20E+01 (G)	4.98E+01	3.20E+01	mg/kg	95% Approx. Gamma	Test (6)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

[5] Infrequent detection resulted in ProUCL modeling error for this constituent, therefore the distribution was assumed to be non-parametric and the UCL was determined using a non-ProUCL bootstrap method with random numbers for NDs (see text for details).

Table E.1-12
Medium-Specific Exposure Point Concentration Summary for Area P Sediment

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Sediment	No COPCs									

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

Table E.1-13a
Medium-Specific Exposure Point Concentration Summary for Area P Unfiltered Groundwater

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Unfiltered Groundwater	Chloroform	mg/l	1.35E-03	N/A	N/A	1.90E-03	1.90E-03	mg/l	Max	Test (7)
	Tetrachloroethene	mg/l	1.52E-03	N/A	N/A	2.00E-03	2.00E-03	mg/l	Max	Test (7)
	Aluminum [5]	mg/l	5.16E+01	N/A	N/A	9.31E+01	9.31E+01	mg/l	Max	Test (7)
	Barium [5]	mg/l	6.64E-01	N/A	N/A	1.15E+00	1.15E+00	mg/l	Max	Test (7)
	Chromium [5]	mg/l	1.28E-01	N/A	N/A	2.34E-01	2.34E-01	mg/l	Max	Test (7)
	Cobalt [5]	mg/l	3.58E-02	N/A	N/A	6.27E-02	6.27E-02	mg/l	Max	Test (7)
	Iron [5]	mg/l	6.70E+01	N/A	N/A	1.29E+02	1.29E+02	mg/l	Max	Test (7)
	Lead [5]	mg/l	1.63E-01	N/A	N/A	5.58E-01	5.58E-01	mg/l	Max	Test (7)
	Manganese [5]	mg/l	1.41E+00	N/A	N/A	2.60E+00	2.60E+00	mg/l	Max	Test (7)
	Nickel [5]	mg/l	7.32E-02	N/A	N/A	1.43E-01	1.43E-01	mg/l	Max	Test (7)
	Vanadium [5]	mg/l	9.54E-02	N/A	N/A	1.63E-01	1.63E-01	mg/l	Max	Test (7)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

[5] Exposure point concentrations (EPCs) for metals in unfiltered groundwater are shown for comparison purposes only. Due to high turbidity in unfiltered samples, EPCs for metals are based on filtered groundwater samples in the HHRA.

Table E.1-13b
Medium-Specific Exposure Point Concentration Summary for Area P Filtered Groundwater

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Filtered Groundwater	Aluminum [5]	mg/l	5.16E+01	N/A	N/A	6.16E+00	6.16E+00	mg/l	Max	Test (7)
	Cobalt [5]	mg/l	3.58E-02	N/A	N/A	4.60E-03	4.60E-03	mg/l	Max	Test (7)
	Iron [5]	mg/l	6.70E+01	N/A	N/A	8.27E+00	8.27E+00	mg/l	Max	Test (7)
	Manganese [5]	mg/l	1.41E+00	N/A	N/A	1.97E-01	1.97E-01	mg/l	Max	Test (7)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

[5] Due to high turbidity in unfiltered samples, EPCs for metals are based on filtered samples in the HHRA.

Table E.1-14
Values Used for Daily Intake Calculations- Current/Future Exposures to Surface Soil
Area P

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	50	days/year	(1)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	50	days/year	(1)	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Best professional judgement. Based on site maintenance/inspection activities conducted 1day/week and assuming 2 weeks on vacation.
(2) Dermal absorption factors are presented in **Table E.1-25**.
(3) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to surface soil.

USEPA, 1995: Assessing Dermal Exposure from Soil Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.

Table E.1-15
Values Used for Daily Intake Calculations- Future Exposures to Total Soil
Area P

Scenario Timeframe:	Future
Medium:	Total Soil
Exposure Medium:	Total Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	50	days/year	(1)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Excavation Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	330	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	125	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a	
				ED_c	Exposure Duration	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	200	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2001	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	50	days/year	(1)	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

Table E.1-15
Values Used for Daily Intake Calculations- Future Exposures to Total Soil
Area P

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal Absorption (con't)	Excavation Worker	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm^2-day	USEPA, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	125	days/year	USEPA, 2002	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	1	years	USEPA, 2002	BW x AT x CF2
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	USEPA, 1997, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700 (4)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	30	years	USEPA, 1991a	BW x AT x CF2
				ED$_c$	Exposure Duration	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800 (5)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	6	years	USEPA, 1991a	BW x AT x CF2
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Best professional judgement. Based on site maintenance/inspection activities conducted 1day/week and assuming 2 weeks on vacation.
(2) Dermal absorption factors are presented in **Table E.1-25**.
(3) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to soil.
(4) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, forearms, and lower legs are exposed to soil.
(5) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, forearms, lower legs, and feet are exposed to soil.

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 1995: Assessing Dermal Exposure from Soil. Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.

Table E.1-16
Values Used for Daily Intake Calculations- Current/Future Exposures to Surface Soil- Air
Area P

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates)	Maintenance Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	50	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
Inhalation (Volatiles)	Maintenance Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	50	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-17
Values Used for Daily Intake Calculations- Future Exposures to Total Soil - Air
Area P

Scenario Timeframe:	Future
Medium:	Total Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates and Volatiles)	Maintenance Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) =
				FI	Fraction Inhaled	1	unitless	--	$\frac{CA*FI*EF*ED}{AT}$
				EF	Exposure Frequency	50	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
	Excavation Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) =
				FI	Fraction Inhaled	1	unitless	--	$\frac{CA*FI*EF*ED}{AT}$
				EF	Exposure Frequency	125	days/year	USEPA, 2002	
				ED	Exposure Duration	1	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	Based on ED	
	Resident	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1	unitless	--	Intake concentration (mg/m^3) =
				EF	Exposure Frequency	350	days/year	USEPA, 2002	$\frac{CA*FI*EF*ED}{AT}$
				ED_c	Exposure Duration (Cancer)	24	years	USEPA, 2002 (2)	
				ED	Exposure Duration (Noncancer)	30	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	Reference	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	Based on ED (3)	
		Child	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) =
				FI	Fraction Inhaled	1	unitless	--	$\frac{CA*FI*EF*ED}{AT}$
				EF	Exposure Frequency	350	days/year	USEPA, 2002	
				ED	Exposure Duration	6	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	--	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).
(2) For carcinogens, risks for adults and children are averaged over a lifetime of 70 years (USEPA, 2002)
(3) AT for chronic exposures = 30 years x 365 days/year.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-18
Values Used for Daily Intake Calculations - Future Exposures to Surface and Total Soil
Area P

Scenario Timeframe:	Future
Medium:	Surface and Total Soil
Exposure Medium:	Surface and Total Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Worker (outdoor)	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Industrial Worker (outdoor)	Adult	Area P	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(1)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (2)	cm^2	USEPA, 1997, 2004	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Dermal absorption factors are presented in **Table E.1-25.**
(2) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to surface soil.

USEPA, 1995: Assessing Dermal Exposure from Soil Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.

Table E.1-19
Values Used for Daily Intake Calculations - Future Exposures to Surface and Total Soil - Air
Area P

Scenario Timeframe:	Future
Medium:	Surface and Total Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates and Volatiles)	Industrial Worker (Outdoor)	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-20
Values Used for Daily Intake Calculations - Current/Future Exposures to Groundwater, Inhalation
Area P

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Maintenance Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1	unitless	--	Intake concentration (mg/m^3) =
				EF	Exposure Frequency	50	days/year	USEPA, 2002	$\frac{CA*FI*EF*ED}{AT}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Ambient air concentrations are modeled by a volatilization model (ASTM, 1995).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-21
Values Used for Daily Intake Calculations - Future Exposures to Groundwater
Area P

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Worker (Outdoor and Indoor)	Adult	Area P	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	1	liters/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident (On-site)	Adult	Area P	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	2	liters/day	USEPA, 1991a, 2003	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a, 2003	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	Area P	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	1	liters/day	USEPA, 2003	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Resident (On-site)	Adult	Area P	DA	Dose Absorbed per Unit Area per Event	--	mg/cm^2-event	(1)	
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	USEPA, 2004	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	
				ED	Exposure Duration	30	years	USEPA, 1991a, 2003	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b, 2003	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	365	days/year	---	
		Child	Area P	DA	Dose Absorbed per Unit Area per Event	--	mg/cm^2-event	(2)	
				SA	Skin Surface Area Available for Contact	6,600	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	USEPA, 2004	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	
				ED	Exposure Duration	6	years	USEPA, 1991a, 2003	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	15	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	365	days/year	---	

Table E.1-21
Values Used for Daily Intake Calculations - Future Exposures to Groundwater
Area P

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal Absorption	Excavation Worker (On-site)	Adult	Area P	DA	Dose Absorbed per Unit Area per Event	--	mg/cm^2-event	(2)	
				SA	Skin Surface Area Available for Contact	3,300	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	USEPA, 2004	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	125	days/year	USEPA, 1991a, 2003	
				ED	Exposure Duration	1	years	USEPA, 1991a, 2003	DA x SA x EV x EF x ED
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	BW x AT x CF1
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	365	days/year	---	

(1) Value is derived using the worksheets for calculating dermal exposure to chemicals in aqueous media (USEPA, 2001) and assuming an exposure time of 30 minutes (ET = 0.50 hr; USEPA, 2004).

(2) Value is derived using the worksheets for calculating dermal exposure to chemicals in aqueous media (USEPA, 2001) and assuming an exposure time of 60 minutes (ET = 1.0 hr; USEPA, 2004).

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 2001: Worksheet to calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://www.epa.gov/oswer/riskassessment/ragse/index.htm.)
USEPA, 2003: EPA Region 3 Risk-Based Concentration Table: Technical Background Information, Region 3, Philadelphia, PA.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.
USEPA, 2005: EPA Region 3 web site - http://www.epa.gov/reg3hwmd/risk/human/index.htm.

Table E.1-22
Values Used for Daily Intake Calculations - Future Exposures to Groundwater, Inhalation
Area P

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Worker (Outdoor and Indoor)	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1, 2)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
	Excavation Worker	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(3)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	125	days/year	(4)	Intake concentration (mg/m^3) =
				ED	Exposure Duration	1	years	(4)	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	365	days	Based on ED	
	Resident (On-site)	Adult	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(2, 5)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration (Non-Cancer)	30	years	USEPA, 2002	CA*FI*EF*ED
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 2002	AT
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	Based on ED	
		Child	Area P	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	6	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	2,190	days	Based on ED	

(1) Ambient air concentrations were modeled by a volatilization model (ASTM, 1995
(2) Indoor air concentrations were modeled using the Johnson and Ettinger (1991) model.
(3) Trench air concentrations were modeled by the Trench Model (VDEQ, 2007)
(4) The excavation scenario is based on a worker working on an excavation project for 125 days/year for 1 year. The excavation worker is assumed to be exposed to groundwater for 4 hrs a day (VDEQ, 200
(5) Shower room air concentrations were modeled using the Foster and Chrostowski (1987) Shower Inhalation Model.

American Society for Testing and Materials (ASTM). 1995. Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites. ASTM Committee E-50 on Environmental Assessment, Report No. E1739-95. West Conshohocken, Pennsylva
Foster, S.A. and P.C. Chrostowski. 1987. Inhalation Exposures to Volatile Organic Contaminants in the Shower. In the proceedings of the 80th Annual Meeting of the Air Pollution Control Association (APCA), June 21-26, New Yo
Johnson, P.C. and Ettinger, R.A. 1991: Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings. Environmental Science & Technology. 25:1445-14
USEPA, 2002: Supplemental Guidance for Developing Soil Screening for Superfund Sites. OSWER 9355.4-24.
VDEQ, 2007: Voluntary Remediation Program Risk Assessment Guidance, Virginia Department of Environmental Qualit

Table E.1-23
Values Used for Daily Intake Calculations
Future Exposures to Sediment
Area P

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Sediment	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	50	days/year	(1)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Industrial Worker (Outdoor)	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Sediment	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Excavation Worker	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Sediment	330	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	125	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	Area P (wading)	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Sediment	100	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	40	days/year	(2)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	Area P (wading)	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Sediment	200	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	40	days/year	(2)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Maintenance Worker	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(3)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (4)	cm^2	USEPA, 1997, 2002	
				EF	Exposure Frequency	50	days/year	(1)	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

Table E.1-23
Values Used for Daily Intake Calculations
Future Exposures to Sediment
Area P

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal Absorption (cont.)	Industrial Worker (Outdoor)	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(3)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (4)	cm^2	USEPA, 1997, 2004	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	25	years	USEPA, 2002	BW x AT x CF2
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Excavation Worker	Adult	Area P	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(3)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (4)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	125	days/year	USEPA, 2002	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	1	years	USEPA, 2002	BW x AT x CF2
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	Area P (wading)	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(3)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700 (5)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	40	days/year	(2)	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	30	years	USEPA, 1991a	BW x AT x CF2
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	Area P (wading)	CS	Chemical Concentration in Sediment	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(3)	--	USEPA, 1995, 2003	[(L)ADD$_{int}$] (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800 (5)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	40	days/year	(2)	CS x SSAF x DABS x SA x EF x ED x CF1
				ED	Exposure Duration	6	years	USEPA, 1991a	BW x AT x CF2
				CF1	Conversion Factor 1	1/10^6	kg/mg	---	
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Best professional judgement. Based on site maintenance/inspection activities conducted 1 day/week and assuming 2 weeks on vacation. Assumed sediment exposures were similar to soil exposures.

(2) The exposure frequency is based on best professional judgment that the time an adult resident would spend wading would be similar to the time spent gardening or doing yard work, approximately 40 events/year (USEPA, 1992, 1997). For the child resident, it is assumed that a child under 6 years of age would be accompanied by an adult while wading.

(3) Dermal absorption factors are presented in **Table E.1-25**.

(4) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to sediment.

(5) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, face, hands, forearms, lower legs, and feet are exposed to sediment.

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 1992: Dermal Exposure Assessment: Principles and Applications. Office of Research and Development. EPA/600/8-91/011B.
USEPA, 1995: Assessing Dermal Exposure from Soil Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.

Table E.1-24
Values Used for Daily Intake Calculations - Future Exposures to Surface Water

Scenario Timeframe:	Future
Medium:	Surface Water
Exposure Medium:	Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User (off-site)	Adult	Area P (Swimming)	CW	Chemical Concentration in Surface Water	See site-specific EPC tables	mg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Surface Water	0.05	liters/day	(1)	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	40	days/year	(2)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				BW	Body Weight	70	kg	USEPA, 1991a	$\frac{CW \times IR\text{-}W \times EF \times ED}{BW \times AT \times CF1}$
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF1	Conversion Factor 1	365	days/year	---	
		Adolescent	Area P (Swimming)	CW	Chemical Concentration in Surface Water	See site-specific EPC tables	mg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Surface Water	0.05	liters/day	(1)	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	40	days/year	(2)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	8	years	(3)	
				EDc	Exposure Duration (Cancer)	8	years	(3)	
				BW	Body Weight	64 (4)	kg	USEPA, 2009	$\frac{CW \times IR\text{-}W \times EF \times ED}{BW \times AT \times CF1}$
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	8	years	(3)	
				CF1	Conversion Factor 1	365	days/year	---	
Dermal Absorption	Recreational User (off-site)	Adult	Area P (Swimming)	DA	Dose Absorbed Per Unit Area per Event	(5)	mg/cm^2-event	USEPA, 2004	
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	(2)	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	40	days/year	(2)	
				ED	Exposure Duration	30	years	USEPA, 1991a	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF1	Conversion Factor 1	365	days/year	---	
		Adolescent	Area P (Swimming)	DA	Dose Absorbed Per Unit Area per Event	(5)	mg/cm^2-event	USEPA, 2004	
				SA	Skin Surface Area Available for Contac	17,000 (6)	cm^2	USEPA, 2009	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	(2)	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	40	days/year	(2)	
				ED	Exposure Duration	8	years	(3)	
				EDc	Exposure Duration (Cancer)	8	years	(3)	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	64 (4)	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	8	years	(3)	
				CF1	Conversion Factor 1	365	days/year	---	

(1) Ingestion rate is based on 0.05 liters/hour (USEPA, 2009) for an exposure time (ET) of 1 hour/day, an average estimate for time spent swimming (USEPA, 1997).

(2) The exposure frequency and event frequency were based on recreational users swimming at New River approximately 2 days/week during the warmer months (i.e., May through September). Best professional judgement.

(3) Exposure duration is based on ages 11 through 18 years old.

(4) Body weight is based on the average of body weights for ages 11 - 16 years and 16 - 18 years (Table 1; USEPA, 2009).

(5) Dermal absorption factors and DA events are presented in **Table E.1-25**.

(6) Skin surface area is based on average of 50th percentile skin surface areas fo age groups 11 - 16 years and 16 - 18 years (Table 1; USEPA, 2009).

USEPA, 1991a: Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) EPA/540/R/99/005
USEPA, 2009: Highlights of the Child-Specific Exposure Factors Handbook. EPA/600/R-08/135. August 2009.

Table E.1-25
Dermal Absorption Fractions and Physical/Chemical Properties for Soil - Area P
Radford Army Ammunition Plant, Radford, Virginia

Analyte	CAS NO.	ABS_d [a] (m^3/kg)	D_i [b] (cm^2/s)	D_w [b] (cm^2/s)	K_{oc} [b] (cm^3/g)	K_d [c] (cm^3/g)	H [b] (unitless)	D_A (cm^2/s)
Aluminum	7429-90-5	1.0E-02	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	1.0E-02	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	3.0E-02	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	1.0E-02	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	1.0E-02	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	1.0E-02	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	1.0E-02	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	1.0E-02	NA	NA	NA	NA	NA	NA
Aroclor 1254	11097-69-1	1.40E-01	NA	NA	7.56E+04	NA	1.20E-02	NA

CAS No. = Chemical Abstract Service No.
ABS_d = Dermal Absorption Factor
VF = Volatilization Factor
D_A = Apparent Diffusivity
m^3/kg = cubic meters per kilogram
cm^2/s = centimeter squared per second
NA = Not Applicable

[a] ABS_d values are taken from Exhibit 3-4, Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation and Manual, Part E; Supplemental Guidance for Dermal Risk Assessment, July 2004, and Region III Technical Guidance, Assessing Dermal Exposure in Soil, December 1995, unless otherwise noted.

[b] Values for derivation of VF are taken from the USEPA Regional Screening Levels Table, Physical-Chemical Parameters (dated September 12, 2008).

[c] Calculated value: $K_d = K_{oc} \times f_{oc}$

Table E.1-26
PEF Calculation - Commercial/Industrial Worker
Radford Army Ammunition Plant - Area P

Site name: Radford Area P

Calculation of Site-Specific Commercial/Industrial Worker PEF:
This value can be applied to workers as well as residents unless site area is greater than 0.5 acres.
Equation 4-5 from USEPA, 2002

$$PEF = \frac{Q}{C_{wind}} \times \frac{3{,}600 \text{ sec/hr}}{0.036 \times (1-V) \times (U_m/U_t)^3 \times F(x)}$$

Variable	Value	Units	Description
Q/C_{wind} =	58.17	g/m^2-s per kg/m^3	Calculated below
V =	**0.5**	unitless	fraction of vegetative cover
U_m =	**3.5**	m/s	mean annual windspeed
U_t =	**11.32**	m/s	equivalent threshold value of windspeed at 7 m
F(x) =	**0.194**	unitless	function dependent on U_m/U_t derived using Cowherd et al., 1985

Q/C_{wind} can be used for any source size from 0.5 acres to 500 acres using the equation and look up tables in Appendix D, Exhibit D-2. Source of 0.5 acres is the size of a typical exposure unit.
Even though the actual site is 0.229 acres in size, a value of A_s = 0.5 acres will be used as that is the smallest area used in the development of the model for Q/C_{wind}.

PEF = 2.03E+09 m^3/kg

From Exhibit D-2 from USEPA 2002:

$$Q/C_{wind} = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Variable	Value	Units	Description
A =	9.9253		Site-specific value
B =	18.6636		Site-specific value
C =	211.8862		Site-specific value
A_s =	**0.5**	acres	**Contaminated site area**

Q/C_{wind} = 58.17 g/m^2-s/kg/m^3

Table E.1-27
PEF Calculation - Construction Worker
Radford Army Ammunition Plant - Area P

Site Name: **Radford Area P**

Calculation of Site-Specific Construction Worker PEF:

$$PEF_{sc} = Q / C_{sr} \; x \; \frac{1}{F_D} \; x \left[\frac{T \; x \; A_R}{556 \; x \; (W/3)^{0.4} \; x \; \frac{365 \; day/yr - p)}{365 \; day/yr} \; x \; \sum VKT} \right]$$

Variable	Value	Units	Description
Q/C_{sr} =	**26.70**	g/m^2-s per kg/m^3	**calculated below**
Duration of construction =	**6**	months	
	25	weeks	
	125	days	assuming 5 days per week
t_c =	1,000	hours	assuming 8 hour days
	60,000	min	
T =	3,600,000	sec	
F_D =	0.185		dispersion correction factor
Surface area of site =	**0.229**	acres	**Site-specific**
Surface area of site =	926.8	m^2	
Length of side of area configured as a square =	30.4	m	equal to the square root of the area of the site
L_R =	100	ft	of area configured as a square
W_R =	20	ft	width of roadway segment - default
A_R =	185.6	m^2	surface area of contaminated roadway segment
W =	**5**	tons	mean vehicle weight - default, assuming 2, 2-ton cars and 1, 10-ton trucks
p =	**119**	days/yr	Number of days/yr with at least 0.01 inches of precipitation - value for Radford Area from Exhibit 5-2
Number of vehicles on site =	**2**	cars	value based on assumptions for W
	1	truck	
VKT =	11.4	km	sum of vehicle km traveled during exposure duration - assuming each vehicle travels road once per day and 5 days/week for total time

Variables in **BOLD** are site-specific and should be entered for each site

PEF_{sc} = 1.84E+07 m^3/kg

$$Q / C_{sr} = A \; x \; \exp \left[\frac{(\ln A_s - B)^2}{C} \right]$$

Variable	Value	Units	Description
A_s =	**0.229**	acres	Site specific area
A =	12.9351		default constant
B =	5.7383		default constant
C =	71.7711		default constant

Q/C_{sr} = 26.70 g/m^2-s per kg/m^3

A_s is site-specific and a value should be entered for each site

Table E.1-28
PEF Calculation - Residents
Radford Army Ammunition Plant - Area P

Site name: Radford Area P

Calculation of Site-Specific Residential PEF:
A separate PEF for residents must be calculated if the site in question is greater than 0.5 acres in size.
This residential PEF is based on a 0.5 acre residential site.
Equation 4-5 from USEPA, 2002

$$PEF = \frac{Q}{C_{wind}} \; x \; \frac{3{,}600 \text{ sec/hr}}{0.036 \; x \; (1-V) \; x \; (U_m/U_t)^3 \; x \; F(x)}$$

Variable	Value	Units	Description
Q/C_{wind} =	58.17	g/m^2-s per kg/m^3	Calculated below
V =	**0.5**	unitless	fraction of vegetative cover
U_m =	**3.5**	m/s	mean annual windspeed
U_t =	**11.32**	m/s	equivalent threshold value of windspeed at 7 m
F(x) =	**0.194**	unitless	function dependent on U_m/U_t derived using Cowherd et al., 1985

Q/C_{wind} can be used for any source size from 0.5 acres to 500 acres using the equation and look up tables in Appendix D, Exhibit D-2. Source of 0.5 acres is the size of a typical exposure unit.

PEF_R = 2.03E+09 m^3/kg

From Exhibit D-2 from USEPA 2002:

$$Q/C_{wind} = A \; x \; \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Variable	Value	Units	Description
A =	9.9253		Site-specific value
B =	18.6636		Site-specific value
C =	211.8862		Site-specific value
A_s =	0.5	acres	**Residential exposure**

Q/C_{wind} = 58.17 g/m^2-s/kg/m^3

Table E.1-29
Parameter Values Used for Groundwater - Area P
Adult Resident

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2/event)	COPC Assessed?
Organics								
Chloroform (1,2)	67-66-3	1.0	6.8E-03	0.50	0.00	1.19		No
Tetrachloroethene (1)	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	1.2E-07	Yes
Inorganics								
Aluminum (3)	7429-90-5		1.0E-03					No
Cobalt (3)	7440-48-4		1.0E-03					No
Iron (3)	7439-89-6		1.0E-03					No
Manganese	7439-96-5		1.0E-03					No

(1) COPC is a halogenated compound. The K_p correlation based on molecular weight of the hydrocarbon will tend to under estimate the
(2) Dermal exposure is less than 10% of drinking water exposure. COPC is not included in the dermal risk assessment based on Exhibits B-2
(3) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Organic parameter values are taken from Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-29
Parameter Values Used for Groundwater - Area P
Adult Resident

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

Table E.1-30
Parameter Values Used for Groundwater - Area P
Child Resident

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2/event)	COPC Assessed?
Organics								
Chloroform (1,2)	67-66-3	1.0	6.8E-03	0.50	0.00	1.19		No
Tetrachloroethene (1)	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	1.8E-07	Yes
Inorganics								
Aluminum (3)	7429-90-5		1.0E-03					No
Cobalt (3)	7440-48-4		1.0E-03					No
Manganese	7439-96-5		1.0E-03					No

(1) COPC is a halogenated compound. The K_p correlation based on molecular weight of the hydrocarbon will tend to under estimate the
(2) Dermal exposure is less than 10% of drinking water exposure. COPC is not included in the dermal risk assessment based on Exhibits B-2
(3) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Organic parameter values are taken from Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-31
Parameter Values Used for Groundwater - Area P
Excavation Worker

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2/event)	COPC Assessed? (1)
Organics								
Chloroform (2)	67-66-3	1.0	6.8E-03	0.50	0.00	1.19	6.4E-08	Yes
Tetrachloroethene (2)	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	3.7E-07	Yes
Inorganics								
Aluminum (3)	7429-90-5		1.0E-03				3.7E-04	Yes
Cobalt (3)	7440-48-4		1.0E-03				2.5E-07	Yes
Iron (3)	7439-89-6		1.0E-03				5.2E-04	Yes
Manganese	7439-96-5		1.0E-03				1.0E-05	Yes

(1) All chemicals are assessed because dermal exposure is not compared with drinking water exposure. There is no ingestion pathway for the excavation worker.

(2) COPC is a halogenated compound. The K_p correlation based on molecular weight of the hydrocarbon will tend to under estimate the permeability coefficient (USEPA, 2004).

(3) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Organic parameter values are taken from Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-32
Parameter Values Used for Surface Water - Area P
Off-Site Recreational User

Dermal Absorption - Chemicals of Potential Concern (COPC) [a]

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2/event)	COPC Assessed? (1)
Organics								
Chloroform	67-66-3	1.0	6.8E-03	0.50	0.00	1.19	2.5E-08	Yes
Tetrachloroethene	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	1.8E-07	Yes
Inorganics								
Aluminum	7440-38-2		1.0E-03				6.2E-06	Yes
Cobalt	7440-43-9		1.0E-03				4.6E-09	Yes
Iron	7440-70-2		1.0E-03				8.3E-06	Yes
Manganese	7440-48-4		1.0E-03				2.0E-07	Yes

[a] Based on discharge of groundwater to surface water

(1) All chemicals were assesses because dermal exposure is not compared with drinking water exposure. There is no ingestion pathway for these receptors.

(2) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Inorganic parameter values are taken from Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; version dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-33
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - Area P

$$VF_{wamb} = (H\ /1 + (U_a d_{air} L_{GW}\ / WD_{effws}))\ X\ 10^3 L/m^3$$

Where:

VF_{wamb} (mg/m^3 air per mg/L water) =	calculated	Volatilization factor
H (cm^3-water per cm^3-air) =	chemical-specific	Henry's Law Constant
U_a (cm/sec) =	353	Wind speed above ground surface (NOAA, 2007)
d_{air} (cm) =	200	Ambient air mixing zone height (ASTM, 1995)
L_{GW} (cm) =	458	Depth to groundwater (site specific; average depth measured in August 2007)
W (cm) =	2,286	Width of source area parallel to wind flow direction (site-specific; measured from GIS mapping)
D_{effws} (cm^2/sec) =	calculated	Effective diffusion coefficient between groundwater and soil surface

$$D_{effws} = \left(h_{cap} + h_v\right)\left[\frac{h_{cap}}{D_{effcap}} + \frac{h_v}{D_{effs}}\right]^{-1}$$

Where:

D_{effws} (cm^2/sec) =	calculated	Effective diffusion coefficient between groundwater and soil surface
h_{cap} (cm) =	152	Thickness of capillary fringe (site specific; assumption based on soil type and depth to groundwater)
h_v (cm) =	305	Thickness of vadose zone (site specific; based on field investigation, August 2007)
D_{effcap} (cm^2/sec) =	calculated	Effective diffusion coefficient through capillary fringe
D_{effs} (cm^2/sec) =	calculated	Effective diffusion coefficient in soil based on vapor phase concentration

Table E.1-33
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - Area P

$$D_{effcap} = D^{air} \frac{\theta_{acap}^{3.33}}{\theta_T^2} + D^{wat} \frac{1}{H} \frac{\theta_{wcap}^{3.33}}{\theta_T^2}$$

Where:

D_{effcap} (cm^2/sec) =	calculated	Effective diffusion coefficient through capillary fringe
D_{air} (cm^2/sec) =	chemical-specific	Diffusion coefficient in air
D_{wat} (cm^2/sec) =	chemical-specific	Diffusion coefficient in water
θ_{acap} (cm^3-air/cm^3-soil)	0.0481	Volumetric air content in capillary fringe soils
θ_{wcap} (cm^3-water/cm^3-soil)	0.4329	Volumetric water content in capillary fringe soils
θ_T (cm^3/cm^3-soil)	0.481	Total soil porosity (silty clay)

$$D_{effs} = D^{air} \frac{\theta_{as}^{3.33}}{\theta_T^2} + D^{wat} \frac{1}{H} \frac{\theta_{ws}^{3.33}}{\theta_T^2}$$

Where:

D_{effs} (cm^2/sec) =	calculated	Effective diffusion coefficient in soil based on vapor phase concentration
D_{air} (cm^2/sec) =	chemical-specific	Diffusion coefficient in air
D_{wat} (cm^2/sec) =	chemical-specific	Diffusion coefficient in water
θ_{as} (cm^3-air/cm^3-soil)	0.265	Volumetric air content in vadose zone soils (silty clay)
θ_{ws} (cm^3-water/cm^3-soil)	0.216	Volumetric water content in vadose zone soils (silty clay)
H (cm^3-water per cm^3-air) =	chemical-specific	Henry's Law Constant
θ_T (cm^3/cm^3-soil)	0.481	Total soil porosity (silty clay)

Table E.1-33
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - Area P

The concentration of the COPC in the ambient air is calculated using the following equation:

$$C_{air} = C_{GW} \times VF_{wamb}$$

Where:

C_{air} (mg/m^3) =	calculated	Concentration of chemical in ambient air
C_{GW} (mg/L) =	site-specific	Maximum detected concentration of chemical in groundwater
VF_{wamb} (mg/m^3 air per mg/L water) =	calculated	Volatilization factor

References:

American Society for Testing and Materials (ASTM), 1995. Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites. ASTM Committee E-50 on Environmental Assessment. Report No. E1739-95. West Conshohocken, Pennsylvania.

National Oceanic and Atmospheric Administration (NOAA), 2007. Comprehensive Climatic Data for the United States through 2006. National Climatic Data Center, Asheville, North Carolina.

Table E.1-33
Calculation of Ambient Air Concentration from Groundwater - Area P

Spreadsheet to calculate outdoor air vapor concentration from groundwater, based on ASTM method.

Constituent	Henry's Law Const.	Wind Speed	Mixing Zone Height	Thickness of Capillary Fringe	Thickness of Vadose Zone	Depth to Groundwater	Effec. Diffus. Coeff. from GW to Soil	Width of Source Area Parallel to Wind	Effec. Diffus. Coeff. in Cap-illary Fringe	Effec. Diffus. Coeff. in Soil	Total Soil Porosity	Vol. Air Cont. in Capillary Fringe Soil	Vol. Water Cont. in Capillary Fringe Soil	Vol. Air Cont. in Vadose Zone Soil	Vol. H2O Cont. in Vadose Zone Soil	Diffusion Coeff. in Air	Diffusion Coeff. in H2O	**OUTPUT** Volatilization Factor
symbol:	(H)	(Uair)	(ht)	(hcap)	(hv)	(Lgw)	(DwsEff)	(W)	(DcapEff)	(DsEff)	(0t)	(0acap)	(0wcap)	(0as)	(0ws)	(Dair)	(Dwat)	(VFamb)
units:	cm3-H2O / cm3-Air	(cm/sec)	(cm)	(cm)	(cm)	(cm)	(cm^2/sec)	(cm)	(cm^2/sec)	(cm^2/sec)	cm3 / cm3-soil	cm3-Air / cm3-soil	cm3-H2O / cm3-soil	cm3-Air / cm3-soil	cm3-H2O / cm3-soil	cm2/sec	cm2/sec	mg/m3-Air / mg/L-H2O
Chloroform	1.50E-01	353	200	152	305	458	0.0001	2,286	0.000036	0.0054	0.481	0.0481	0.433	0.265	0.216	1.04E-01	1.00E-05	1.14E-06
Tetrachloroethene	7.54E-01	353	200	152	305	458	4.66E-05	2,286	1.56E-05	0.0037	0.481	0.0481	0.433	0.265	0.216	7.20E-02	8.20E-06	2.48E-06

Source: ASTM, 1994

Constituents	Groundwater Concentration (mg/L)	VFamb	**"Ca"** Concentration (mg/m^3)
Chloroform	1.90E-03	1.14E-06	2.16E-09
Tetrachloroethene	2.00E-03	2.48E-06	4.96E-09

Table E.1-34
Groundwater Inhalation Indoor Air Concentration Summary - Area P
Radford Army Ammunition Plant, Radford, Virginia

Chemicals of Potential Concern in Groundwater and Indoor Air

Analyte	CAS No.	Cw µg/L	Ca µg/m^3
Organics			
Chloroform	67-66-3	1.90E+00	4.06E-03
Tetrachloroethene	127-18-4	2.00E+00	9.19E-03

Notes:
Indoor air concentrations modeled using Johnson and Ettinger Model
Model output provided in **Appendix E.6**

Non-default model inputs (based on site-specific data):

Average soil temperature (T_s) is set at 60°F or 15.6°C, based on the average temperature of soil for the vicinity of Area P.

Depth below grade to bottom of enclosed space floor (L_F) is set at the default value of 200 cm because building construction is likely to include a basement

Depth below grade to water table (L_{wt}) is set at 431 cm (14.15 ft), conservatively based on the shallowest depth of groundwater measured at Area P.

The soil type in the vadose zone was modeled as silty clay (SIC). This is based on soil type found at Area P.

The thickness and properties of the capillary zone are based on values in the "lookup" table for the SIC soil type.

The vadose zone soil total porosity is set at 0.481, based on the "lookup" soil parameter in the model for silty clay.

The vadose zone soil water-filled porosity is set at 0.216 cm^3/cm^3, based on the "lookup" soil parameter in the model for silty clay.

The vadose zone soil dry bulk density (pb) is set at the "lookup" soil parameter of 1.38 g/cm^3 for silty clay in the model.

The calculated concentration of each COPC in building air ($C_{building}$) served as the EPC in the intake calculations for inhalation.

Table E.1-35
Groundwater Inhalation -Excavation Worker - Trench Gas Concentration Calculations - Area P

Analyte	CAS No.	C_w ug/L	H_i atm-m^3/mole	VF L/min^3	C_a mg/m^3
Chloroform	67-66-3	1.90E+00	3.67E-03	3.89E+00	7.40E+00
Tetrachloroethene	127-18-4	2.00E+00	1.84E-02	3.34E+00	6.69E+00

NA = Not Applicable.
NV = No Value.

Exposure point calculations calculated using trench model for construction worker/ utility worker in a trench where average depth to groundwater is less than or equal to 15 feet (VDEQ,2007).

$$VF = (K_i \times A \times F \times 10^{-3} \times 10^4 \times 3600) / (ACH \times V)$$

where:

Parameters	Value	
K_i (cm/sec) =	calculated	overall mass transfer coefficient of contaminant i
A (m^2) =	2.22	Area of trench (default)
F (unitless) =	1	Fraction of floor through which contaminant can enter
ACH (h^{-1}) =	2	air changes per hour
V (m^3) =	10.14	Volume of trench (length x width x depth)
Conversion Factor (L/cm^3) =	10^{-3}	
Conversion Factor (cm^2/m^2) =	10^4	
Conversion Factor (s/hr) =	3,600	

The overall mass transfer coefficient of contaminant is calculated using the equation below (VDEQ, 2007):

$$K_i = 1 / \{(1/K_{iL}) + [(R\ T) / H_i\ K_{iG})]\}$$

where:

Parameters	Value	
K_{iL} (cm/sec) =	calculated	liquid-phase mass transfer coefficient of contaminant i
R (atm-m^3/mole-K) =	8.2E-05	ideal gas constant
T (K) =	289	average system absolute temperature
H_i (atm-m^3/mol) =	Chemical-specific	Henry's Law constant of contaminant i
K_{iG} (cm/sec) =	calculated	gas-phase mass transfer coefficient of contaminant i

Table E.1-35
Groundwater Inhalation -Excavation Worker - Trench Gas Concentration Calculations - Area P

The liquid-phase mass transfer coefficient is calculated using the following equation (VDEQ, 2007):

$$K_{iL} = (MW_{02}/MW_i)^{0.5} \times (T/298) \times K_L, O_2$$

where:

Parameters	Value	
K_{iL} (cm/sec) =	calculated	liquid-phase mass transfer coefficient of contaminant i
MW_{02} (g/mol) =	chemical-specific	molecular weight of O_2
MW_i (g/mol) =	chemical-specific	molecular weight of contaminant i
K_L, O_2 (cm/sec) =	0.002	liquid-phase mass transfer coefficient of oxygen at 25°C

The gas-phase mass transfer coefficient of contaminant is calculated using the equation below:

$$K_{iG} = (MW_{H2O}/MW_i)^{0.335} \times (T/298)^{1.005} \times K_G, H_2O$$

where:

Parameters	Value	
K_{iG} (cm/sec) =		gas-phase mass transfer coefficient of contaminant i
MW_{H2O} (g/mol) =	Chemical-specific	molecular weight of water
MW_i (g/mol) =	Chemical-specific	molecular weight of contaminant i
K_G, H_2O (cm/sec) =	0.833	gas-phase mass transfer coefficient of water at 25°C

The concentration of the contaminant in trench air is calculated using the equation below:

$$C_{trench} = C_{GW} \times VF \times 10^{-3}$$

where:

Parameters	Value	
C_{trench} (µg/m^3) =	chemical-specific	Concentration of contaminant in the trench air
C_{GW} (µg/L) =	chemical-specific	Concentration of contaminant in groundwater
VF (L/min^3) =	chemical-specific	Volatilization factor
Conversion Factor (mg/µg) =	10^{-3}	

Table E.1-36
Groundwater Inhalation Shower Air Concentration Calculations - Area P

Analyte	CAS No.	Cw mg/L	MW g/mole	H atm-m^3/mole	k_l cm/hr	k_g cm/hr	K_L cm/hr	K_{aL} cm/hr	C_{wd} mg/L	S mg/m^3-min	Ca mg/m^3
Organics											
Chloroform	67-66-3	1.90E-03	1.19E+02	3.66E-03	1.21E+01	1.16E+03	1.14E+01	1.53E+01	2.28E-04	1.90E-04	2.98E-03
Tetrachloroethene	127-18-4	2.00E-03	1.66E+02	1.84E-02	1.03E+01	9.88E+02	1.02E+01	1.37E+01	2.16E-04	1.80E-04	2.83E-03

NA = Not Applicable.

Variable	Equations:	
k_l (cm/hr) =	$20 \times (44/MW)^{0.5}$	Liquid-film transfer coefficient
k_g (cm/hr) =	$3000 \times (18/MW)^{0.5}$	Gas-film transfer coefficient
K_L (cm/hr) =	$(1/k_l + (R \times T/H^* k_g))^{-1}$	overall mass transfer coefficient
K_{aL} (cm/hr) =	$K_L \times ((T \times \mu_s/T_s \times \mu_l)^{-0.5}$	overall mass transfer coefficient adjusted to shower water temperature
C_{wd} (mg/L) =	$C_w \times (1-\exp(-K_{aL} \times t_s/60 \times d)$	VOC concentration leaving shower droplet after time t_s
S (mg/m^3-min) =	C_{wd} x FR/SV	VOC generation rate
C_a (mg/m^3) =	$\left[\frac{S}{R_a \times t}\right] \times \left[D_s + \frac{e^{(-Ra \times t)}}{R_a} - \frac{e^{R_a(D_s - t)}}{R_a}\right]$	VOC concentration in shower air

Constants:	Value	
R (atm-m^3/mole-K) =	8.2×10^{-5}	Gas constant
T (K) =	293	Room Temperature
T_s (K) =	318	Water Temperature
μ_s (centapoise) =	0.596	Water viscosity at Ts
μ_l (centapoise) =	1.002	Water viscosity at T
t_s (sec) =	0.5	Shower droplet drop time
d (mm) =	1	Droplet diameter
FR (L/min) =	10	Shower flow rate
SV (m^3) =	12	Shower room air volume
R_a (per min) =	0.01667	Air exchange rate
D_s (min) =	30	Shower Duration
t (min) =	60	Total time in shower room

Table E.1-37
Summary of Groundwater-to-Air Exposure Point Concentrations
Area P

COPC	GW Conc. mg/L	J-E Vapor Intrusion Modeled Infinite Source Building Air Conc. ($\mu g/m^3$)	Air Conc. in Shower Room ($\mu g/m^3$)	ASTM Ambient Air Conc from GW ($\mu g/m^3$)	Trench Model Air Conc. ($\mu g/m^3$)
Chloroform	1.90E-03	4.06E-03	2.98E+00	2.16E-06	7.40E+00
Tetrachloroethylene	2.00E-03	9.19E-03	2.83E+00	4.96E-06	6.69E+00

NA = Not Applicable; COPC is not defined as a volatile.
NV = Chemical-specific parameters are not available for this COPC.

Table E.1-38
Cancer Toxicity Data - Oral/Dermal

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source	Date (3) (MM/DD/YY)
Organics								
Aroclor 1254	2.0E+00	$(mg/kg\text{-}day)^{-1}$	100%	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 2008	3/6/09:9/12/08
Chloroform	3.1E-02	$(mg/kg\text{-}day)^{-1}$	100%	3.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 2008; Cal EPA	3/6/09:9/12/08
Tetrachloroethene	5.4E-01	$(mg/kg\text{-}day)^{-1}$	100%	5.4E-01	$(mg/kg\text{-}day)^{-1}$	C	EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
Inorganics								
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Antimony	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	100%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	3/6/09:4/10/98
Barium	N/A	N/A	N/A	N/A	N/A	D	IRIS	3/6/09:3/30/98
Chromium (VI)	N/A	N/A	N/A	N/A	N/A	D	IRIS	3/6/09:9/3/98
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Copper	N/A	N/A	N/A	N/A	N/A	D	IRIS	3/6/09:8/1/91
Iron	N/A	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese	N/A	N/A	N/A	N/A	N/A	D	IRIS	3/6/09:12/1/96
Nickel	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	3/6/09:8/1/94
Vanadium (4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08

(1) Source: Risk Assessment Guidance for Fuperfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1.
(2) The equation for deriving the adjusted dermal cancer slope factors are presented in the text.
(3) For IRIS values, the date IRIS was searched and the date of the most recent review are provided. For HEAST values, the date of HEAST is provided.
(4) The toxicity value for Vanadium was based on Vanadium and Compounds.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Definitions:
N/A = Not Available
Cal EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL Sept 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

Table E.1-39
Non-Cancer Toxicity Data - Oral/Dermal

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral to Dermal Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates of RfD (3): (MM/DD/YY)
Organics										
Aroclor 1254	Chronic	2.0E-05	mg/kg-day	100%	2.0E-05	mg/kg-day	Immune system, eyes	300	IRIS	3/6/09:11/1/96
Chloroform	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	100	IRIS	3/6/09:10/19/01
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	1,000	IRIS	3/6/09: 3/1/88
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg-day	100%	1.0E+00	mg/kg-day	Developmental nervous system	N/A	PPRTV; EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
Antimony	Chronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	Blood Chemistry	1,000	IRIS	3/6/09:2/1/91
Arsenic	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	Skin, Vascular System	3	IRIS	3/6/09:2/1/93
Barium	Chronic	2.0E-01	mg/kg-day	7%	1.4E-02	mg/kg-day	Kidney	300	IRIS	3/6/09:7/11/05
Chromium (VI)	Chronic	3.0E-03	mg/kg-day	2.5%	7.5E-05	mg/kg-day	NOAEL	900	IRIS	3/6/09:9/3/98
Cobalt	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	N/A	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Copper	Chronic	4.0E-02	mg/kg-day	100%	4.0E-02	mg/kg-day	GI Tract	N/A	HEAST	7/97
Iron	Chronic	7.0E-01	mg/kg-day	100%	7.0E-01	mg/kg-day	Blood, Liver, GI Tract	N/A	PPRTV; EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese	Chronic	2.4E-02	mg/kg-day	4%	9.6E-04	mg/kg-day	CNS	1	IRIS	3/6/09:5/1/96
Nickel	Chronic	2.0E-02	mg/kg-day	4%	8.0E-04	mg/kg-day	Kidney, Liver, Spleen	300	IRIS, VDEQ, 2008	3/6/09:12/1/96
Vanadium (4)	Chronic	5.0E-03	mg/kg-day	2.6%	1.3E-04	mg/kg-day	Kidney	N/A	EPA, 2008; VDEQ, 2008; NCEA	3/6/09:9/12/08

(1) Source: Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1.

(2) The equation used to derive the adjusted dermal RfD is presented in the text.

(3) For IRIS values, the date IRIS was searched and the date of the most recent review are provided. For HEAST values, the date of HEAST is provided.

(4) The toxicity value for Vanadium was based on Vanadium and Compounds.

Definitions:

N/A = Not Available
ATSDR = Agency for Toxic Substances Disease Registry
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

Table E.1-40
Cancer Toxicity Data - Inhalation

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation CSF	
	Value	Units		Source	Date (1) (MM/DD/YY)
Organics					
Aroclor 1254	5.70E-04	$(ug/m^3)^{-1}$	B2	EPA, 2008	3/6/09:9/12/08
Chloroform	2.30E-05	$(ug/m^3)^{-1}$	B2	IRIS	3/6/09:10/19/01
Tetrachloroethene	5.90E-06	$(ug/m^3)^{-1}$	C	EPA, 2008; Cal EPA	3/6/09:9/12/08
Inorganics					
Aluminum	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Antimony	N/A	N/A	N/A	N/A	N/A
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	A	IRIS	3/6/09:4/10/98
Barium	N/A	N/A	D	IRIS	3/6/09:3/30/98
Chromium (Total)	1.2E-02	$(ug/m^3)^{-1}$	A	IRIS	3/6/09:9/3/98
Cobalt	9.0E-03	$(ug/m^3)^{-1}$	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Copper	N/A	N/A	D	IRIS	3/6/09:8/1/91
Iron	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Lead	N/A	N/A	N/A	N/A	N/A
Manganese	N/A	N/A	D	IRIS	3/6/09:12/1/96
Nickel	N/A	N/A	N/A	IRIS	3/6/09:8/1/94
Vanadium (2)	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08

(1) For IRIS values, the date IRIS was searched and the date of the most recent review are provided.
For HEAST values, the date of HEAST is provided.
(2) The toxicity value for Vanadium was based on Vanadium and Compounds.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

Definition:
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Cal EPA = California Environmental Protection Agency
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HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.2, Cancer Toxicity Data, August 1, 2008.

C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Table E.1-41
Non-Cancer Toxicity Data - Inhalation

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ (s)	Combined Uncertainty/ Modifying Factors	RfC:Target Organ(s)	
		Value	Units			Source(s) (2)	Dates of RfD: (MM/DD/YY)
Organics							
Aroclor 1254	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:11/1/96
Chloroform	Chronic	9.8E-02	mg/m^3	N/A	N/A	EPA 2008; ATSDR	3/6/09:9/12/08
Tetrachloroethene	Chronic	2.7E-01	mg/m^3	CNS	N/A	EPA, 2008; VDEQ, 2008: ATSDR	3/6/09:9/12/08
Inorganics							
Aluminum	Chronic	5.0E-03	mg/m^3	N/A	N/A	EPA, 2008; VDEQ, 2008; PPRTV	3/6/09:9/12/08
Antimony	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	Chronic	3.0E-05	mg/m^3	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Barium	Chronic	5.0E-04	mg/m^3	Fetus	N/A	EPA, 2008; HEAST	3/6/09:7/97
Chromium (VI)	Chronic	1.0E-04	mg/m^3	Respiratory System	300	IRIS	3/6/09:9/3/98
Cobalt	Chronic	6.0E-06	mg/m^3	N/A	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese	Chronic	5.0E-05	mg/m^3	CNS	1,000	IRIS	3/6/09:12/1/93
Nickel	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Vanadium	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08

(1) The adjusted inhalation RfD was derived from the RfC value assuming a 70 kg adult inhales 20 m^3/day as follows: RfD = RfC * (20 m^3/day / 70 kg).

(2) For NCEA values, the date of the article provided by NCEA is provided.
For IRIS values, the date IRIS was searched and the date of the most recent review are provided.
For HEAST values, the date of HEAST is provided.

Definitions: N/A = Not Available
ATSDR = Agency for Toxic Substances Disease Registry
IRIS = Integrated Risk Information System
NCEA = National Center for Environmental Assessment
HEAST = Health Effects Assessment Tables
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 - Regional Screening Valules, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

Table E.1-42
Calculation of Cancer Risks
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	2.8E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.6E-08
				Inorganics							
				Aluminum	1.13E+04	mg/kg	7.9E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	2.7E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.8E-07
				Cobalt	9.87E+00	mg/kg	6.9E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	1.64E+02	mg/kg	1.1E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.95E+04	mg/kg	1.4E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	5.8E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	2.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								3.4E-07
			Dermal Absorption	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.2E-08
				Inorganics							
				Aluminum	1.13E+04	mg/kg	5.2E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	1.8E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	3.7E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.6E-08
				Cobalt	9.87E+00	mg/kg	4.6E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	1.64E+02	mg/kg	7.6E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.95E+04	mg/kg	9.0E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	3.8E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	1.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.1E-07
		Exposure Point Total									4.5E-07
	Exposure Media Total										4.5E-07
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-07	$\mu g/m^3$	9.7E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.5E-12
				Inorganics							
				Aluminum	5.57E-03	$\mu g/m^3$	2.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.89E-06	$\mu g/m^3$	9.2E-08	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.33E-06	$\mu g/m^3$	6.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.8E-10
				Cobalt	4.86E-06	$\mu g/m^3$	2.4E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.1E-09
				Copper	8.08E-05	$\mu g/m^3$	4.0E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.61E-03	$\mu g/m^3$	4.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	4.08E-04	$\mu g/m^3$	2.0E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.50E-05	$\mu g/m^3$	7.3E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								2.4E-09
		Exposure Point Total									2.4E-09
	Exposure Media Total										2.4E-09
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPC							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											4.5E-07

Table E.1-42
Calculation of Cancer Risks
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Air	Area P	**Inhalation**	**Organics**							
			(Ambient Air)	Chloroform	2.16E-06	µg/m^3	1.1E-07	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	2.4E-12
				Tetrachloroethene	4.96E-06	µg/m^3	2.4E-07	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	1.4E-12
			Exp. Route Total								3.9E-12
		Exposure Point Total									3.9E-12
	Exposure Media Total										3.9E-12
Groundwater Total											3.9E-12
										Total of Receptor Risks Across All Media	4.5E-07

N/A = Not Applicable.

Table E.1-43
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	7.9E-08	mg/kg-day	2.0E-05	mg/kg-day	3.9E-03
				Inorganics							
				Aluminum	1.13E+04	mg/kg	2.2E-03	mg/kg-day	1.0E+00	mg/kg-day	2.2E-03
				Antimony	3.83E+00	mg/kg	7.5E-07	mg/kg-day	4.0E-04	mg/kg-day	1.9E-03
				Arsenic	2.70E+00	mg/kg	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
				Cobalt	9.87E+00	mg/kg	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.4E-03
				Copper	1.64E+02	mg/kg	3.2E-05	mg/kg-day	4.0E-02	mg/kg-day	8.0E-04
				Iron	1.95E+04	mg/kg	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	5.5E-03
				Manganese	8.28E+02	mg/kg	1.6E-04	mg/kg-day	2.4E-02	mg/kg-day	6.8E-03
				Vanadium	3.04E+01	mg/kg	5.9E-06	mg/kg-day	5.0E-03	mg/kg-day	1.2E-03
			Exp. Route Total								3.0E-02
			Dermal	**Organics**							
			Absorption	Aroclor 1254	4.03E-01	mg/kg	7.3E-08	mg/kg-day	2.0E-05	mg/kg-day	3.6E-03
				Inorganics							
				Aluminum	1.13E+04	mg/kg	1.5E-04	mg/kg-day	1.0E+00	mg/kg-day	1.5E-04
				Antimony	3.83E+00	mg/kg	4.9E-08	mg/kg-day	6.0E-05	mg/kg-day	8.2E-04
				Arsenic	2.70E+00	mg/kg	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.5E-04
				Cobalt	9.87E+00	mg/kg	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	4.2E-04
				Copper	1.64E+02	mg/kg	2.1E-06	mg/kg-day	4.0E-02	mg/kg-day	5.3E-05
				Iron	1.95E+04	mg/kg	2.5E-04	mg/kg-day	7.0E-01	mg/kg-day	3.6E-04
				Manganese	8.28E+02	mg/kg	1.1E-05	mg/kg-day	9.6E-04	mg/kg-day	1.1E-02
				Vanadium	3.04E+01	mg/kg	3.9E-07	mg/kg-day	1.3E-04	mg/kg-day	3.0E-03
			Exp. Route Total								2.0E-02
		Exposure Point Total									5.0E-02
	Exposure Media Total										5.0E-02
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-10	mg/m^3	2.7E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.57E-06	mg/m^3	7.6E-07	mg/m^3	5.0E-03	(mg/m^3)	1.5E-04
				Antimony	1.89E-09	mg/m^3	2.6E-10	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.33E-09	mg/m^3	1.8E-10	mg/m^3	3.0E-05	(mg/m^3)	6.1E-06
				Cobalt	4.86E-09	mg/m^3	6.7E-10	mg/m^3	6.0E-06	(mg/m^3)	1.1E-04
				Copper	8.08E-08	mg/m^3	1.1E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.61E-06	mg/m^3	1.3E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	4.08E-07	mg/m^3	5.6E-08	mg/m^3	5.0E-05	(mg/m^3)	1.1E-03
				Vanadium	1.50E-08	mg/m^3	2.1E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								1.4E-03
		Exposure Point Total									1.4E-03
	Exposure Media Total										1.4E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											5.2E-02

Table E.1-43
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Air	Area P	**Inhalation**	**Organics**							
			(Ambient Air)	Chloroform	2.16E-09	mg/m^3	3.0E-10	mg/m^3	9.8E-02	(mg/m^3)	3.0E-09
				Tetrachloroethene	4.96E-09	mg/m^3	6.8E-10	mg/m^3	2.7E-01	(mg/m^3)	2.5E-09
			Exp. Route Total								5.5E-09
		Exposure Point Total									5.5E-09
	Exposure Media Total										5.5E-09
Groundwater Total											5.5E-09
										Total of Receptor Hazards Across All Media	5.2E-02

N/A = Not Applicable.

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	6.4E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.3E-08
				Inorganics							
				Aluminum	1.17E+04	mg/kg	8.2E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	2.1E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	1.4E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.1E-07
				Cobalt	9.45E+00	mg/kg	6.6E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	6.4E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	1.3E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	4.4E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	2.2E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								2.3E-07
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	5.9E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.2E-08
				Inorganics							
				Aluminum	1.17E+04	mg/kg	5.4E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	1.4E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	2.8E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.2E-08
				Cobalt	9.45E+00	mg/kg	4.4E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	4.2E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	8.6E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	2.9E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	1.5E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								5.4E-08
		Exposure Point Total									2.8E-07
	Exposure Media Total										2.8E-07
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-08	$\mu g/m^3$	2.2E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-12
				Inorganics							
				Aluminum	5.76E-03	$\mu g/m^3$	2.8E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.50E-06	$\mu g/m^3$	7.4E-08	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.00E-06	$\mu g/m^3$	4.9E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.1E-10
				Cobalt	4.66E-06	$\mu g/m^3$	2.3E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.0E-09
				Copper	4.51E-05	$\mu g/m^3$	2.2E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.21E-03	$\mu g/m^3$	4.5E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	3.13E-04	$\mu g/m^3$	1.5E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.58E-05	$\mu g/m^3$	7.7E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								2.3E-09
		Exposure Point Total									2.3E-09
	Exposure Media Total										2.3E-09
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.8E-07

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	2.8E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.6E-08
				Inorganics							
				Aluminum	1.13E+04	mg/kg	7.9E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	2.7E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.8E-07
				Cobalt	9.87E+00	mg/kg	6.9E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	1.64E+02	mg/kg	1.1E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.95E+04	mg/kg	1.4E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	5.8E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	2.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								3.4E-07
			Dermal Absorption	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.2E-08
				Inorganics							
				Aluminum	1.13E+04	mg/kg	5.2E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	1.8E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	3.7E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.6E-08
				Cobalt	9.87E+00	mg/kg	4.6E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	1.64E+02	mg/kg	7.6E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.95E+04	mg/kg	9.0E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	3.8E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	1.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.1E-07
		Exposure Point Total									4.5E-07
	Exposure Media Total										4.5E-07
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-07	$\mu g/m^3$	9.7E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.5E-12
				Inorganics							
				Aluminum	5.57E-03	$\mu g/m^3$	2.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.89E-06	$\mu g/m^3$	9.2E-08	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.33E-06	$\mu g/m^3$	6.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.8E-10
				Cobalt	4.86E-06	$\mu g/m^3$	2.4E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.1E-09
				Copper	8.08E-05	$\mu g/m^3$	4.0E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.61E-03	$\mu g/m^3$	4.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	4.08E-04	$\mu g/m^3$	2.0E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.50E-05	$\mu g/m^3$	7.3E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								2.4E-09
		Exposure Point Total									2.4E-09
	Exposure Media Total										2.4E-09
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											4.5E-07

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Air	Area P	**Inhalation**	**Organics**							
			(Ambient Air)	Chloroform	2.16E-06	µg/m^3	1.1E-07	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	2.4E-12
				Tetrachloroethene	4.96E-06	µg/m^3	2.4E-07	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	1.4E-12
			Exp. Route Total								3.9E-12
		Exposure Point Total									3.9E-12
	Exposure Media Total										3.9E-12
Groundwater Total											3.9E-12
										Total of Receptor Risks Across All Media	4.5E-07

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this data grouping.

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	8.9E-04
				Inorganics							
				Aluminum	1.17E+04	mg/kg	2.3E-03	mg/kg-day	1.0E+00	mg/kg-day	2.3E-03
				Antimony	3.05E+00	mg/kg	6.0E-07	mg/kg-day	4.0E-04	mg/kg-day	1.5E-03
				Arsenic	2.04E+00	mg/kg	4.0E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03
				Cobalt	9.45E+00	mg/kg	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	6.2E-03
				Copper	9.16E+01	mg/kg	1.8E-05	mg/kg-day	4.0E-02	mg/kg-day	4.5E-04
				Iron	1.87E+04	mg/kg	3.7E-03	mg/kg-day	7.0E-01	mg/kg-day	5.2E-03
				Manganese	6.36E+02	mg/kg	1.2E-04	mg/kg-day	2.4E-02	mg/kg-day	5.2E-03
				Vanadium	3.20E+01	mg/kg	6.3E-06	mg/kg-day	5.0E-03	mg/kg-day	1.3E-03
			Exp. Route Total								2.4E-02
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	8.2E-04
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.5E-04	mg/kg-day	1.0E+00	mg/kg-day	1.5E-04
				Antimony	3.05E+00	mg/kg	3.9E-08	mg/kg-day	6.0E-05	mg/kg-day	6.6E-04
				Arsenic	2.04E+00	mg/kg	7.9E-08	mg/kg-day	3.0E-04	mg/kg-day	2.6E-04
				Cobalt	9.45E+00	mg/kg	1.2E-07	mg/kg-day	3.0E-04	mg/kg-day	4.1E-04
				Copper	9.16E+01	mg/kg	1.2E-06	mg/kg-day	4.0E-02	mg/kg-day	3.0E-05
				Iron	1.87E+04	mg/kg	2.4E-04	mg/kg-day	7.0E-01	mg/kg-day	3.5E-04
				Manganese	6.36E+02	mg/kg	8.2E-06	mg/kg-day	9.6E-04	mg/kg-day	8.6E-03
				Vanadium	3.20E+01	mg/kg	4.1E-07	mg/kg-day	1.3E-04	mg/kg-day	3.2E-03
			Exp. Route Total								1.4E-02
		Exposure Point Total									3.9E-02
	Exposure Media Total										3.9E-02
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-11	mg/m^3	6.1E-12	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.76E-06	mg/m^3	7.9E-07	mg/m^3	5.0E-03	(mg/m^3)	1.6E-04
				Antimony	1.50E-09	mg/m^3	2.1E-10	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.00E-09	mg/m^3	1.4E-10	mg/m^3	3.0E-05	(mg/m^3)	4.6E-06
				Cobalt	4.66E-09	mg/m^3	6.4E-10	mg/m^3	6.0E-06	(mg/m^3)	1.1E-04
				Copper	4.51E-08	mg/m^3	6.2E-09	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.21E-06	mg/m^3	1.3E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.13E-07	mg/m^3	4.3E-08	mg/m^3	5.0E-05	(mg/m^3)	8.6E-04
				Vanadium	1.58E-08	mg/m^3	2.2E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								1.1E-03
		Exposure Point Total									1.1E-03
	Exposure Media Total										1.1E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											4.0E-02

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	7.9E-08	mg/kg-day	2.0E-05	mg/kg-day	3.9E-03
				Inorganics							
				Aluminum	1.13E+04	mg/kg	2.2E-03	mg/kg-day	1.0E+00	mg/kg-day	2.2E-03
				Antimony	3.83E+00	mg/kg	7.5E-07	mg/kg-day	4.0E-04	mg/kg-day	1.9E-03
				Arsenic	2.70E+00	mg/kg	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
				Cobalt	9.87E+00	mg/kg	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.4E-03
				Copper	1.64E+02	mg/kg	3.2E-05	mg/kg-day	4.0E-02	mg/kg-day	8.0E-04
				Iron	1.95E+04	mg/kg	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	5.5E-03
				Manganese	8.28E+02	mg/kg	1.6E-04	mg/kg-day	2.4E-02	mg/kg-day	6.8E-03
				Vanadium	3.04E+01	mg/kg	5.9E-06	mg/kg-day	5.0E-03	mg/kg-day	1.2E-03
			Exp. Route Total								3.0E-02
			Dermal Absorption	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	7.3E-08	mg/kg-day	2.0E-05	mg/kg-day	3.6E-03
				Inorganics							
				Aluminum	1.13E+04	mg/kg	1.5E-04	mg/kg-day	1.0E+00	mg/kg-day	1.5E-04
				Antimony	3.83E+00	mg/kg	4.9E-08	mg/kg-day	6.0E-05	mg/kg-day	8.2E-04
				Arsenic	2.70E+00	mg/kg	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.5E-04
				Cobalt	9.87E+00	mg/kg	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	4.2E-04
				Copper	1.64E+02	mg/kg	2.1E-06	mg/kg-day	4.0E-02	mg/kg-day	5.3E-05
				Iron	1.95E+04	mg/kg	2.5E-04	mg/kg-day	7.0E-01	mg/kg-day	3.6E-04
				Manganese	8.28E+02	mg/kg	1.1E-05	mg/kg-day	9.6E-04	mg/kg-day	1.1E-02
				Vanadium	3.04E+01	mg/kg	3.9E-07	mg/kg-day	1.3E-04	mg/kg-day	3.0E-03
			Exp. Route Total								2.0E-02
		Exposure Point Total									5.0E-02
	Exposure Media Total										5.0E-02
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-10	mg/m^3	2.7E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.57E-06	mg/m^3	7.6E-07	mg/m^3	5.0E-03	(mg/m^3)	1.5E-04
				Antimony	1.89E-09	mg/m^3	2.6E-10	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.33E-09	mg/m^3	1.8E-10	mg/m^3	3.0E-05	(mg/m^3)	6.1E-06
				Cobalt	4.86E-09	mg/m^3	6.7E-10	mg/m^3	6.0E-06	(mg/m^3)	1.1E-04
				Copper	8.08E-08	mg/m^3	1.1E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.61E-06	mg/m^3	1.3E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	4.08E-07	mg/m^3	5.6E-08	mg/m^3	5.0E-05	(mg/m^3)	1.1E-03
				Vanadium	1.50E-08	mg/m^3	2.1E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								1.4E-03
		Exposure Point Total									1.4E-03
	Exposure Media Total										1.4E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											5.2E-02

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Sediment	Sediment	Area P	**Ingestion**	**Organics** No COPCs **Inorganics** No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics** No COPCs **Inorganics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Air	Area P	**Inhalation** (Ambient Air)	**Organics** Chloroform Tetrachloroethene	2.16E-09 4.96E-09	mg/m^3 mg/m^3	3.0E-10 6.8E-10	mg/m^3 mg/m^3	9.8E-02 2.7E-01	(mg/m^3) (mg/m^3)	3.0E-09 2.5E-09
			Exp. Route Total								5.5E-09
		Exposure Point Total									5.5E-09
	Exposure Media Total										5.5E-09
Groundwater Total											5.5E-09
										Total of Receptor Hazards Across All Media	5.2E-02

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, hazard estimates are conservatively based on this data grouping.

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	2.9E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.7E-08
				Inorganics							
				Aluminum	1.17E+04	mg/kg	3.7E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	9.6E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	6.4E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	9.6E-07
				Cobalt	9.45E+00	mg/kg	3.0E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	2.9E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	5.9E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	2.0E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	1.0E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.0E-06
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.3E-08
				Inorganics							
				Aluminum	1.17E+04	mg/kg	2.4E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	6.3E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	1.3E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.9E-07
				Cobalt	9.45E+00	mg/kg	2.0E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	1.9E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	3.9E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	1.3E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	6.6E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								2.4E-07
		Exposure Point Total									1.3E-06
	Exposure Media Total										1.3E-06
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-08	$\mu g/m^3$	9.9E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.6E-12
				Inorganics							
				Aluminum	5.76E-03	$\mu g/m^3$	1.3E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.50E-06	$\mu g/m^3$	3.3E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.00E-06	$\mu g/m^3$	2.2E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	9.5E-10
				Cobalt	4.66E-06	$\mu g/m^3$	1.0E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	9.2E-09
				Copper	4.51E-05	$\mu g/m^3$	9.9E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.21E-03	$\mu g/m^3$	2.0E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	3.13E-04	$\mu g/m^3$	6.9E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.58E-05	$\mu g/m^3$	3.5E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								1.0E-08
		Exposure Point Total									1.0E-08
	Exposure Media Total										1.0E-08
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.3E-06

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07
				Inorganics							
				Aluminum	1.13E+04	mg/kg	3.6E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	1.2E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	8.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-06
				Cobalt	9.87E+00	mg/kg	3.1E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Copper	1.64E+02	mg/kg	5.2E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.95E+04	mg/kg	6.1E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	2.6E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	9.6E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.5E-06
			Dermal Absorption	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07
				Inorganics							
				Aluminum	1.13E+04	mg/kg	2.3E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Antimony	3.83E+00	mg/kg	8.0E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	2.70E+00	mg/kg	1.7E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07
				Cobalt	9.87E+00	mg/kg	2.0E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Copper	1.64E+02	mg/kg	3.4E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.95E+04	mg/kg	4.0E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.28E+02	mg/kg	1.7E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.04E+01	mg/kg	6.3E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								4.9E-07
		Exposure Point Total									2.0E-06
	Exposure Media Total										2.0E-06
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-07	$\mu g/m^3$	4.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.5E-11
				Inorganics							
				Aluminum	5.57E-03	$\mu g/m^3$	1.2E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.89E-06	$\mu g/m^3$	4.2E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.33E-06	$\mu g/m^3$	2.9E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.3E-09
				Cobalt	4.86E-06	$\mu g/m^3$	1.1E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	9.6E-09
				Copper	8.08E-05	$\mu g/m^3$	1.8E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.61E-03	$\mu g/m^3$	2.1E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	4.08E-04	$\mu g/m^3$	9.0E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.50E-05	$\mu g/m^3$	3.3E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								1.1E-08
		Exposure Point Total									1.1E-08
	Exposure Media Total										1.1E-08
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											2.0E-06

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	6.0E-06	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-07
				Tetrachloroethene	2.00E+00	µg/L	6.3E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-06
				Inorganics							
				Aluminum	6.16E+03	µg/L	1.9E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E+00	µg/L	1.4E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+03	µg/L	2.6E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E+02	µg/L	6.2E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.6E-06
		Exposure Point Total									3.6E-06
	Exposure Media Total										3.6E-06
	Air	Area P	**Inhalation** (Ambient Air)	**Organics**							
				Chloroform	2.16E-06	$µg/m^3$	4.8E-07	$µg/m^3$	2.3E-05	$(µg/m^3)^{-1}$	1.1E-11
				Tetrachloroethene	4.96E-06	$µg/m^3$	1.1E-06	$µg/m^3$	5.9E-06	$(µg/m^3)^{-1}$	6.4E-12
			Exp. Route Total								1.7E-11
		Exposure Point Total									1.7E-11
	Exposure Media Total										1.7E-11
	Air	Area P	**Inhalation** (Indoor Air)	**Organics**							
				Chloroform	4.06E-03	$µg/m^3$	8.9E-04	$µg/m^3$	2.3E-05	$(µg/m^3)^{-1}$	2.1E-08
				Tetrachloroethene	9.19E-03	$µg/m^3$	2.0E-03	$µg/m^3$	5.9E-06	$(µg/m^3)^{-1}$	1.2E-08
			Exp. Route Total								3.2E-08
		Exposure Point Total									3.2E-08
	Exposure Media Total										3.2E-08
Groundwater Total											3.6E-06
										Total of Receptor Risks Across All Media	5.6E-06

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this data grouping.

Since indoor air represents the more highly contaminated portion of groundwater, total risk estimates are conservatively based on this data grouping.

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Hazard Quotient
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	4.0E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.0E-02	mg/kg-day	1.0E+00	mg/kg-day	1.0E-02
				Antimony	3.05E+00	mg/kg	2.7E-06	mg/kg-day	4.0E-04	mg/kg-day	6.7E-03
				Arsenic	2.04E+00	mg/kg	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	6.0E-03
				Cobalt	9.45E+00	mg/kg	8.3E-06	mg/kg-day	3.0E-04	mg/kg-day	2.8E-02
				Copper	9.16E+01	mg/kg	8.1E-05	mg/kg-day	4.0E-02	mg/kg-day	2.0E-03
				Iron	1.87E+04	mg/kg	1.6E-02	mg/kg-day	7.0E-01	mg/kg-day	2.4E-02
				Manganese	6.36E+02	mg/kg	5.6E-04	mg/kg-day	2.4E-02	mg/kg-day	2.3E-02
				Vanadium	3.20E+01	mg/kg	2.8E-05	mg/kg-day	5.0E-03	mg/kg-day	5.6E-03
			Exp. Route Total								1.1E-01
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	7.4E-08	mg/kg-day	2.0E-05	mg/kg-day	3.7E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	6.8E-04	mg/kg-day	1.0E+00	mg/kg-day	6.8E-04
				Antimony	3.05E+00	mg/kg	1.8E-07	mg/kg-day	6.0E-05	mg/kg-day	3.0E-03
				Arsenic	2.04E+00	mg/kg	3.6E-07	mg/kg-day	3.0E-04	mg/kg-day	1.2E-03
				Cobalt	9.45E+00	mg/kg	5.5E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
				Copper	9.16E+01	mg/kg	5.3E-06	mg/kg-day	4.0E-02	mg/kg-day	1.3E-04
				Iron	1.87E+04	mg/kg	1.1E-03	mg/kg-day	7.0E-01	mg/kg-day	1.6E-03
				Manganese	6.36E+02	mg/kg	3.7E-05	mg/kg-day	9.6E-04	mg/kg-day	3.9E-02
				Vanadium	3.20E+01	mg/kg	1.9E-06	mg/kg-day	1.3E-04	mg/kg-day	1.4E-02
			Exp. Route Total								6.5E-02
		Exposure Point Total									1.7E-01
	Exposure Media Total										1.7E-01
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-11	mg/m^3	2.8E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.76E-06	mg/m^3	3.6E-06	mg/m^3	5.0E-03	(mg/m^3)	7.1E-04
				Antimony	1.50E-09	mg/m^3	9.3E-10	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.00E-09	mg/m^3	6.2E-10	mg/m^3	3.0E-05	(mg/m^3)	2.1E-05
				Cobalt	4.66E-09	mg/m^3	2.9E-09	mg/m^3	6.0E-06	(mg/m^3)	4.8E-04
				Copper	4.51E-08	mg/m^3	2.8E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.21E-06	mg/m^3	5.7E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.13E-07	mg/m^3	1.9E-07	mg/m^3	5.0E-05	(mg/m^3)	3.9E-03
				Vanadium	1.58E-08	mg/m^3	9.7E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								5.1E-03
		Exposure Point Total									5.1E-03
	Exposure Media Total										5.1E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.8E-01

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Hazard Quotient
Surface Soil	Surface Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	3.5E-07	mg/kg-day	2.0E-05	mg/kg-day	1.8E-02
				Inorganics							
				Aluminum	1.13E+04	mg/kg	1.0E-02	mg/kg-day	1.0E+00	mg/kg-day	1.0E-02
				Antimony	3.83E+00	mg/kg	3.4E-06	mg/kg-day	4.0E-04	mg/kg-day	8.4E-03
				Arsenic	2.70E+00	mg/kg	2.4E-06	mg/kg-day	3.0E-04	mg/kg-day	7.9E-03
				Cobalt	9.87E+00	mg/kg	8.7E-06	mg/kg-day	3.0E-04	mg/kg-day	2.9E-02
				Copper	1.64E+02	mg/kg	1.4E-04	mg/kg-day	4.0E-02	mg/kg-day	3.6E-03
				Iron	1.95E+04	mg/kg	1.7E-02	mg/kg-day	7.0E-01	mg/kg-day	2.5E-02
				Manganese	8.28E+02	mg/kg	7.3E-04	mg/kg-day	2.4E-02	mg/kg-day	3.0E-02
				Vanadium	3.04E+01	mg/kg	2.7E-05	mg/kg-day	5.0E-03	mg/kg-day	5.4E-03
			Exp. Route Total								1.4E-01
			Dermal Absorption	**Organics**							
				Aroclor 1254	4.03E-01	mg/kg	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	1.6E-02
				Inorganics							
				Aluminum	1.13E+04	mg/kg	6.6E-04	mg/kg-day	1.0E+00	mg/kg-day	6.6E-04
				Antimony	3.83E+00	mg/kg	2.2E-07	mg/kg-day	6.0E-05	mg/kg-day	3.7E-03
				Arsenic	2.70E+00	mg/kg	4.7E-07	mg/kg-day	3.0E-04	mg/kg-day	1.6E-03
				Cobalt	9.87E+00	mg/kg	5.7E-07	mg/kg-day	3.0E-04	mg/kg-day	1.9E-03
				Copper	1.64E+02	mg/kg	9.5E-06	mg/kg-day	4.0E-02	mg/kg-day	2.4E-04
				Iron	1.95E+04	mg/kg	1.1E-03	mg/kg-day	7.0E-01	mg/kg-day	1.6E-03
				Manganese	8.28E+02	mg/kg	4.8E-05	mg/kg-day	9.6E-04	mg/kg-day	5.0E-02
				Vanadium	3.04E+01	mg/kg	1.8E-06	mg/kg-day	1.3E-04	mg/kg-day	1.4E-02
			Exp. Route Total								9.0E-02
		Exposure Point Total									2.3E-01
	Exposure Media Total										2.3E-01
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	1.99E-10	mg/m^3	1.2E-10	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.57E-06	mg/m^3	3.4E-06	mg/m^3	5.0E-03	(mg/m^3)	6.9E-04
				Antimony	1.89E-09	mg/m^3	1.2E-09	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.33E-09	mg/m^3	8.2E-10	mg/m^3	3.0E-05	(mg/m^3)	2.7E-05
				Cobalt	4.86E-09	mg/m^3	3.0E-09	mg/m^3	6.0E-06	(mg/m^3)	5.0E-04
				Copper	8.08E-08	mg/m^3	5.0E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.61E-06	mg/m^3	5.9E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	4.08E-07	mg/m^3	2.5E-07	mg/m^3	5.0E-05	(mg/m^3)	5.0E-03
				Vanadium	1.50E-08	mg/m^3	9.2E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								6.2E-03
		Exposure Point Total									6.2E-03
	Exposure Media Total										6.2E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											2.3E-01

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Hazard Quotient
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	1.7E-05	mg/kg-day	1.0E-02	mg/kg-day	1.7E-03
				Tetrachloroethene	2.00E+00	µg/L	1.8E-05	mg/kg-day	1.0E-02	mg/kg-day	1.8E-03
				Inorganics							
				Aluminum	6.16E+03	µg/L	5.4E-02	mg/kg-day	1.0E+00	mg/kg-day	5.4E-02
				Cobalt	4.60E+00	µg/L	4.1E-05	mg/kg-day	3.0E-04	mg/kg-day	1.4E-01
				Iron	8.27E+03	µg/L	7.3E-02	mg/kg-day	7.0E-01	mg/kg-day	1.0E-01
				Manganese	1.97E+02	µg/L	1.7E-03	mg/kg-day	2.4E-02	mg/kg-day	7.2E-02
			Exp. Route Total								3.7E-01
		Exposure Point Total									3.7E-01
	Exposure Media Total										3.7E-01
	Air	Area P	**Inhalation**	**Organics**							
			(Ambient Air)	Chloroform	2.16E-09	mg/m^3	1.3E-09	mg/m^3	9.8E-02	(mg/m^3)	1.4E-08
				Tetrachloroethene	4.96E-09	mg/m^3	3.1E-09	mg/m^3	2.7E-01	(mg/m^3)	1.1E-08
			Exp. Route Total								2.5E-08
		Exposure Point Total									2.5E-08
	Exposure Media Total										2.5E-08
	Air	Area P	**Inhalation**	**Organics**							
			(Indoor Air)	Chloroform	4.06E-06	mg/m^3	2.5E-06	mg/m^3	9.8E-02	(mg/m^3)	2.6E-05
				Tetrachloroethene	9.19E-06	mg/m^3	5.7E-06	mg/m^3	2.7E-01	(mg/m^3)	2.1E-05
			Exp. Route Total								4.7E-05
		Exposure Point Total									4.7E-05
	Exposure Media Total										4.7E-05
Groundwater Total											3.7E-01
										Total of Receptor Hazards Across All Media	6.0E-01

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, hazard estimates are conservatively based on this data grouping.
Since indoor air represents the more highly contaminated portion of groundwater, hazard estimates are conservatively based on this data grouping.

Table E.1-48
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	2.1E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.2E-09
				Inorganics							
				Aluminum	1.17E+04	mg/kg	2.7E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	7.0E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	4.7E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	7.1E-08
				Cobalt	9.45E+00	mg/kg	2.2E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	2.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	4.3E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	1.5E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	7.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								7.5E-08
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	8.8E-10	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.8E-09
				Inorganics							
				Aluminum	1.17E+04	mg/kg	8.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	2.1E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	4.2E-09	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	6.4E-09
				Cobalt	9.45E+00	mg/kg	6.5E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	6.3E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	1.3E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	4.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	2.2E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								8.1E-09
		Exposure Point Total									8.3E-08
	Exposure Media Total										8.3E-08
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.95E-06	$\mu g/m^3$	2.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.4E-11
				Inorganics							
				Aluminum	6.36E-01	$\mu g/m^3$	3.1E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.66E-04	$\mu g/m^3$	8.1E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.11E-04	$\mu g/m^3$	5.4E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.3E-09
				Cobalt	5.14E-04	$\mu g/m^3$	2.5E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.3E-08
				Copper	4.98E-03	$\mu g/m^3$	2.4E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	1.02E+00	$\mu g/m^3$	5.0E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	3.46E-02	$\mu g/m^3$	1.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.74E-03	$\mu g/m^3$	8.5E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								2.5E-08
		Exposure Point Total									2.5E-08
	Exposure Media Total										2.5E-08
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.1E-07

Table E.1-48
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater			**Dermal Absorption**	**Organics**							
				Chloroform	1.90E+00	µg/L	1.5E-08	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	4.6E-10
				Tetrachloroethene	2.00E+00	µg/L	8.5E-08	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	4.6E-08
				Inorganics							
				Aluminum	6.16E+03	µg/L	8.5E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E+00	µg/L	5.8E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+03	µg/L	1.2E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E+02	µg/L	2.3E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								4.7E-08
		Exposure Point Total									4.7E-08
	Exposure Media Total										4.7E-08
	Air	Area P	**Inhalation** (Trench Air)	**Organics**							
				Chloroform	7.40E+00	$µg/m^3$	3.6E-02	$µg/m^3$	2.3E-05	$(µg/m^3)^{-1}$	8.3E-07
				Tetrachloroethene	6.69E+00	$µg/m^3$	3.3E-02	$µg/m^3$	5.9E-06	$(µg/m^3)^{-1}$	1.9E-07
			Exp. Route Total								1.0E-06
		Exposure Point Total									1.0E-06
	Exposure Media Total										1.0E-06
Groundwater Total											1.1E-06
										Total of Receptor Risks Across All Media	1.2E-06

N/A = Not Applicable.

Table E.1-49
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Hazard Quotient
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	7.3E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.9E-02	mg/kg-day	1.0E+00	mg/kg-day	1.9E-02
				Antimony	3.05E+00	mg/kg	4.9E-06	mg/kg-day	4.0E-04	mg/kg-day	1.2E-02
				Arsenic	2.04E+00	mg/kg	3.3E-06	mg/kg-day	3.0E-04	mg/kg-day	1.1E-02
				Cobalt	9.45E+00	mg/kg	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	5.1E-02
				Copper	9.16E+01	mg/kg	1.5E-04	mg/kg-day	4.0E-02	mg/kg-day	3.7E-03
				Iron	1.87E+04	mg/kg	3.0E-02	mg/kg-day	7.0E-01	mg/kg-day	4.3E-02
				Manganese	6.36E+02	mg/kg	1.0E-03	mg/kg-day	2.4E-02	mg/kg-day	4.3E-02
				Vanadium	3.20E+01	mg/kg	5.2E-05	mg/kg-day	5.0E-03	mg/kg-day	1.0E-02
			Exp. Route Total								2.0E-01
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	3.1E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	5.7E-04	mg/kg-day	1.0E+00	mg/kg-day	5.7E-04
				Antimony	3.05E+00	mg/kg	1.5E-07	mg/kg-day	6.0E-05	mg/kg-day	2.5E-03
				Arsenic	2.04E+00	mg/kg	3.0E-07	mg/kg-day	3.0E-04	mg/kg-day	9.9E-04
				Cobalt	9.45E+00	mg/kg	4.6E-07	mg/kg-day	3.0E-04	mg/kg-day	1.5E-03
				Copper	9.16E+01	mg/kg	4.4E-06	mg/kg-day	4.0E-02	mg/kg-day	1.1E-04
				Iron	1.87E+04	mg/kg	9.1E-04	mg/kg-day	7.0E-01	mg/kg-day	1.3E-03
				Manganese	6.36E+02	mg/kg	3.1E-05	mg/kg-day	9.6E-04	mg/kg-day	3.2E-02
				Vanadium	3.20E+01	mg/kg	1.5E-06	mg/kg-day	1.3E-04	mg/kg-day	1.2E-02
			Exp. Route Total								5.4E-02
		Exposure Point Total									2.5E-01
	Exposure Media Total										2.5E-01
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.95E-09	mg/m^3	1.7E-09	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	6.36E-04	mg/m^3	2.2E-04	mg/m^3	5.0E-03	(mg/m^3)	4.4E-02
				Antimony	1.66E-07	mg/m^3	5.7E-08	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.11E-07	mg/m^3	3.8E-08	mg/m^3	3.0E-05	(mg/m^3)	1.3E-03
				Cobalt	5.14E-07	mg/m^3	1.8E-07	mg/m^3	6.0E-06	(mg/m^3)	2.9E-02
				Copper	4.98E-06	mg/m^3	1.7E-06	mg/m^3	N/A	(mg/m^3)	---
				Iron	1.02E-03	mg/m^3	3.5E-04	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.46E-05	mg/m^3	1.2E-05	mg/m^3	5.0E-05	(mg/m^3)	2.4E-01
				Vanadium	1.74E-06	mg/m^3	6.0E-07	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								3.1E-01
		Exposure Point Total									3.1E-01
	Exposure Media Total										3.1E-01
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											5.7E-01

Table E.1-49
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Hazard Quotient
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Dermal Absorption**	**Organics**							
				Chloroform	1.90E+00	µg/L	1.0E-06	mg/kg-day	1.0E-02	mg/kg-day	1.0E-04
				Tetrachloroethene	2.00E+00	µg/L	6.0E-06	mg/kg-day	1.0E-02	mg/kg-day	6.0E-04
				Inorganics							
				Aluminum	6.16E+03	µg/L	6.0E-03	mg/kg-day	1.0E+00	mg/kg-day	6.0E-03
				Cobalt	4.60E+00	µg/L	4.0E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02
				Iron	8.27E+03	µg/L	8.4E-03	mg/kg-day	7.0E-01	mg/kg-day	1.2E-02
				Manganese	1.97E+02	µg/L	1.6E-04	mg/kg-day	9.6E-04	mg/kg-day	1.7E-01
			Exp. Route Total								2.0E-01
		Exposure Point Total									2.0E-01
	Exposure Media Total										2.0E-01
	Air	Area P	**Inhalation** (Trench Air)	**Organics**							
				Chloroform	7.40E-03	mg/m^3	2.5E-03	mg/m^3	9.8E-02	(mg/m^3)	2.6E-02
				Tetrachloroethene	6.69E-03	mg/m^3	2.3E-03	mg/m^3	2.7E-01	(mg/m^3)	8.5E-03
			Exp. Route Total								3.4E-02
		Exposure Point Total									3.4E-02
	Exposure Media Total										3.4E-02
Groundwater Total											2.3E-01
										Total of Receptor Hazards Across All Media	8.0E-01

N/A = Not Applicable.

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.8E-07
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.8E-02	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	4.8E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	3.2E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.8E-06
				Cobalt	9.45E+00	mg/kg	1.5E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	1.4E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	2.9E-02	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	1.0E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	5.0E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								5.1E-06
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	6.3E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.3E-07
				Inorganics							
				Aluminum	1.17E+04	mg/kg	5.8E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	1.5E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	3.0E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.5E-07
				Cobalt	9.45E+00	mg/kg	4.7E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Copper	9.16E+01	mg/kg	4.5E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	9.2E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	3.1E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	1.6E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								5.8E-07
		Exposure Point Total									5.7E-06
	Exposure Media Total										5.7E-06
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-08	$\mu g/m^3$	1.1E-11	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.0E-15
				Inorganics							
				Aluminum	5.77E-03	$\mu g/m^3$	2.4E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.50E-06	$\mu g/m^3$	6.2E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.01E-06	$\mu g/m^3$	4.1E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.8E-09
				Cobalt	4.66E-06	$\mu g/m^3$	1.9E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.7E-08
				Copper	4.51E-05	$\mu g/m^3$	1.9E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.22E-03	$\mu g/m^3$	3.8E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	3.13E-04	$\mu g/m^3$	1.3E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.58E-05	$\mu g/m^3$	6.5E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								1.9E-08
		Exposure Point Total									1.9E-08
	Exposure Media Total										1.9E-08
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											5.7E-06

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	2.8E-05	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	8.8E-07
				Tetrachloroethene	2.00E+00	µg/L	3.0E-05	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-05
				Inorganics							
				Aluminum	6.16E+03	µg/L	9.2E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E+00	µg/L	6.8E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+03	µg/L	1.2E-01	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E+02	µg/L	2.9E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.7E-05
			Dermal Absorption	**Organics**							
				Chloroform	1.90E+00	µg/L	N/A	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	NV
				Tetrachloroethene	2.00E+00	µg/L	1.7E-05	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	9.0E-06
				Inorganics							
				Aluminum	6.16E+03	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Cobalt	4.60E+00	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Iron	8.27E+03	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Manganese	1.97E+02	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
			Exp. Route Total								9.0E-06
		Exposure Point Total									2.6E-05
	Exposure Media Total										2.6E-05

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Air	Area P	**Inhalation**	**Organics**							
			(Indoor Air)	Chloroform	4.06E-03	µg/m^3	1.7E-03	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	3.8E-08
				Tetrachloroethene	9.19E-03	µg/m^3	3.8E-03	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	2.2E-08
			Exp. Route Total								6.1E-08
		Exposure Point Total									6.1E-08
	Exposure Media Total										6.1E-08
	Air	Area P	**Inhalation**	**Organics**							
			(Shower Room)	Chloroform	2.98E+00	µg/m^3	9.8E-01	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	2.3E-05
				Tetrachloroethene	2.83E+00	µg/m^3	9.3E-01	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	5.5E-06
			Exp. Route Total								2.8E-05
		Exposure Point Total									2.8E-05
	Exposure Media Total										2.8E-05
	Home Grown Produce	Area P	**Ingestion**	**Inorganics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Groundwater Total											5.4E-05
										Total of Receptor Risks Across All Media	6.0E-05

N/A = Not Applicable.
NC = Not calculated. Intake for Lifetime Resident based on age-adjusted calculation.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	6.2E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.6E-02	mg/kg-day	1.0E+00	mg/kg-day	1.6E-02
				Antimony	3.05E+00	mg/kg	4.2E-06	mg/kg-day	4.0E-04	mg/kg-day	1.0E-02
				Arsenic	2.04E+00	mg/kg	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	9.3E-03
				Cobalt	9.45E+00	mg/kg	1.3E-05	mg/kg-day	3.0E-04	mg/kg-day	4.3E-02
				Copper	9.16E+01	mg/kg	1.3E-04	mg/kg-day	4.0E-02	mg/kg-day	3.1E-03
				Iron	1.87E+04	mg/kg	2.6E-02	mg/kg-day	7.0E-01	mg/kg-day	3.7E-02
				Manganese	6.36E+02	mg/kg	8.7E-04	mg/kg-day	2.4E-02	mg/kg-day	3.6E-02
				Vanadium	3.20E+01	mg/kg	4.4E-05	mg/kg-day	5.0E-03	mg/kg-day	8.8E-03
			Exp. Route Total								1.7E-01
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	7.0E-08	mg/kg-day	2.0E-05	mg/kg-day	3.5E-03
				Inorganics							
				Aluminum	1.17E+04	mg/kg	6.4E-04	mg/kg-day	1.0E+00	mg/kg-day	6.4E-04
				Antimony	3.05E+00	mg/kg	1.7E-07	mg/kg-day	6.0E-05	mg/kg-day	2.8E-03
				Arsenic	2.04E+00	mg/kg	3.3E-07	mg/kg-day	3.0E-04	mg/kg-day	1.1E-03
				Cobalt	9.45E+00	mg/kg	5.2E-07	mg/kg-day	3.0E-04	mg/kg-day	1.7E-03
				Copper	9.16E+01	mg/kg	5.0E-06	mg/kg-day	4.0E-02	mg/kg-day	1.3E-04
				Iron	1.87E+04	mg/kg	1.0E-03	mg/kg-day	7.0E-01	mg/kg-day	1.5E-03
				Manganese	6.36E+02	mg/kg	3.5E-05	mg/kg-day	9.6E-04	mg/kg-day	3.6E-02
				Vanadium	3.20E+01	mg/kg	1.7E-06	mg/kg-day	1.3E-04	mg/kg-day	1.3E-02
			Exp. Route Total								6.1E-02
		Exposure Point Total									2.3E-01
	Exposure Media Total										2.3E-01
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-11	mg/m^3	4.3E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.77E-06	mg/m^3	5.5E-06	mg/m^3	5.0E-03	(mg/m^3)	1.1E-03
				Antimony	1.50E-09	mg/m^3	1.4E-09	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.01E-09	mg/m^3	9.6E-10	mg/m^3	3.0E-05	(mg/m^3)	3.2E-05
				Cobalt	4.66E-09	mg/m^3	4.5E-09	mg/m^3	6.0E-06	(mg/m^3)	7.4E-04
				Copper	4.51E-08	mg/m^3	4.3E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.22E-06	mg/m^3	8.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.13E-07	mg/m^3	3.0E-07	mg/m^3	5.0E-05	(mg/m^3)	6.0E-03
				Vanadium	1.58E-08	mg/m^3	1.5E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								7.9E-03
		Exposure Point Total									7.9E-03
	Exposure Media Total										7.9E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.4E-01

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal	**Organics**							
			Absorption	No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	5.2E-05	mg/kg-day	1.0E-02	mg/kg-day	5.2E-03
				Tetrachloroethene	2.00E+00	µg/L	5.5E-05	mg/kg-day	1.0E-02	mg/kg-day	5.5E-03
				Inorganics							
				Aluminum	6.16E+03	µg/L	1.7E-01	mg/kg-day	1.0E+00	mg/kg-day	1.7E-01
				Cobalt	4.60E+00	µg/L	1.3E-04	mg/kg-day	3.0E-04	mg/kg-day	4.2E-01
				Iron	8.27E+03	µg/L	2.3E-01	mg/kg-day	7.0E-01	mg/kg-day	3.2E-01
				Manganese	1.97E+02	µg/L	5.4E-03	mg/kg-day	2.4E-02	mg/kg-day	2.2E-01
			Exp. Route Total								1.1E+00
			Dermal	**Organics**							
			Absorption	Chloroform	1.90E+00	µg/L	N/A	mg/kg-day	1.0E-02	mg/kg-day	NV
				Tetrachloroethene	2.00E+00	µg/L	3.0E-05	mg/kg-day	1.0E-02	mg/kg-day	3.0E-03
				Inorganics							
				Aluminum	6.16E+03	µg/L	N/A	mg/kg-day	1.0E+00	mg/kg-day	NV
				Cobalt	4.60E+00	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Iron	8.27E+03	µg/L	N/A	mg/kg-day	7.0E-01	mg/kg-day	NV
				Manganese	1.97E+02	µg/L	N/A	mg/kg-day	9.6E-04	mg/kg-day	NV
			Exp. Route Total								3.0E-03
		Exposure Point Total									1.2E+00
	Exposure Media Total										1.2E+00

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Groundwater	Air	Area P	**Inhalation** (Indoor Air)	**Organics**							
				Chloroform	4.06E-06	mg/m^3	3.9E-06	mg/m^3	9.8E-02	$(mg/m^3)^{-1}$	4.0E-05
				Tetrachloroethene	9.19E-06	mg/m^3	8.8E-06	mg/m^3	2.7E-01	$(mg/m^3)^{-1}$	3.3E-05
			Exp. Route Total								7.2E-05
		Exposure Point Total									7.2E-05
	Exposure Media Total										7.2E-05
	Air	Area P	**Inhalation** (Shower Room)	**Organics**							
				Chloroform	2.98E-03	mg/m^3	2.9E-03	mg/m^3	9.8E-02	$(mg/m^3)^{-1}$	2.9E-02
				Tetrachloroethene	2.83E-03	mg/m^3	2.7E-03	mg/m^3	2.7E-01	$(mg/m^3)^{-1}$	1.0E-02
			Exp. Route Total								3.9E-02
		Exposure Point Total									3.9E-02
	Exposure Media Total										3.9E-02
	Home Grown Produce	Area P	**Ingestion**	**Inorganics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Groundwater Total											1.2E+00
									Total of Receptor Hazards Across All Media		1.4E+00

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.3E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	3.3E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	2.2E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-06
				Cobalt	9.45E+00	mg/kg	1.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Copper	9.16E+01	mg/kg	1.0E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	2.0E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	7.0E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	3.5E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.6E-06
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	3.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.8E-08
				Inorganics							
				Aluminum	1.17E+04	mg/kg	3.6E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Antimony	3.05E+00	mg/kg	9.4E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	2.04E+00	mg/kg	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07
				Cobalt	9.45E+00	mg/kg	2.9E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Copper	9.16E+01	mg/kg	2.8E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	5.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	6.36E+02	mg/kg	2.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.20E+01	mg/kg	9.8E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.6E-07
		Exposure Point Total									3.9E-06
	Exposure Media Total										3.9E-06
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-08	$\mu g/m^3$	3.7E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-12
				Inorganics							
				Aluminum	5.77E-03	$\mu g/m^3$	4.7E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Antimony	1.50E-06	$\mu g/m^3$	1.2E-07	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	1.01E-06	$\mu g/m^3$	8.3E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	3.6E-10
				Cobalt	4.66E-06	$\mu g/m^3$	3.8E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.4E-09
				Copper	4.51E-05	$\mu g/m^3$	3.7E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Iron	9.22E-03	$\mu g/m^3$	7.6E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	3.13E-04	$\mu g/m^3$	2.6E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	1.58E-05	$\mu g/m^3$	1.3E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								3.8E-09
		Exposure Point Total									3.8E-09
	Exposure Media Total										3.8E-09
	Air (Volatiles)	Area P	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											3.9E-06

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal Absorption	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	1.0E-05	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-07
				Tetrachloroethene	2.00E+00	µg/L	1.1E-05	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	5.9E-06
				Inorganics							
				Aluminum	6.16E+03	µg/L	3.4E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E+00	µg/L	2.5E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+03	µg/L	4.5E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E+02	µg/L	1.1E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								6.2E-06
			Dermal Absorption	**Organics**							
				Chloroform	1.90E+00	µg/L	N/A	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	NV
				Tetrachloroethene	2.00E+00	µg/L	6.5E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-06
				Inorganics							
				Aluminum	6.16E+03	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Cobalt	4.60E+00	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Iron	8.27E+03	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Manganese	1.97E+02	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
			Exp. Route Total								3.5E-06
		Exposure Point Total									9.8E-06
	Exposure Media Total										9.8E-06

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Air	Area P	**Inhalation**	**Organics**							
			(Indoor Air)	Chloroform	4.06E-03	$\mu g/m^3$	3.3E-04	$\mu g/m^3$	2.3E-05	$(\mu g/m^3)^{-1}$	7.7E-09
				Tetrachloroethene	9.19E-03	$\mu g/m^3$	7.6E-04	$\mu g/m^3$	5.9E-06	$(\mu g/m^3)^{-1}$	4.5E-09
			Exp. Route Total								1.2E-08
		Exposure Point Total									1.2E-08
	Exposure Media Total										1.2E-08
	Home Grown Produce	Area P	**Ingestion**	**Inorganics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Groundwater Total											9.8E-06
										Total of Receptor Risks Across All Media	1.4E-05

N/A = Not Applicable.

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Total Soil	Total Soil	Area P	**Ingestion**	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	5.8E-02
				Inorganics							
				Aluminum	1.17E+04	mg/kg	1.5E-01	mg/kg-day	1.0E+00	mg/kg-day	1.5E-01
				Antimony	3.05E+00	mg/kg	3.9E-05	mg/kg-day	4.0E-04	mg/kg-day	9.7E-02
				Arsenic	2.04E+00	mg/kg	2.6E-05	mg/kg-day	3.0E-04	mg/kg-day	8.7E-02
				Cobalt	9.45E+00	mg/kg	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	4.0E-01
				Copper	9.16E+01	mg/kg	1.2E-03	mg/kg-day	4.0E-02	mg/kg-day	2.9E-02
				Iron	1.87E+04	mg/kg	2.4E-01	mg/kg-day	7.0E-01	mg/kg-day	3.4E-01
				Manganese	6.36E+02	mg/kg	8.1E-03	mg/kg-day	2.4E-02	mg/kg-day	3.4E-01
				Vanadium	3.20E+01	mg/kg	4.1E-04	mg/kg-day	5.0E-03	mg/kg-day	8.2E-02
			Exp. Route Total								1.6E+00
			Dermal Absorption	**Organics**							
				Aroclor 1254	9.10E-02	mg/kg	4.6E-07	mg/kg-day	2.0E-05	mg/kg-day	2.3E-02
				Inorganics							
				Aluminum	1.17E+04	mg/kg	4.2E-03	mg/kg-day	1.0E+00	mg/kg-day	4.2E-03
				Antimony	3.05E+00	mg/kg	1.1E-06	mg/kg-day	6.0E-05	mg/kg-day	1.8E-02
				Arsenic	2.04E+00	mg/kg	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.3E-03
				Cobalt	9.45E+00	mg/kg	3.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.1E-02
				Copper	9.16E+01	mg/kg	3.3E-05	mg/kg-day	4.0E-02	mg/kg-day	8.2E-04
				Iron	1.87E+04	mg/kg	6.7E-03	mg/kg-day	7.0E-01	mg/kg-day	9.6E-03
				Manganese	6.36E+02	mg/kg	2.3E-04	mg/kg-day	9.6E-04	mg/kg-day	2.4E-01
				Vanadium	3.20E+01	mg/kg	1.1E-05	mg/kg-day	1.3E-04	mg/kg-day	8.8E-02
			Exp. Route Total								4.0E-01
		Exposure Point Total									2.0E+00
	Exposure Media Total										2.0E+00
	Air (Particulates)	Area P	**Inhalation**	**Organics**							
				Aroclor 1254	4.48E-11	mg/m^3	4.3E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.77E-06	mg/m^3	5.5E-06	mg/m^3	5.0E-03	(mg/m^3)	1.1E-03
				Antimony	1.50E-09	mg/m^3	1.4E-09	mg/m^3	N/A	(mg/m^3)	---
				Arsenic	1.01E-09	mg/m^3	9.6E-10	mg/m^3	3.0E-05	(mg/m^3)	3.2E-05
				Cobalt	4.66E-09	mg/m^3	4.5E-09	mg/m^3	6.0E-06	(mg/m^3)	7.4E-04
				Copper	4.51E-08	mg/m^3	4.3E-08	mg/m^3	N/A	(mg/m^3)	---
				Iron	9.22E-06	mg/m^3	8.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.13E-07	mg/m^3	3.0E-07	mg/m^3	5.0E-05	(mg/m^3)	6.0E-03
				Vanadium	1.58E-08	mg/m^3	1.5E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								7.9E-03
		Exposure Point Total									7.9E-03
	Exposure Media Total										7.9E-03
	Air (Volatiles)	Area P	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.0E+00

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Sediment	Sediment	Area P	**Ingestion**	**Organics**							
				No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
			Dermal	**Organics**							
			Absorption	No COPCs							
				Inorganics							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Sediment Total											0.0E+00
Groundwater	Groundwater	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E+00	µg/L	1.2E-04	mg/kg-day	1.0E-02	mg/kg-day	1.2E-02
				Tetrachloroethene	2.00E+00	µg/L	1.3E-04	mg/kg-day	1.0E-02	mg/kg-day	1.3E-02
				Inorganics							
				Aluminum	6.16E+03	µg/L	3.9E-01	mg/kg-day	1.0E+00	mg/kg-day	3.9E-01
				Cobalt	4.60E+00	µg/L	2.9E-04	mg/kg-day	3.0E-04	mg/kg-day	9.8E-01
				Iron	8.27E+03	µg/L	5.3E-01	mg/kg-day	7.0E-01	mg/kg-day	7.6E-01
				Manganese	1.97E+02	µg/L	1.3E-02	mg/kg-day	2.4E-02	mg/kg-day	5.2E-01
			Exp. Route Total								2.7E+00
			Dermal	**Organics**							
			Absorption	Chloroform	1.90E+00	µg/L	N/A	mg/kg-day	1.0E-02	mg/kg-day	NV
				Tetrachloroethene	2.00E+00	µg/L	7.6E-05	mg/kg-day	1.0E-02	mg/kg-day	7.6E-03
				Inorganics							
				Aluminum	6.16E+03	µg/L	N/A	mg/kg-day	1.0E+00	mg/kg-day	NV
				Cobalt	4.60E+00	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Iron	8.27E+03	µg/L	N/A	mg/kg-day	7.0E-01	mg/kg-day	NV
				Manganese	1.97E+02	µg/L	N/A	mg/kg-day	9.6E-04	mg/kg-day	NV
			Exp. Route Total								7.6E-03
		Exposure Point Total									2.7E+00
	Exposure Media Total										2.7E+00

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
	Air	Area P	**Inhalation** (Indoor Air)	**Organics**							
				Chloroform	4.06E-06	mg/m^3	3.9E-06	mg/m^3	9.8E-02	$(mg/m^3)^{-1}$	4.0E-05
				Tetrachloroethene	9.19E-06	mg/m^3	8.8E-06	mg/m^3	2.7E-01	$(mg/m^3)^{-1}$	3.3E-05
			Exp. Route Total								7.2E-05
		Exposure Point Total									7.2E-05
	Exposure Media Total										7.2E-05
	Home Grown Produce	Area P	**Ingestion**	**Inorganics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Groundwater Total											2.7E+00
										Total of Receptor Hazards Across All Media	4.7E+00

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-54
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Off-Site Adult Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Water	New River (swimming)	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E-03	mg/l	5.1E-08	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	1.6E-09
				Tetrachloroethene	2.00E-03	mg/l	5.4E-08	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	2.9E-08
				Inorganics							
				Aluminum	6.16E+00	mg/l	1.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E-03	mg/l	1.2E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+00	mg/l	2.2E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E-01	mg/l	5.3E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.1E-08
			Dermal Absorption	**Organics**							
				Chloroform	1.90E-03	mg/l	2.4E-07	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	7.5E-09
				Tetrachloroethene	2.00E-03	mg/l	1.7E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	9.4E-07
				Inorganics							
				Aluminum	6.16E+00	mg/l	6.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E-03	mg/l	4.4E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+00	mg/l	8.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E-01	mg/l	1.9E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								9.5E-07
		Exposure Point Total									9.8E-07
	Exposure Media Total										9.8E-07
Surface water Total											9.8E-07
										Total of Receptor Hazards Across All Media	9.8E-07

N/A = Not Applicable.
EPCs are based on discharge of groundwater to surface water.

Table E.1-55
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Off-Site Adult Recreational User

Scenario Timeframe: Future
Receptor Population: Off-Site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Surface Water	New River (swimming)	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E-03	mg/l	1.2E-07	mg/kg-day	1.0E-02	mg/kg-day	1.2E-05
				Tetrachloroethene	2.00E-03	mg/l	1.3E-07	mg/kg-day	1.0E-02	mg/kg-day	1.3E-05
				Inorganics							
				Aluminum	6.16E+00	mg/l	3.9E-04	mg/kg-day	1.0E+00	mg/kg-day	3.9E-04
				Cobalt	4.60E-03	mg/l	2.9E-07	mg/kg-day	3.0E-04	mg/kg-day	9.6E-04
				Iron	8.27E+00	mg/l	5.2E-04	mg/kg-day	7.0E-01	mg/kg-day	7.4E-04
				Manganese	1.97E-01	mg/l	1.2E-05	mg/kg-day	2.4E-02	mg/kg-day	5.1E-04
			Exp. Route Total								2.6E-03
			Dermal Absorption	**Organics**							
				Chloroform	1.90E-03	mg/l	5.6E-07	mg/kg-day	1.0E-02	mg/kg-day	5.6E-05
				Tetrachloroethene	2.00E-03	mg/l	4.1E-06	mg/kg-day	1.0E-02	mg/kg-day	4.1E-04
				Inorganics							
				Aluminum	6.16E+00	mg/l	1.4E-04	mg/kg-day	1.0E+00	mg/kg-day	1.4E-04
				Cobalt	4.60E-03	mg/l	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.5E-04
				Iron	8.27E+00	mg/l	1.9E-04	mg/kg-day	7.0E-01	mg/kg-day	2.7E-04
				Manganese	1.97E-01	mg/l	4.5E-06	mg/kg-day	9.6E-04	mg/kg-day	4.7E-03
			Exp. Route Total								5.9E-03
		Exposure Point Total									8.5E-03
	Exposure Media Total										8.5E-03
Surface water Total											8.5E-03
										Total of Receptor Hazards Across All Media	8.5E-03

N/A = Not Applicable.
EPCs are based on discharge of groundwater to surface water.

Table E.1-56
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Off-Site Adolescent Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Water	New River (swimming)	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E-03	mg/l	1.9E-08	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	5.8E-10
				Tetrachloroethene	2.00E-03	mg/l	2.0E-08	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-08
				Inorganics							
				Aluminum	6.16E+00	mg/l	6.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E-03	mg/l	4.5E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+00	mg/l	8.1E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E-01	mg/l	1.9E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.1E-08
			Dermal Absorption	**Organics**							
				Chloroform	1.90E-03	mg/l	8.3E-08	mg/kg-day	3.1E-02	$(mg/kg\text{-}day)^{-1}$	2.6E-09
				Tetrachloroethene	2.00E-03	mg/l	6.0E-07	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-07
				Inorganics							
				Aluminum	6.16E+00	mg/l	2.1E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Cobalt	4.60E-03	mg/l	1.5E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	8.27E+00	mg/l	2.8E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.97E-01	mg/l	6.7E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.3E-07
		Exposure Point Total									3.4E-07
	Exposure Media Total										3.4E-07
Surface water Total											3.4E-07
										Total of Receptor Hazards Across All Media	3.4E-07

N/A = Not Applicable.
EPCs are based on discharge of groundwater to surface water.

Table E.1-57
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Off-Site Adolescent Recreational User

Scenario Timeframe: Future
Receptor Population: Off-Site Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Surface Water	New River (swimming)	Area P	**Ingestion**	**Organics**							
				Chloroform	1.90E-03	mg/l	1.6E-07	mg/kg-day	1.0E-02	mg/kg-day	1.6E-05
				Tetrachloroethene	2.00E-03	mg/l	1.7E-07	mg/kg-day	1.0E-02	mg/kg-day	1.7E-05
				Inorganics							
				Aluminum	6.16E+00	mg/l	5.3E-04	mg/kg-day	1.0E+00	mg/kg-day	5.3E-04
				Cobalt	4.60E-03	mg/l	3.9E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03
				Iron	8.27E+00	mg/l	7.1E-04	mg/kg-day	7.0E-01	mg/kg-day	1.0E-03
				Manganese	1.97E-01	mg/l	1.7E-05	mg/kg-day	2.4E-02	mg/kg-day	7.0E-04
			Exp. Route Total								3.6E-03
			Dermal Absorption	**Organics**							
				Chloroform	1.90E-03	mg/l	7.3E-07	mg/kg-day	1.0E-02	mg/kg-day	7.3E-05
				Tetrachloroethene	2.00E-03	mg/l	5.2E-06	mg/kg-day	1.0E-02	mg/kg-day	5.2E-04
				Inorganics							
				Aluminum	6.16E+00	mg/l	1.8E-04	mg/kg-day	1.0E+00	mg/kg-day	1.8E-04
				Cobalt	4.60E-03	mg/l	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	4.5E-04
				Iron	8.27E+00	mg/l	2.4E-04	mg/kg-day	7.0E-01	mg/kg-day	3.5E-04
				Manganese	1.97E-01	mg/l	5.8E-06	mg/kg-day	9.6E-04	mg/kg-day	6.1E-03
			Exp. Route Total								7.6E-03
		Exposure Point Total									1.1E-02
	Exposure Media Total										1.1E-02
Surface water Total											1.1E-02
										Total of Receptor Hazards Across All Media	1.1E-02

N/A = Not Applicable.
EPCs are based on discharge of groundwater to surface water.

Table E.1-58
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Current - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area P	Aroclor 1254	5.6E-08		5.2E-08	1.1E-07	Immune System, Eyes	3.9E-03		3.6E-03	7.6E-03
			Aluminum	---		---	---	Developmental nervous system	2.2E-03		1.5E-04	2.4E-03
			Antimony	---		---	---	Blood Chemistry	1.9E-03		8.2E-04	2.7E-03
			Arsenic	2.8E-07		5.6E-08	3.4E-07	Skin, Vascular Effects	1.8E-03		3.5E-04	2.1E-03
			Cobalt	---		---	---	N/A	6.4E-03		4.2E-04	6.9E-03
			Copper	---		---	---	GI Tract	8.0E-04		5.3E-05	8.6E-04
			Iron	---		---	---	Blood, Liver, GI Irritation	5.5E-03		3.6E-04	5.8E-03
			Manganese	---		---	---	CNS	6.8E-03		1.1E-02	1.8E-02
			Vanadium	---		---	---	Kidney	1.2E-03		3.0E-03	4.2E-03
			Chemical Total	3.4E-07		1.1E-07	4.5E-07		0.030		0.020	0.050
		Exposure Point Total					4.5E-07					0.050
	Exposure Media Total						4.5E-07					0.050
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		5.5E-12		5.5E-12	N/A		---		---
			Aluminum		---		---	N/A		1.5E-04		1.5E-04
			Antimony		---			N/A		---		---
			Arsenic		2.8E-10		2.8E-10	N/A		6.1E-06		6.1E-06
			Cobalt		2.1E-09		2.1E-09	N/A		1.1E-04		1.1E-04
			Copper		---			N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		1.1E-03		1.1E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.4E-09		2.4E-09			0.0014		0.0014
		Exposure Point Total					2.4E-09					0.0014
	Exposure Media Total						2.4E-09					0.0014
Surface Soil Total							4.5E-07					0.052
Sediment	Sediment	Area P	No COPCs									
							0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000

Table E.1-58
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Current - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Air (Ambient Air)	Area P	Chloroform		2.4E-12		2.4E-12	N/A		3.0E-09		3.0.E-09
			Tetrachloroethene		1.4E-12		1.4E-12	CNS		2.5E-09		2.5.E-09
			Chemical Total		3.9E-12		3.9E-12			5.5E-09		5.5E-09
		Exposure Point Total					3.9E-12					5.5E-09
	Exposure Media Total						3.9E-12					5.5E-09
Groundwater Total							3.9E-12					5.5E-09
Receptor Total							4.5E-07					0.052

4.5E-07	Total Hazard Across All Media = 0.052
	Total Immune System HI Across All Media = 0.0076
	Total Eyes HI Across All Media = 0.0076
	Total CNS HI Across All Media = 0.021
	Total Blood HI Across All Media = 0.0085
	Total Skin HI Across All Media = 0.0021
	Total Vascular Effects HI Across All Media = 0.0021
	Total Liver HI Across All Media = 0.0058
	Total GI Tract HI Across All Media = 0.0067
	Total Kidney HI Across All Media = 0.0042

CNS = Central Nervous System.
GI = Gastrointestinal
N/A = Not Available.

Table E.1-59
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P										
			Aroclor 1254	1.3E-08		1.2E-08	2.4E-08	Immune System, Eyes	8.9E-04		8.2E-04	1.7E-03
			Aluminum	---		---	---	Developmental nervous system	2.3E-03		1.5E-04	2.4E-03
			Antimony	---		---	---	Blood Chemistry	1.5E-03		6.6E-04	2.1E-03
			Arsenic	2.1E-07		4.2E-08	2.6E-07	Skin, Vascular Effects	1.3E-03		2.6E-04	1.6E-03
			Cobalt	---		---	---	N/A	6.2E-03		4.1E-04	6.6E-03
			Copper	---		---	---	GI Tract	4.5E-04		3.0E-05	4.8E-04
			Iron	---		---	---	Blood, Liver, GI Irritation	5.2E-03		3.5E-04	5.6E-03
			Manganese	---		---	---	CNS	5.2E-03		8.6E-03	1.4E-02
			Vanadium	---		---	---	Kidney	1.3E-03		3.2E-03	4.4E-03
			Chemical Total	2.3E-07		5.4E-08	2.8E-07		0.024		0.014	0.039
		Exposure Point Total					2.8E-07					0.039
	Exposure Media Total						2.8E-07					0.039
	Air (Particulates and Volatiles)	Area P										
			Aroclor 1254		1.3E-12		1.3E-12	N/A		---		---
			Aluminum		---		---	N/A		1.6E-04		1.6E-04
			Antimony		---		---	N/A		---		---
			Arsenic		2.1E-10		2.1E-10	N/A		4.6E-06		4.6E-06
			Cobalt		2.0E-09		2.0E-09	N/A		1.1E-04		1.1E-04
			Copper		---		---	N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		8.6E-04		8.6E-04
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.3E-09		2.3E-09			0.0011		0.0011
		Exposure Point Total					2.3E-09					0.0011
	Exposure Media Total						2.3E-09					0.0011
Total Soil Total							2.8E-07					0.040

Table E.1-59
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area P										
			Aroclor 1254	5.6E-08		5.2E-08	1.1E-07	Immune System, Eyes	3.9E-03		3.6E-03	7.6E-03
			Aluminum	---		---	---	Developmental nervous system	2.2E-03		1.5E-04	2.4E-03
			Antimony	---		---	---	Blood Chemistry	1.9E-03		8.2E-04	2.7E-03
			Arsenic	2.8E-07		5.6E-08	3.4E-07	Skin, Vascular Effects	1.8E-03		3.5E-04	2.1E-03
			Cobalt	---		---	---	N/A	6.4E-03		4.2E-04	6.9E-03
			Copper	---		---	---	GI Tract	8.0E-04		5.3E-05	8.6E-04
			Iron	---		---	---	Blood, Liver, GI Irritation	5.5E-03		3.6E-04	5.8E-03
			Manganese	---		---	---	CNS	6.8E-03		1.1E-02	1.8E-02
			Vanadium	---		---	---	Kidney	1.2E-03		3.0E-03	4.2E-03
			Chemical Total	3.4E-07		1.1E-07	4.5E-07		0.030		0.020	0.050
		Exposure Point Total					4.5E-07					0.050
	Exposure Media Total						4.5E-07					0.050
	Air (Particulates and Volatiles)	Area P										
			Aroclor 1254		5.5E-12		5.5E-12	N/A		---		---
			Aluminum		---		---	N/A		1.5E-04		1.5E-04
			Antimony		---			N/A		---		---
			Arsenic		2.8E-10		2.8E-10	N/A		6.1E-06		6.1E-06
			Cobalt		2.1E-09		2.1E-09	N/A		1.1E-04		1.1E-04
			Copper		---			N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		1.1E-03		1.1E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.4E-09		2.4E-09			0.0014		0.0014
		Exposure Point Total					2.4E-09					0.0014
	Exposure Media Total						2.4E-09					0.0014
Surface Soil Total							4.5E-07					0.052

Table E.1-59
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area P	No COPCs									
							0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000
Groundwater	Air (Ambient Air)	Area P	Chloroform		2.4E-12		2.4E-12	N/A		3.0E-09		3.0.E-09
			Tetrachloroethene		1.4E-12		1.4E-12	CNS		2.5E-09		2.5.E-09
			Chemical Total		3.9E-12		3.9E-12			5.5E-09		5.5.E-09
		Exposure Point Total					3.9E-12					5.5.E-09
	Exposure Media Total						3.9E-12					5.5.E-09
Groundwater Total							3.9E-12					5.5E-09
Receptor Total[b]							4.5E-07					0.052

Total Risk Across All Media[a] = 4.5E-07

Total Hazard Across All Media[a] = 0.052

(a) Since surface soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this soil data grouping.

Total Immune System HI Across All Media =	0.0076
Total Eyes HI Across All Media =	0.0076
Total CNS HI Across All Media =	0.021
Total Blood HI Across All Media =	0.0085
Total Skin HI Across All Media =	0.0021
Total Vascular Effects HI Across All Media =	0.0021
Total Liver HI Across All Media =	0.0058
Total GI Tract HI Across All Media =	0.0067
Total Kidney HI Across All Media =	0.0042

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.

Table E.1-60
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Aroclor 1254	5.7E-08		5.3E-08	1.1E-07	Immune System, Eyes	4.0E-03		3.7E-03	7.7E-03
			Aluminum	---		---	---	Developmental nervous system	1.0E-02		6.8E-04	1.1E-02
			Antimony	---		---	---	Blood Chemistry	6.7E-03		3.0E-03	9.7E-03
			Arsenic	9.6E-07		1.9E-07	1.2E-06	Skin, Vascular Effects	6.0E-03		1.2E-03	7.2E-03
			Cobalt	---		---	---	N/A	2.8E-02		1.8E-03	3.0E-02
			Copper	---		---	---	GI Tract	2.0E-03		1.3E-04	2.1E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	2.4E-02		1.6E-03	2.5E-02
			Manganese	---		---	---	CNS	2.3E-02		3.9E-02	6.2E-02
			Vanadium	---		---	---	Kidney	5.6E-03		1.4E-02	2.0E-02
			Chemical Total	1.0E-06		2.4E-07	1.3E-06		0.11		0.065	0.17
		Exposure Point Total					1.3E-06					0.17
	Exposure Media Total						1.3E-06					0.17
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		5.6E-12		5.6E-12	N/A		---		---
			Aluminum		---		---	N/A		7.1E-04		7.1E-04
			Antimony		---		---	N/A		---		---
			Arsenic		9.5E-10		9.5E-10	N/A		2.1E-05		2.1E-05
			Cobalt		9.2E-09		9.2E-09	N/A		4.8E-04		4.8E-04
			Copper		---		---	N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		3.9E-03		3.9E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		1.0E-08		1.0E-08			0.0051		0.0051
		Exposure Point Total					1.0E-08					0.0051
	Exposure Media Total						1.0E-08					0.0051
Total Soil Total							1.3E-06					0.18

Table E.1-60
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area P	Aroclor 1254	2.5E-07		2.3E-07	4.9E-07	Immune System, Eyes	1.8E-02		1.6E-02	3.4E-02
			Aluminum	---		---	---	Developmental nervous system	1.0E-02		6.6E-04	1.1E-02
			Antimony	---		---	---	Blood Chemistry	8.4E-03		3.7E-03	1.2E-02
			Arsenic	1.3E-06		2.5E-07	1.5E-06	Skin, Vascular Effects	7.9E-03		1.6E-03	9.5E-03
			Cobalt	---		---	---	N/A	2.9E-02		1.9E-03	3.1E-02
			Copper	---		---	---	GI Tract	3.6E-03		2.4E-04	3.8E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	2.5E-02		1.6E-03	2.6E-02
			Manganese	---		---	---	CNS	3.0E-02		5.0E-02	8.1E-02
			Vanadium	---		---	---	Kidney	5.4E-03		1.4E-02	1.9E-02
			Chemical Total	1.5E-06		4.9E-07	2.0E-06		0.14		0.090	0.23
		Exposure Point Total					2.0E-06					0.23
	Exposure Media Total						2.0E-06					0.23
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		2.5E-11		2.5E-11	N/A		---		---
			Aluminum		---		---	N/A		6.9E-04		6.9E-04
			Antimony		---		---	N/A		---		---
			Arsenic		1.3E-09		1.3E-09	N/A		2.7E-05		2.7E-05
			Cobalt		9.6E-09		9.6E-09	N/A		5.0E-04		5.0E-04
			Copper		---		---	N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		5.0E-03		5.0E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		1.1E-08		1.1E-08			0.0062		0.0062
		Exposure Point Total					1.1E-08					0.0062
	Exposure Media Total						1.1E-08					0.0062
Surface Soil Total							2.0E-06					0.23

Table E.1-60
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area P	No COPCs									
							0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000
Groundwater	Groundwater	Area P	Chloroform	1.9E-07			1.9E-07	Liver	1.7E-03			1.7.E-03
			Tetrachloroethene	3.4E-06			3.4E-06	Liver	1.8E-03			1.8E-03
			Aluminum	---			---	Developmental nervous system	5.4E-02			5.4E-02
			Cobalt	---			---	N/A	1.4E-01			1.4E-01
			Iron	---			---	Blood, Liver, GI Irritation	1.0E-01			1.0E-01
			Manganese	---			---	CNS	7.2E-02			7.2E-02
			Chemical Total	3.6E-06			3.6E-06		0.37			0.37
		Exposure Point Total					3.6E-06					0.37
	Exposure Media Total						3.6E-06					0.37
	Air (Ambient Air)	Area P	Chloroform		1.1E-11		1.1E-11	N/A		1.4E-08		1.4.E-08
			Tetrachloroethene		6.4E-12		6.4E-12	CNS		1.1E-08		1.1.E-08
			Chemical Total		1.7E-11		1.7E-11			2.5E-08		2.5E-08
		Exposure Point Total					1.7E-11					2.5E-08
	Exposure Media Total						1.7E-11					2.5E-08
	Air (Indoor Air)	Area P	Chloroform		2.1E-08		2.1E-08	N/A		2.6E-05		2.6.E-05
			Tetrachloroethene		1.2E-08		1.2E-08	CNS		2.1E-05		2.1.E-05
			Chemical Total		3.2E-08		3.2E-08			4.7E-05		4.7E-05
		Exposure Point Total					3.2E-08					4.7E-05
	Exposure Media Total						3.2E-08					4.7E-05
Groundwater Total							3.6E-06					0.37
Receptor Total[b]							5.6E-06					0.60

Total Risk Across All Media[a] = 5.6E-06

Total Hazard Across All Media[a] = 0.60

Total Immune System HI Across All Media =	0.034
Total Eyes HI Across All Media =	0.034
Total CNS HI Across All Media =	0.22
Total Blood HI Across All Media =	0.14
Total Skin HI Across All Media =	0.0095
Total Vascular Effects HI Across All Media =	0.0095
Total Liver HI Across All Media =	0.13
Total GI Tract HI Across All Media =	0.13
Total Kidney HI Across All Media =	0.019

(a) Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this soil data grouping.
Since indoor air represents the more highly contaminated portion of groundwater, hazard estimates are conservatively based on this data grouping.

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.

Table E.1-61
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Aroclor 1254	4.2E-09		1.8E-09	6.0E-09	Immune System, Eyes	7.3E-03		3.1E-03	1.0E-02
			Aluminum	---		---	---	Developmental nervous system	1.9E-02		5.7E-04	1.9E-02
			Antimony	---		---	---	Blood Chemistry	1.2E-02		2.5E-03	1.5E-02
			Arsenic	7.1E-08		6.4E-09	7.7E-08	Skin, Vascular Effects	1.1E-02		9.9E-04	1.2E-02
			Cobalt	---		---	---	N/A	5.1E-02		1.5E-03	5.2E-02
			Copper	---		---	---	GI Tract	3.7E-03		1.1E-04	3.8E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	4.3E-02		1.3E-03	4.4E-02
			Manganese	---		---	---	CNS	4.3E-02		3.2E-02	7.5E-02
			Vanadium	---		---	---	Kidney	1.0E-02		1.2E-02	2.2E-02
			Chemical Total	7.5E-08		8.1E-09	8.3E-08		0.20		0.054	0.25
		Exposure Point Total					8.3E-08					0.25
	Exposure Media Total						8.3E-08					0.25
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		1.4E-11		1.4E-11	N/A		---		---
			Aluminum		---		---	N/A		4.4E-02		4.4E-02
			Antimony		---		---	N/A		---		---
			Arsenic		2.3E-09		2.3E-09	N/A		1.3E-03		1.3E-03
			Cobalt		2.3E-08		2.3E-08	N/A		2.9E-02		2.9E-02
			Copper		---		---	N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		2.4E-01		2.4E-01
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.5E-08		2.5E-08			0.31		0.31
		Exposure Point Total					2.5E-08					0.31
	Exposure Media Total						2.5E-08					0.31
Total Soil Total							1.1E-07					0.57
Sediment	Sediment	Area P	No COPCs									
							0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000

Table E.1-61
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area P										
			Chloroform			4.6E-10	4.6E-10	Liver			1.0E-04	1.0.E-04
			Tetrachloroethene			4.6E-08	4.6E-08	Liver			6.0E-04	6.0.E-04
			Aluminum			---	---	Developmental nervous system			6.0E-03	6.0.E-03
			Cobalt			---	---	N/A			1.3E-02	1.3.E-02
			Iron			---	---	Blood, Liver, GI Irritation			1.2E-02	1.2.E-02
			Manganese			---	---	CNS			1.7E-01	1.7.E-01
			Chemical Total			4.7E-08	4.7E-08				0.20	0.20
		Exposure Point Total					4.7E-08					0.20
	Exposure Media Total						4.7E-08					0.20
	Air (Trench Air)	Area P										
			Chloroform		8.3E-07		8.3E-07	N/A		2.6E-02		2.6.E-02
			Tetrachloroethene		1.9E-07		1.9E-07	CNS		8.5E-03		8.5.E-03
			Chemical Total		1.0E-06		1.0E-06			0.034		0.034
		Exposure Point Total					1.0E-06					0.034
	Exposure Media Total						1.0E-06					0.034
Groundwater Total							1.1E-06					0.23
Receptor Total							1.2E-06					0.80

Total Risk Across All Media = 1.2E-06

Total Hazard Across All Media = 0.80

Total Immune System HI Across All Media =	0.010
Total Eyes HI Across All Media =	0.010
Total CNS HI Across All Media =	0.51
Total Blood HI Across All Media =	0.071
Total Skin HI Across All Media =	0.012
Total Vascular Effects HI Across All Media =	0.012
Total Liver HI Across All Media =	0.057
Total GI Tract HI Across All Media =	0.060
Total Kidney HI Across All Media =	0.022

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.

Table E.1-62
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal
Total Soil	Total Soil	Area P	Aroclor 1254	2.8E-07		1.3E-07	4.1E-07	Immune System, Eyes	6.2E-03		3.5E-03
			Aluminum	---		---	---	Developmental nervous system	1.6E-02		6.4E-04
			Antimony	---		---	---	Blood Chemistry	1.0E-02		2.8E-03
			Arsenic	4.8E-06		4.5E-07	5.2E-06	Skin, Vascular Effects	9.3E-03		1.1E-03
			Cobalt	---		---	---	N/A	4.3E-02		1.7E-03
			Copper	---		---	---	GI Tract	3.1E-03		1.3E-04
			Iron	---		---	---	Blood, Liver, GI Irritation	3.7E-02		1.5E-03
			Manganese	---		---	---	CNS	3.6E-02		3.6E-02
			Vanadium	---		---	---	Kidney	8.8E-03		1.3E-02
			Chemical Total	5.1E-06		5.8E-07	5.7E-06		0.17		0.061
		Exposure Point Total					5.7E-06				
	Exposure Media Total						5.7E-06				
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		6.0E-15		6.0E-15	N/A		---	
			Aluminum		---		---	N/A		1.1E-03	
			Antimony		---		---	N/A		---	
			Arsenic		1.8E-09		1.8E-09	N/A		3.2E-05	
			Cobalt		1.7E-08		1.7E-08	N/A		7.4E-04	
			Copper		---		---	N/A		---	
			Iron		---		---	N/A		---	
			Manganese		---		---	CNS		6.0E-03	
			Vanadium		---		---	N/A		---	
			Chemical Total		1.9E-08		1.9E-08			0.0079	
		Exposure Point Total					1.9E-08				
	Exposure Media Total						1.9E-08				
Total Soil Total							5.7E-06				
Sediment	Sediment	Area P	No COPCs								
							0.0E+00				
		Exposure Point Total					0.0E+00				
	Exposure Media Total						0.0E+00				
Sediment Total							0.0E+00				

Table E.1-62
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal
Groundwater	Groundwater	Area P									
			Chloroform	8.8E-07		NV	8.8E-07	Liver	5.2E-03		NV
			Tetrachloroethene	1.6E-05		9.0E-06	2.5E-05	Liver	5.5E-03		3.0E-03
			Aluminum	---		NV	---	Developmental nervous system	1.7E-01		NV
			Cobalt	---		NV	---	N/A	4.2E-01		NV
			Iron	---		NV	---	Blood, Liver, GI Irritation	3.2E-01		NV
			Manganese	---		NV	--	CNS	2.2E-01		NV
			Chemical Total	1.7E-05		9.0E-06	2.6E-05		1.1		0.0030
		Exposure Point Total					2.6E-05				
	Exposure Media Total						2.6E-05				
	Air (Indoor Air)	Area P									
			Chloroform		3.8E-08		3.8E-08	N/A		4.0E-05	
			Tetrachloroethene		2.2E-08		2.2E-08	CNS		3.3E-05	
			Chemical Total		6.1E-08		6.1E-08			7.2E-05	
		Exposure Point Total					6.1E-08				
	Exposure Media Total						6.1E-08				
	Air (Shower Room)	Area P									
			Chloroform		2.3E-05		2.3E-05	N/A		2.9E-02	
			Tetrachloroethene		5.5E-06		5.5E-06	CNS		1.0E-02	
			Chemical Total		2.8E-05		2.8E-05			0.039	
		Exposure Point Total					2.8E-05				
	Exposure Media Total						2.8E-05				
	Home Grown Produce	Area P									
			No COPCs				0.0E+00				
			Chemical Total				0.0E+00				
		Exposure Point Total					0.0E+00				
	Exposure Media Total						0.0E+00				
Groundwater Total							5.4E-05				
Receptor Total							6.0E-05				

Total Risk Across All Media= 6.0E-05

Total Hazard Across All Media =

Total Immune System HI Across All Media =
Total Eyes HI Across All Media =
Total CNS HI Across All Media =
Total Blood HI Across All Media =
Total Skin HI Across All Media =
Total Vascular Effects HI Across All Media =
Total Liver HI Across All Media =
Total GI Tract HI Across All Media =
Total Kidney HI Across All Media =

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-62
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Exposure Routes Total
9.7E-03
1.7E-02
1.3E-02
1.0E-02
4.5E-02
3.3E-03
3.8E-02
7.3E-02
2.2E-02
0.23
0.23
0.23

1.1E-03

3.2E-05
7.4E-04

6.0E-03

0.0079
0.0079
0.0079
0.24
0.0000
0.0000
0.0000
0.0000

Table E.1-62
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Exposure Routes Total
5.2E-03
8.4E-03
1.7E-01
4.2E-01
3.2E-01
2.2E-01
1.2
1.2
1.2
4.0.E-05
3.3.E-05
7.2E-05
0.000
0.000
2.9E-02
1.0E-02
0.039
0.039
0.039
0.0E+00
0.0E+00
0.0E+00
0.0E+00
1.2
1.4
1.4
0.0097
0.0097
0.50
0.37
0.010
0.010
0.38
0.36
0.022

Table E.1-63
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Aroclor 1254	2.0E-07		7.8E-08	2.8E-07	Immune System, Eyes	5.8E-02		2.3E-02	8.1E-02
			Aluminum	---		---	---	Developmental nervous system	1.5E-01		4.2E-03	1.5E-01
			Antimony	---		---	---	Blood Chemistry	9.7E-02		1.8E-02	1.2E-01
			Arsenic	3.4E-06		2.8E-07	3.6E-06	Skin, Vascular Effects	8.7E-02		7.3E-03	9.4E-02
			Cobalt	---		---	---	N/A	4.0E-01		1.1E-02	4.1E-01
			Copper	---		---	---	GI Tract	2.9E-02		8.2E-04	3.0E-02
			Iron	---		---	---	Blood, Liver, GI Irritation	3.4E-01		9.6E-03	3.5E-01
			Manganese	---		---	---	CNS	3.4E-01		2.4E-01	5.8E-01
			Vanadium	---		---	---	Kidney	8.2E-02		8.8E-02	1.7E-01
			Chemical Total	3.6E-06		3.6E-07	3.9E-06		1.6		0.40	2.0
		Exposure Point Total					3.9E-06					2.0
	Exposure Media Total						3.9E-06					2.0
	Air (Particulates and Volatiles)	Area P	Aroclor 1254		2.1E-12		2.1E-12	N/A		---		---
			Aluminum		---		---	N/A		1.1E-03		1.1E-03
			Antimony		---		---	N/A		---		---
			Arsenic		3.6E-10		3.6E-10	N/A		3.2E-05		3.2E-05
			Cobalt		3.4E-09		3.4E-09	N/A		7.4E-04		7.4E-04
			Copper		---		---	N/A		---		---
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		6.0E-03		6.0E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		3.8E-09		3.8E-09			0.0079		0.0079
		Exposure Point Total					3.8E-09					0.0079
	Exposure Media Total						3.8E-09					0.0079
Total Soil Total							3.9E-06					2.0
Sediment	Sediment	Area P	No COPCs									
							0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000

Table E.1-63
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area P										
			Chloroform	3.2E-07		NV	3.2E-07	Liver	1.2E-02		NV	1.2E-02
			Tetrachloroethene	5.9E-06		3.5E-06	9.4E-06	Liver	1.3E-02		7.6E-03	2.0E-02
			Aluminum	---		NV	---	Developmental nervous system	3.9E-01		NV	3.9E-01
			Cobalt	---		NV	---	N/A	9.8E-01		NV	9.8E-01
			Iron	---		NV	---	Blood, Liver, GI Irritation	7.6E-01		NV	7.6E-01
			Manganese	---		NV	---	CNS	5.2E-01		NV	5.2E-01
			Chemical Total	6.2E-06		3.5E-06	9.8E-06		2.7		0.0076	2.7
		Exposure Point Total					9.8E-06					2.7
	Exposure Media Total						9.8E-06					2.7
	Air (Indoor Air)	Area P										
			Chloroform		7.7E-09		7.7E-09	N/A		4.0E-05		4.0.E-05
			Tetrachloroethene		4.5E-09		4.5E-09	CNS		3.3E-05		3.3.E-05
			Chemical Total		1.2E-08		1.2E-08			7.2E-05		7.2E-05
		Exposure Point Total					1.2E-08					7.2E-05
	Exposure Media Total						1.2E-08					7.2E-05
	Home Grown Produce	Area P										
			No COPCs				0.0E+00					0.0.E+00
			Chemical Total				0.0E+00					0.0E+00
		Exposure Point Total					0.0E+00					0.0E+00
	Exposure Media Total						0.0E+00					0.0E+00
Groundwater Total							9.8E-06					2.7
Receptor Total							1.4E-05					4.7

Total Risk Across All Media = 1.4E-05

Total Hazard Across All Media = 4.7

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Total Immune System HI Across All Media =	0.081
Total Eyes HI Across All Media =	0.081
Total CNS HI Across All Media =	1.7
Total Blood HI Across All Media =	1.2
Total Skin HI Across All Media =	0.094
Total Vascular Effects HI Across All Media =	0.094
Total Liver HI Across All Media =	1.1
Total GI Tract HI Across All Media =	1.1
Total Kidney HI Across All Media =	0.17

Table E.1-64
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Off-site Adult Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	New River (swimming)	Area P	Chloroform	1.6E-09		7.5E-09	9.1E-09	Liver	1.2E-05		5.6E-05	6.8E-05
			Tetrachloroethene	2.9E-08		9.4E-07	9.7E-07	Liver	1.3E-05		4.1E-04	4.2E-04
			Aluminum	---		---	---	Developmental nervous system	3.9E-04		1.4E-04	5.3E-04
			Cobalt	---		---	---	N/A	9.6E-04		3.5E-04	1.3E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	7.4E-04		2.7E-04	1.0E-03
			Manganese	---		---	---	CNS	5.1E-04		4.7E-03	5.2E-03
			Chemical Total	3.1E-08		9.5E-07	9.8E-07		0.0026		0.0059	0.0085
		Exposure Point Total					9.8E-07					0.0085
	Exposure Media Total						9.8E-07					0.0085
Surface Water Total							9.8E-07					0.0085
Receptor Total							9.8E-07					0.0085

Total Risk Across All Media= 9.8E-07

Total Hazard Across All Media= 0.0085

Total Liver HI Across All Media =	0.0015
Total CNS HI Across All Media =	0.0057
Total Blood HI Across All Media =	0.0010
Total GI Irritation HI Across All Media =	0.0010

CNS = Central nervous system.
GI = Gastrointestinal
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-65
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Off-site Adolescent Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	New River (swimming)	Area P	Chloroform	5.8E-10		2.6E-09	3.2E-09	Liver	1.6E-05		7.3E-05	8.9E-05
			Tetrachloroethene	1.1E-08		3.2E-07	3.3E-07	Liver	1.7E-05		5.2E-04	5.4E-04
			Aluminum	---		---	---	Developmental nervous system	5.3E-04		1.8E-04	7.1E-04
			Cobalt	---		---	---	N/A	1.3E-03		4.5E-04	1.8E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	1.0E-03		3.5E-04	1.4E-03
			Manganese	---		---	---	CNS	7.0E-04		6.1E-03	6.8E-03
			Chemical Total	1.1E-08		3.3E-07	3.4E-07		0.0036		0.0076	0.011
		Exposure Point Total					3.4E-07					0.011
	Exposure Media Total						3.4E-07					0.011
Surface Water Total							3.4E-07					0.011
Receptor Total							3.4E-07					0.011

Total Risk Across All Media= 3.4E-07

Total Hazard Across All Media= 0.011

Total Liver HI Across All Media =	0.0020
Total CNS HI Across All Media =	0.0075
Total Blood HI Across All Media =	0.0014
Total GI Irritation HI Across All Media =	0.0014

CNS = Central nervous system.
GI = Gastrointestinal
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-66
Risk Assessment Summary
Reasonable Maximum Exposure
Current - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							<1.0E-06					<1
Sediment	Sediment	Area P										
			No COPCs									
			Chemical Total									
		Exposure Point Total					0.0E+00					0.0
	Exposure Media Total						0.0E+00					0.0
Sediment Total							0.0E+00					0.0
Groundwater	Air (Ambient Air)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							<1.0E-06					<1
Receptor Total							<1.0E-06					<1

Total Risk Across All Media = <1.0E-06

Total Hazard Across All Media = <1

Table E.1-67
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							<1.0E-06					<1
Surface Soil	Surface Soil	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
			Radionuclide Total									
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							<1.0E-06					<1
Sediment	Sediment	Area P										
			No COPCs									
			Chemical Total				0.0E+00					0.000
		Exposure Point Total					0.0E+00					0.000
	Exposure Media Total						0.0E+00					0.000
Sediment Total							0.0E+00					0.000
Groundwater	Air (Ambient Air)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							<1.0E-06					<1
Receptor Total[a]							<1.0E-06					<1

Total Risk Across All Media = <1.0E-06

Total Hazard Across All Media = <1

Table E.1-68
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Arsenic	9.6E-07		1.9E-07	1.2E-06					
			Chemical Total	9.6E-07		1.9E-07	1.2E-06					<1
		Exposure Point Total					1.2E-06					<1
	Exposure Media Total						1.2E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							1.2E-06					<1
Surface Soil	Surface Soil	Area P	Arsenic	1.3E-06		2.5E-07	1.5E-06					
			Chemical Total	1.3E-06		2.5E-07	1.5E-06					<1
		Exposure Point Total					1.5E-06					<1
	Exposure Media Total						1.5E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							1.5E-06					<1
Sediment	Sediment	Area P	No COPCs									
			Chemical Total				0.0E+00					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Sediment Total							<1.0E-06					<1

Table E.1-68
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area P	Tetrachloroethene	3.4E-06			3.4E-06					
			Chemical Total	3.4E-06			3.4E-06					<1
		Exposure Point Total					3.4E-06					<1
	Exposure Media Total						3.4E-06					<1
	Air (Ambient Air)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Indoor Air)	Area P										<1
			Chemical Total				<1.0E-06					
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							3.4E-06					<1
Receptor Total[a]							4.9E-06					<1

Total Risk Across All Media[a] = 4.9E-06

Total Hazard Across All Media = <1

[a] Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this soil data grouping.

Table E.1-69
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal
Total Soil	Total Soil	Area P									
			Chemical Total				<1.0E-06				
		Exposure Point Total					<1.0E-06				
	Exposure Media Total						<1.0E-06				
	Air (Particulates and Volatiles)	Area P									
			Chemical Total				<1.0E-06				
		Exposure Point Total					<1.0E-06				
	Exposure Media Total						<1.0E-06				
Total Soil Total							<1.0E-06				
Sediment	Sediment	Area P									
			Chemical Total				<1.0E-06				
		Exposure Point Total					<1.0E-06				
	Exposure Media Total						<1.0E-06				
Sediment Total											
Groundwater	Grounwater	Area P									
			Chemical Total				<1.0E-06				
		Exposure Point Total					<1.0E-06				
	Exposure Media Total						<1.0E-06				
	Air (Trench Air)	Area P									
			Chemical Total				1.0E-06				
		Exposure Point Total					1.0E-06				
	Exposure Media Total						1.0E-06				
Groundwater Total							1.0E-06				
Receptor Total							1.0E-06				

Total Risk Across All Media[a] = 1.0E-06

Total Hazard Across All Media =

[a] Although the total risk is greater than 1.0E-06, no individual chemical exceeded 1.0E-06.

Table E.1-69
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Excavation Worker

Exposure Routes Total
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1
<1

Table E.1-70
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Arsenic	4.8E-06		4.5E-07	5.2E-06					
			Chemical Total	4.8E-06		4.5E-07	5.2E-06					<1
		Exposure Point Total					5.2E-06					<1
	Exposure Media Total						5.2E-06					<1
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							5.2E-06					<1
Sediment	Sediment	Area P	No COPCs									
			Chemical Total				0.0E+00					<1
		Exposure Point Total					0.0E+00					<1
	Exposure Media Total						0.0E+00					<1
Sediment Total							0.0E+00					<1
Groundwater	Groundwater	Area P	Tetrachloroethene	1.6E-05		9.0E-06	2.5E-05					
			Chemical Total	1.6E-05		9.0E-06	2.5E-05					1.2
		Exposure Point Total					2.5E-05					1.2
	Exposure Media Total						2.5E-05					1.2
	Air (Indoor Air)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Shower Room)	Area P	Chloroform		5.5E-06		5.5E-06					
			Tetrachloroethene		2.8E-05		2.8E-05					
			Chemical Total		3.4E-05		3.4E-05					<1
		Exposure Point Total					3.4E-05					<1
	Exposure Media Total						3.4E-05					<1

Table E.1-70
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Home Grown Produce	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							5.9E-05					1
Receptor Total							6.4E-05					1.2

Total Risk Across All Media = 6.4E-05

Total Hazard Across All Media [a] = 1.2

(a) Although the total hazard is greater than 1.0, no individual target organ value exceeded 1.0.

Table E.1-71
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	Area P	Arsenic	3.4E-06		2.8E-07	3.6E-06		---		---	
			Chemical Total	3.4E-06		2.8E-07	3.6E-06					2.0
		Exposure Point Total					3.6E-06					2.0
	Exposure Media Total						3.6E-06					2.0
	Air (Particulates and Volatiles)	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							3.6E-06					2.0
Sediment	Sediment	Area P	No COPCs									
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Sediment Total							<1.0E-06					<1
Groundwater	Groundwater	Area P	Tetrachloroethene	5.9E-06		3.5E-06	9.4E-06		---		---	
			Chemical Total	5.9E-06		3.5E-06	9.4E-06					2.7
		Exposure Point Total					9.4E-06					2.7
	Exposure Media Total						9.4E-06					2.7
	Air (Indoor Air)	Area P	No COPCs									
			Chemical Total									<1
		Exposure Point Total										<1
	Exposure Media Total											<1
	Home Grown Produce	Area P										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							9.4E-06					2.7
Receptor Total							1.3E-05					4.7

Total Risk Across All Media = 1.3E-05

Total Hazard Across All Media [a] = 4.7

(a) Although the total hazard is greater than 1.0, no individual COPC value exceeded 1.0.

Table E.1-72
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Off-Site Adolescent Recreational User

Scenario Timeframe: Future
Receptor Population: Off-Site Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	New River (swimming)	Area P										
			Chemical Total				<1.0E-06					<1.0
		Exposure Point Total					<1.0E-06					<1.0
	Exposure Media Total						<1.0E-06					<1.0
Surface Water Total							<1.0E-06					<1.0
Receptor Total							<1.0E-06					<1.0

Total Risk Across All Media = <1.0E-06

Total Hazard Across All Media = <1.0

TABLE E.1-72
RAGS D IEUBK LEAD WORKSHEET
Radford Army Ammunition Plant – Area P
Child (Age 0 – 84 Months), Exposure to Groundwater

1. Lead Screening Questions

Medium	Lead Concentration Used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	41	mg/kg	Average Detected Value	400	mg/kg	Recommended Soil Screening Level
Water	163	µg/L	Average Detected Value	15	µg/L	Recommended Drinking Water Action Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model (version and date) was used?	Lead Model for Windows, Version 1.0 Build 264
Where are the input values located in the risk assessment report?	Located in **Appendix D.1** and IEUBKwin OUTPUT (Attached)
What range of media concentrations were used for the model?	Range of concentration for total soil = 2.7 to 150 mg/kg Range of concentrations for groundwater = 21.3 – 558 µg/L
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic Mean Concentration; Data are located in **Appendix D.1**
Was soil sample taken from top 2 cm? If not, why?	No – Future scenario based on assumption that soil would be disturbed. Surface and subsurface data sets were combined to represent total soil.
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	No -- Soil samples were collected for multiple analyses.
What was the point of exposure/location?	Total soil and groundwater at Area P.
Where are the output values located in the risk assessment report?	IEUBKwin OUTPUT (Attached)
Was the model run using default values only?	No – Assumed site-specific arithmetic mean concentration of lead in soil and mean concentration of lead in groundwater.
Was the default soil bioavailability used?	Yes -- Default is 30%
Was the default soil ingestion rate used?	Yes -- Default values for 7 age groups are 85, 135, 135, 100, 090, and 85 mg/day
If non-default values were used, where is the rationale for the values located in the risk assessment report?	Located in **Section 6.4.1**.

3. Final Result

Medium	Result	Comment/PRG [1]
Groundwater	Input value of 163 µg/L Pb in groundwater results in a child geometric mean blood lead concentration of 11.9 µg/dL and 64.4% of children above a blood lead level of 10 µg/dL. This fails to meet the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children exceeding 10 µg/dL blood lead.	PRG not calculated.

1. Attach the IEUBK text output file and graph upon which the PRG was based as an appendix. For additional information, see www.epa.gov/superfund/programs/lead

LEAD MODEL FOR WINDOWS Version 1.0

Model Version: 1.0 Build 264
User Name: Shaw Environmental, Inc.
Date: 04/14/2009
Site Name: Radford Army Ammuniton Plant
Operable Unit: Area P
Run Mode: Site Risk Assessment

Water Data
Average groundwater concentration = 163 ug/L.
Soil/Dust Data
Average lead concentration in total soil = 41 mg/kg.

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	5.530
1-2	5.780
2-3	6.490
3-4	6.240
4-5	6.010
5-6	6.340
6-7	7.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 163.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 38.700 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	41.000	38.700
1-2	41.000	38.700
2-3	41.000	38.700
3-4	41.000	38.700
4-5	41.000	38.700
5-6	41.000	38.700
6-7	41.000	38.700

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

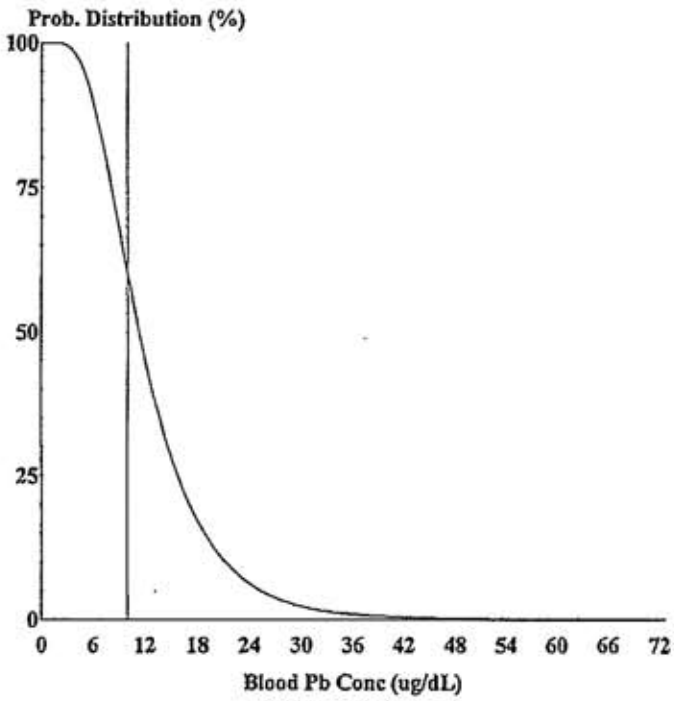
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	2.279	0.000	13.438
1-2	0.034	2.132	0.000	30.059
2-3	0.062	2.460	0.000	32.132
3-4	0.067	2.438	0.000	33.759
4-5	0.067	2.406	0.000	35.890
5-6	0.093	2.571	0.000	38.331
6-7	0.093	2.870	0.000	39.436

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	0.835	16.574	8.8
1-2	1.187	33.412	13.0
2-3	1.220	35.875	13.0
3-4	1.258	37.521	12.7
4-5	0.954	39.317	12.6
5-6	0.870	41.865	12.4
6-7	0.831	43.230	11.9



Cutoff = 10.000 ug/dl
Geo Mean = 11.889
GSD = 1.600
% Above = 64.359

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment

Appendix E-2

TCDD TE Calculations

Area P
TE Summary

Sample		HHRA Values	Units	SLERA Values	Units	Matrix	HHRA - Unit Adjusted Values		SLERA - Unit Adjusted Values	
APSD01	TCDD-TE	5.11E+00	pg/g	5.20E+00	pg/g	SD	5.11E-06	mg/kg	5.20E-06	mg/kg

Area P
TE Calculations
HHRA

SAMPNUMB	PARAMETER	VALUE	Units	LABQUAL	DVQUAL	ETECT_LI
APSD01	1,2,3,4,6,7,8-HpCDD	178	PG/G			
APSD01	1,2,3,4,6,7,8-HpCDF	37.6	PG/G			
APSD01	1,2,3,4,7,8,9-HpCDF	1.14	PG/G	A	J	
APSD01	1,2,3,4,7,8-HxCDD	1.53	PG/G	A	J	
APSD01	1,2,3,4,7,8-HxCDF	0.938	PG/G	A	U	
APSD01	1,2,3,6,7,8-HxCDD	4.08	PG/G	A	J	
APSD01	1,2,3,6,7,8-HxCDF	0.763	PG/G	A	J	
APSD01	1,2,3,7,8,9-HxCDD	4.19	PG/G	A	J	
APSD01	1,2,3,7,8,9-HxCDF	0.561	PG/G	U	U	0.561
APSD01	1,2,3,7,8-PeCDD	0.875	PG/G	A	J	
APSD01	1,2,3,7,8-PeCDF	0.238	PG/G	A	J	
APSD01	2,3,4,6,7,8-HxCDF	0.965	PG/G	A	J	
APSD01	2,3,4,7,8-PeCDF	0.0965	PG/G	A, EMPC	J	0.561
APSD01	2,3,7,8-TCDD	0.191	PG/G	A, EMPC	J	0.168
APSD01	2,3,7,8-TCDF	0.509	PG/G	A	U	
APSD01	OCDD	2180	PG/G			
APSD01	OCDF	115	PG/G			

U = B qualified data changed to "U"

Area P
TE Calculations
HHRA

ALIDVALU	AMATRIX	TE Needed?	TEF	ND = U	TCDD-TE		
178	SD	Y	0.01	0	1.78		
37.6	SD	Y	0.01	0	0.376		
1.14	SD	Y	0.01	J	0.0114		
1.53	SD	Y	0.1	J	0.153		
0.938	SD	Y	0.1	U	0		
4.08	SD	Y	0.1	J	0.408		
0.763	SD	Y	0.1	J	0.0763		
4.19	SD	Y	0.1	J	0.419		
0.561	SD	Y	0.1	U	0		
0.875	SD	Y	1	J	0.875		
0.238	SD	Y	0.03	J	0.00714		
0.965	SD	Y	0.1	J	0.0965		
0.0965	SD	Y	0.3	J	0.02895		
0.191	SD	Y	1	J	0.191		
0.509	SD	Y	0.1	U	0		
2180	SD	Y	0.0003	0	0.654	**APSD01**	**TCDD-TE**
115	SD	Y	0.0003	0	0.0345		

5.11079 PG/G SD

Area P
TE Calculations
SLERA

SAMPNUMB	PARAMETER	VALUE	Units	LABQUAL	DVQUAL	ETECT_LI
APSD01	1,2,3,4,6,7,8-HpCDD	178	PG/G			
APSD01	1,2,3,4,6,7,8-HpCDF	37.6	PG/G			
APSD01	1,2,3,4,7,8,9-HpCDF	1.14	PG/G	A	J	
APSD01	1,2,3,4,7,8-HxCDD	1.53	PG/G	A	J	
APSD01	1,2,3,4,7,8-HxCDF	0.938	PG/G	A	U	
APSD01	1,2,3,6,7,8-HxCDD	4.08	PG/G	A	J	
APSD01	1,2,3,6,7,8-HxCDF	0.763	PG/G	A	J	
APSD01	1,2,3,7,8,9-HxCDD	4.19	PG/G	A	J	
APSD01	1,2,3,7,8,9-HxCDF	0.561	PG/G	U	U	0.561
APSD01	1,2,3,7,8-PeCDD	0.875	PG/G	A	J	
APSD01	1,2,3,7,8-PeCDF	0.238	PG/G	A	J	
APSD01	2,3,4,6,7,8-HxCDF	0.965	PG/G	A	J	
APSD01	2,3,4,7,8-PeCDF	0.0965	PG/G	A, EMPC	J	0.561
APSD01	2,3,7,8-TCDD	0.191	PG/G	A, EMPC	J	0.168
APSD01	2,3,7,8-TCDF	0.509	PG/G	A	U	
APSD01	OCDD	2180	PG/G			
APSD01	OCDF	115	PG/G			

U = B qualified data changed to "U"

Area P
TE Calculations
SLERA

ALIDVALU	AMATRIX	TE Needed?	TEF	ND = U	TCDD-TE		
178	SD	Y	0.01	0	1.78		
37.6	SD	Y	0.01	0	0.376		
1.14	SD	Y	0.01	J	0.0114		
1.53	SD	Y	0.1	J	0.153		
0.938	SD	Y	0.1	U	0		
4.08	SD	Y	0.1	J	0.408		
0.763	SD	Y	0.1	J	0.0763		
4.19	SD	Y	0.1	J	0.419		
0.561	SD	Y	0.1	U	0		
0.875	SD	Y	1	J	0.875		
0.238	SD	Y	0.1	J	0.0238		
0.965	SD	Y	0.1	J	0.0965		
0.0965	SD	Y	1	J	0.0965		
0.191	SD	Y	1	J	0.191		
0.509	SD	Y	1	U	0		
2180	SD	Y	0.0003	0	0.654	**APSD01**	**TCDD-TE**
115	SD	Y	0.0003	0	0.0345		

Area P
TE Calculations
SLERA

5.195 PG/G SD

Area P
TEFs

1,2,3,4,6,7,8-HpCDD	0.01	0.01
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01
1,2,3,4,7,8-HxCDD	0.1	0.1
1,2,3,4,7,8-HxCDF	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1
1,2,3,7,8-PeCDD	1	1
1,2,3,7,8-PeCDF	0.03	**0.1**
2,3,4,6,7,8-HxCDF	0.1	0.1
2,3,4,7,8-PeCDF	0.3	**1**
2,3,7,8-TCDD	1	1
2,3,7,8-TCDF	0.1	**1**
OCDD	0.0003	0.0003
OCDF	0.0003	0.0003

red - Avian TEF (WHO 1998) - use for SLERA
all others - mammalian (WHO 2005) - use for HHRA

Appendix E-3

ProUCL Output

1				**General UCL Statistics for Data Sets with Non-Detects**								
2		**User Selected Options**										
3		From File		C:\Documents and Settings\debbi.freer\My Documents\Radford\AOC P\AOC P_ProUCL_input_SS.wst								
4		Full Precision		OFF								
5		Confidence Coefficient		95%								
6		Number of Bootstrap Operations		2000								
7												
8												
9	**Aluminum (mg/kg)**											
10												
11						**General Statistics**							
12				Number of Valid Samples	10				Number of Unique Samples	10		
13												
14				**Raw Statistics**					**Log-transformed Statistics**			
15				Minimum	3620				Minimum of Log Data	8.194		
16				Maximum	13200				Maximum of Log Data	9.488		
17				Mean	9343				Mean of log Data	9.067		
18				Median	10350				SD of log Data	0.44		
19				SD	3306							
20				Coefficient of Variation	0.354							
21				Skewness	-0.787							
22												
23						**Relevant UCL Statistics**							
24				**Normal Distribution Test**					**Lognormal Distribution Test**			
25				Shapiro Wilk Test Statistic	0.865				Shapiro Wilk Test Statistic	0.811		
26				Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842		
27				**Data appear Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**			
28												
29				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
30				95% Student's-t UCL	11259				95% H-UCL	13063		
31				**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	15258		
32				95% Adjusted-CLT UCL	10784				97.5% Chebyshev (MVUE) UCL	17772		
33				95% Modified-t UCL	11216				99% Chebyshev (MVUE) UCL	22710		
34												
35				**Gamma Distribution Test**					**Data Distribution**			
36				k star (bias corrected)	4.838				**Data appear Normal at 5% Significance Level**			
37				Theta Star	1931							
38				nu star	96.77							
39				Approximate Chi Square Value (.05)	75.08				**Nonparametric Statistics**			
40				Adjusted Level of Significance	0.0267				95% CLT UCL	11063		
41				Adjusted Chi Square Value	71.76				95% Jackknife UCL	11259		
42									95% Standard Bootstrap UCL	10993		
43				Anderson-Darling Test Statistic	0.908				95% Bootstrap-t UCL	10931		
44				Anderson-Darling 5% Critical Value	0.728				95% Hall's Bootstrap UCL	10689		
45				Kolmogorov-Smirnov Test Statistic	0.34				95% Percentile Bootstrap UCL	10927		
46				Kolmogorov-Smirnov 5% Critical Value	0.267				95% BCA Bootstrap UCL	10799		
47				**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	13900		
48									97.5% Chebyshev(Mean, Sd) UCL	15872		
49				**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	19745		
50				95% Approximate Gamma UCL	12042							
51				95% Adjusted Gamma UCL	12598							
52												

Potential UCL to Use		Use 95% Student's-t UCL	11259
Arsenic (mg/kg)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.923	Minimum of Log Data	-0.0801
Maximum	4.3	Maximum of Log Data	1.459
Mean	2.071	Mean of log Data	0.609
Median	1.9	SD of log Data	0.516
SD	1.082		
Coefficient of Variation	0.522		
Skewness	1.024		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2.699	95% H-UCL	3.091
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.572
95% Adjusted-CLT UCL	2.753	97.5% Chebyshev (MVUE) UCL	4.222
95% Modified-t UCL	2.717	99% Chebyshev (MVUE) UCL	5.498
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.117	**Data appear Normal at 5% Significance Level**	
Theta Star	0.665		
nu star	62.34		
Approximate Chi Square Value (.05)	45.18	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	2.634
Adjusted Chi Square Value	42.65	95% Jackknife UCL	2.699
		95% Standard Bootstrap UCL	2.608
Anderson-Darling Test Statistic	0.294	95% Bootstrap-t UCL	2.997
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	3.478
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL	2.631
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	2.696
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.563
		97.5% Chebyshev(Mean, Sd) UCL	4.208
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.476
95% Approximate Gamma UCL	2.858		
95% Adjusted Gamma UCL	3.028		
Potential UCL to Use		Use 95% Student's-t UCL	2.699
Barium (mg/kg)			

105	**General Statistics**											
106					Number of Valid Samples	10				Number of Unique Samples	10	
107												
108	**Raw Statistics**						**Log-transformed Statistics**					
109					Minimum	52.7				Minimum of Log Data	3.965	
110					Maximum	257				Maximum of Log Data	5.549	
111					Mean	141.5				Mean of log Data	4.83	
112					Median	148.5				SD of log Data	0.554	
113					SD	66.13						
114					Coefficient of Variation	0.467						
115					Skewness	0.05						
116												
117	**Relevant UCL Statistics**											
118	**Normal Distribution Test**						**Lognormal Distribution Test**					
119					Shapiro Wilk Test Statistic	0.939				Shapiro Wilk Test Statistic	0.883	
120					Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842	
121	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
122												
123	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
124					95% Student's-t UCL	179.8				95% H-UCL	223.2	
125	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	255.5	
126					95% Adjusted-CLT UCL	176.2				97.5% Chebyshev (MVUE) UCL	304	
127					95% Modified-t UCL	179.9				99% Chebyshev (MVUE) UCL	399.1	
128												
129	**Gamma Distribution Test**						**Data Distribution**					
130					k star (bias corrected)	3.044	**Data appear Normal at 5% Significance Level**					
131					Theta Star	46.48						
132					nu star	60.88						
133					Approximate Chi Square Value (.05)	43.94	**Nonparametric Statistics**					
134					Adjusted Level of Significance	0.0267				95% CLT UCL	175.9	
135					Adjusted Chi Square Value	41.45				95% Jackknife UCL	179.8	
136										95% Standard Bootstrap UCL	173.8	
137					Anderson-Darling Test Statistic	0.489				95% Bootstrap-t UCL	180.3	
138					Anderson-Darling 5% Critical Value	0.729				95% Hall's Bootstrap UCL	178.2	
139					Kolmogorov-Smirnov Test Statistic	0.209				95% Percentile Bootstrap UCL	174.8	
140					Kolmogorov-Smirnov 5% Critical Value	0.268				95% BCA Bootstrap UCL	174.9	
141	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	232.6	
142										97.5% Chebyshev(Mean, Sd) UCL	272.1	
143	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	349.6	
144					95% Approximate Gamma UCL	196.1						
145					95% Adjusted Gamma UCL	207.9						
146												
147	**Potential UCL to Use**									Use 95% Student's-t UCL	179.8	
148												
149												
150	**Beryllium (mg/kg)**											
151												
152	**General Statistics**											
153					Number of Valid Samples	10				Number of Detected Data	8	
154					Number of Unique Samples	8				Number of Non-Detect Data	2	
155										Percent Non-Detects	20.00%	
156												

	A	B	C	D	E	F	G	H	I	J	K	L
157	**Raw Statistics**						**Log-transformed Statistics**					
158					Minimum Detected	0.43					Minimum Detected	-0.844
159					Maximum Detected	0.97					Maximum Detected	-0.0305
160					Mean of Detected	0.686					Mean of Detected	-0.413
161					SD of Detected	0.187					SD of Detected	0.292
162					Minimum Non-Detect	0.5					Minimum Non-Detect	-0.693
163					Maximum Non-Detect	0.5					Maximum Non-Detect	-0.693
164												
165												
166	**UCL Statistics**											
167	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
168					Shapiro Wilk Test Statistic	0.951					Shapiro Wilk Test Statistic	0.916
169					5% Shapiro Wilk Critical Value	0.818					5% Shapiro Wilk Critical Value	0.818
170	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
171												
172	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
173					DL/2 Substitution Method						DL/2 Substitution Method	
174					Mean	0.599					Mean	-0.607
175					SD	0.247					SD	0.485
176					95% DL/2 (t) UCL	0.742					95% H-Stat (DL/2) UCL	0.702
177												
178					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
179					Mean	0.596					Mean in Log Scale	-0.49
180					SD	0.244					SD in Log Scale	0.308
181					95% MLE (t) UCL	0.738					Mean in Original Scale	0.639
182					95% MLE (Tiku) UCL	0.757					SD in Original Scale	0.193
183											95% Percentile Bootstrap UCL	0.736
184											95% BCA Bootstrap UCL	0.737
185												
186	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
187					k star (bias corrected)	8.96	**Data appear Normal at 5% Significance Level**					
188					Theta Star	0.0766						
189					nu star	143.4						
190												
191					A-D Test Statistic	0.331	**Nonparametric Statistics**					
192					5% A-D Critical Value	0.716					Kaplan-Meier (KM) Method	
193					K-S Test Statistic	0.716					Mean	0.636
194					5% K-S Critical Value	0.294					SD	0.186
195	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.0629
196											95% KM (t) UCL	0.751
197	**Assuming Gamma Distribution**										95% KM (z) UCL	0.739
198					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.749
199					Minimum	0.43					95% KM (bootstrap t) UCL	0.755
200					Maximum	0.97					95% KM (BCA) UCL	0.764
201					Mean	0.658					95% KM (Percentile Bootstrap) UCL	0.75
202					Median	0.654					95% KM (Chebyshev) UCL	0.91
203					SD	0.178					97.5% KM (Chebyshev) UCL	1.028
204					k star	10.48					99% KM (Chebyshev) UCL	1.261
205					Theta star	0.0628						
206					Nu star	209.6	**Potential UCLs to Use**					
207					AppChi2	177.1					95% KM (t) UCL	0.751
208					95% Gamma Approximate UCL	0.779					95% KM (Percentile Bootstrap) UCL	0.75

209					95% Adjusted Gamma UCL	0.803						
210	**Note: DL/2 is not a recommended method.**											
211												
212												
213	**Cadmium (mg/kg)**											
214												
215					**General Statistics**							
216					Number of Valid Samples	10				Number of Detected Data		2
217					Number of Unique Samples	2				Number of Non-Detect Data		8
218										Percent Non-Detects		80.00%
219												
220					**Raw Statistics**					**Log-transformed Statistics**		
221					Minimum Detected	0.18				Minimum Detected		-1.715
222					Maximum Detected	0.39				Maximum Detected		-0.942
223					Mean of Detected	0.285				Mean of Detected		-1.328
224					SD of Detected	0.148				SD of Detected		0.547
225					Minimum Non-Detect	0.052				Minimum Non-Detect		-2.957
226					Maximum Non-Detect	0.7				Maximum Non-Detect		-0.357
227												
228	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		10
229	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
230	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
231												
232					**UCL Statistics**							
233					**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**		
234					Shapiro Wilk Test Statistic	1				Shapiro Wilk Test Statistic		1
235					5% Shapiro Wilk Critical Value	N/A				5% Shapiro Wilk Critical Value		N/A
236					**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
237												
238					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
239					DL/2 Substitution Method					DL/2 Substitution Method		
240					Mean	0.24				Mean		-1.876
241					SD	0.157				SD		1.221
242					95% DL/2 (t) UCL	0.331				95% H-Stat (DL/2) UCL		0.715
243												
244					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
245					**MLE method failed to converge properly**					Mean in Log Scale		N/A
246										SD in Log Scale		N/A
247										Mean in Original Scale		N/A
248										SD in Original Scale		N/A
249										95% Percentile Bootstrap UCL		N/A
250										95% BCA Bootstrap UCL		N/A
251												
252					**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
253					k star (bias corrected)	N/A				**Data do not follow a Discernable Distribution (0.05)**		
254					Theta Star	N/A						
255					nu star	N/A						
256												
257					A-D Test Statistic	0.359				**Nonparametric Statistics**		
258					5% A-D Critical Value	N/A				Kaplan-Meier (KM) Method		
259					K-S Test Statistic	N/A				Mean		0.222
260					5% K-S Critical Value	N/A				SD		0.084

261	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.0531
262											95% KM (t) UCL	0.319
263	**Assuming Gamma Distribution**										95% KM (z) UCL	0.309
264	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	0.37
265	Minimum	N/A									95% KM (bootstrap t) UCL	1.8E+308
266	Maximum	N/A									95% KM (BCA) UCL	0.39
267	Mean	N/A									95% KM (Percentile Bootstrap) UCL	N/A
268	Median	N/A									95% KM (Chebyshev) UCL	0.454
269	SD	N/A									97.5% KM (Chebyshev) UCL	0.554
270	k star	N/A									99% KM (Chebyshev) UCL	0.751
271	Theta star	N/A										
272	Nu star	N/A									**Potential UCLs to Use**	
273	AppChi2	N/A									95% KM (t) UCL	0.319
274	95% Gamma Approximate UCL	N/A									95% KM (% Bootstrap) UCL	N/A
275	95% Adjusted Gamma UCL	N/A										
276	**Note: DL/2 is not a recommended method.**											
277												
278												
279	**Calcium (mg/kg)**											
280												
281	**General Statistics**											
282	Number of Valid Samples	10									Number of Unique Samples	10
283												
284	**Raw Statistics**										**Log-transformed Statistics**	
285	Minimum	1180									Minimum of Log Data	7.073
286	Maximum	160000									Maximum of Log Data	11.98
287	Mean	19539									Mean of log Data	8.425
288	Median	3270									SD of log Data	1.413
289	SD	49466										
290	Coefficient of Variation	2.532										
291	Skewness	3.136										
292												
293	**Relevant UCL Statistics**											
294	**Normal Distribution Test**										**Lognormal Distribution Test**	
295	Shapiro Wilk Test Statistic	0.415									Shapiro Wilk Test Statistic	0.777
296	Shapiro Wilk Critical Value	0.842									Shapiro Wilk Critical Value	0.842
297	**Data not Normal at 5% Significance Level**										**Data not Lognormal at 5% Significance Level**	
298												
299	**Assuming Normal Distribution**										**Assuming Lognormal Distribution**	
300	95% Student's-t UCL	48214									95% H-UCL	81529
301	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	32160
302	95% Adjusted-CLT UCL	61844									97.5% Chebyshev (MVUE) UCL	41527
303	95% Modified-t UCL	50799									99% Chebyshev (MVUE) UCL	59926
304												
305	**Gamma Distribution Test**										**Data Distribution**	
306	k star (bias corrected)	0.378									**Data do not follow a Discernable Distribution (0.05)**	
307	Theta Star	51715										
308	nu star	7.556										
309	Approximate Chi Square Value (.05)	2.481									**Nonparametric Statistics**	
310	Adjusted Level of Significance	0.0267									95% CLT UCL	45269
311	Adjusted Chi Square Value	2.006									95% Jackknife UCL	48214
312											95% Standard Bootstrap UCL	43373

313				Anderson-Darling Test Statistic	1.847					95% Bootstrap-t UCL	743378
314				Anderson-Darling 5% Critical Value	0.787					95% Hall's Bootstrap UCL	254709
315				Kolmogorov-Smirnov Test Statistic	0.385					95% Percentile Bootstrap UCL	50057
316				Kolmogorov-Smirnov 5% Critical Value	0.283					95% BCA Bootstrap UCL	65812
317				**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	87724
318										97.5% Chebyshev(Mean, Sd) UCL	117227
319				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	175181
320				95% Approximate Gamma UCL	59512						
321				95% Adjusted Gamma UCL	73612						
322											
323				**Potential UCL to Use**						Use 99% Chebyshev (Mean, Sd) UCL	175181
324				**Recommended UCL exceeds the maximum observation**							
325											
326											
327	**Chromium (mg/kg)**										
328											
329				**General Statistics**							
330				Number of Valid Samples	10					Number of Unique Samples	10
331											
332				**Raw Statistics**						**Log-transformed Statistics**	
333				Minimum	7.63					Minimum of Log Data	2.032
334				Maximum	59.6					Maximum of Log Data	4.088
335				Mean	20.78					Mean of log Data	2.858
336				Median	16.9					SD of log Data	0.596
337				SD	15.05						
338				Coefficient of Variation	0.724						
339				Skewness	2.187						
340											
341				**Relevant UCL Statistics**							
342				**Normal Distribution Test**						**Lognormal Distribution Test**	
343				Shapiro Wilk Test Statistic	0.762					Shapiro Wilk Test Statistic	0.961
344				Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
345				**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
346											
347				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
348				95% Student's-t UCL	29.51					95% H-UCL	33.25
349				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	37.54
350				95% Adjusted-CLT UCL	32.13					97.5% Chebyshev (MVUE) UCL	44.96
351				95% Modified-t UCL	30.06					99% Chebyshev (MVUE) UCL	59.53
352											
353				**Gamma Distribution Test**						**Data Distribution**	
354				k star (bias corrected)	2.162					**Data appear Gamma Distributed at 5% Significance Level**	
355				Theta Star	9.611						
356				nu star	43.25						
357				Approximate Chi Square Value (.05)	29.17					**Nonparametric Statistics**	
358				Adjusted Level of Significance	0.0267					95% CLT UCL	28.61
359				Adjusted Chi Square Value	27.17					95% Jackknife UCL	29.51
360										95% Standard Bootstrap UCL	28.04
361				Anderson-Darling Test Statistic	0.369					95% Bootstrap-t UCL	37.8
362				Anderson-Darling 5% Critical Value	0.732					95% Hall's Bootstrap UCL	62.46
363				Kolmogorov-Smirnov Test Statistic	0.164					95% Percentile Bootstrap UCL	29.22
364				Kolmogorov-Smirnov 5% Critical Value	0.268					95% BCA Bootstrap UCL	32.22

365	Data appear Gamma Distributed at 5% Significance Level									95% Chebyshev(Mean, Sd) UCL		41.53
366										97.5% Chebyshev(Mean, Sd) UCL		50.5
367	Assuming Gamma Distribution									99% Chebyshev(Mean, Sd) UCL		68.13
368					95% Approximate Gamma UCL	30.81						
369					95% Adjusted Gamma UCL	33.08						
370												
371	Potential UCL to Use									Use 95% Approximate Gamma UCL		30.81
372												
373												
374	Cobalt (mg/kg)											
375												
376	General Statistics											
377					Number of Valid Samples	10				Number of Unique Samples		10
378												
379	Raw Statistics									Log-transformed Statistics		
380					Minimum	2.65				Minimum of Log Data		0.975
381					Maximum	12.6				Maximum of Log Data		2.534
382					Mean	7.985				Mean of log Data		1.983
383					Median	8				SD of log Data		0.493
384					SD	3.249						
385					Coefficient of Variation	0.407						
386					Skewness	-0.256						
387												
388	Relevant UCL Statistics											
389	Normal Distribution Test									Lognormal Distribution Test		
390					Shapiro Wilk Test Statistic	0.96				Shapiro Wilk Test Statistic		0.908
391					Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value		0.842
392	Data appear Normal at 5% Significance Level									Data appear Lognormal at 5% Significance Level		
393												
394	Assuming Normal Distribution									Assuming Lognormal Distribution		
395					95% Student's-t UCL	9.868				95% H-UCL		11.79
396	95% UCLs (Adjusted for Skewness)									95% Chebyshev (MVUE) UCL		13.69
397					95% Adjusted-CLT UCL	9.586				97.5% Chebyshev (MVUE) UCL		16.11
398					95% Modified-t UCL	9.854				99% Chebyshev (MVUE) UCL		20.86
399												
400	Gamma Distribution Test									Data Distribution		
401					k star (bias corrected)	3.861				Data appear Normal at 5% Significance Level		
402					Theta Star	2.068						
403					nu star	77.23						
404					Approximate Chi Square Value (.05)	57.99				Nonparametric Statistics		
405					Adjusted Level of Significance	0.0267				95% CLT UCL		9.675
406					Adjusted Chi Square Value	55.1				95% Jackknife UCL		9.868
407										95% Standard Bootstrap UCL		9.616
408					Anderson-Darling Test Statistic	0.351				95% Bootstrap-t UCL		9.835
409					Anderson-Darling 5% Critical Value	0.729				95% Hall's Bootstrap UCL		9.549
410					Kolmogorov-Smirnov Test Statistic	0.176				95% Percentile Bootstrap UCL		9.63
411					Kolmogorov-Smirnov 5% Critical Value	0.267				95% BCA Bootstrap UCL		9.575
412	Data appear Gamma Distributed at 5% Significance Level									95% Chebyshev(Mean, Sd) UCL		12.46
413										97.5% Chebyshev(Mean, Sd) UCL		14.4
414	Assuming Gamma Distribution									99% Chebyshev(Mean, Sd) UCL		18.21
415					95% Approximate Gamma UCL	10.64						
416					95% Adjusted Gamma UCL	11.19						

417												
418	**Potential UCL to Use**									Use 95% Student's-t UCL	9.868	
419												
420												
421	**Copper (mg/kg)**											
422												
423	**General Statistics**											
424	Number of Valid Samples	10					Number of Unique Samples	10				
425												
426	**Raw Statistics**						**Log-transformed Statistics**					
427	Minimum	5					Minimum of Log Data	1.609				
428	Maximum	347					Maximum of Log Data	5.849				
429	Mean	67.47					Mean of log Data	3.316				
430	Median	20.4					SD of log Data	1.404				
431	SD	104.7										
432	Coefficient of Variation	1.551										
433	Skewness	2.525										
434												
435	**Relevant UCL Statistics**											
436	**Normal Distribution Test**						**Lognormal Distribution Test**					
437	Shapiro Wilk Test Statistic	0.644					Shapiro Wilk Test Statistic	0.936				
438	Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842				
439	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
440												
441	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
442	95% Student's-t UCL	128.1					95% H-UCL	477				
443	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	191.7				
444	95% Adjusted-CLT UCL	150.1					97.5% Chebyshev (MVUE) UCL	247.5				
445	95% Modified-t UCL	132.5					99% Chebyshev (MVUE) UCL	357				
446												
447	**Gamma Distribution Test**						**Data Distribution**					
448	k star (bias corrected)	0.541					**Data appear Gamma Distributed at 5% Significance Level**					
449	Theta Star	124.7										
450	nu star	10.82										
451	Approximate Chi Square Value (.05)	4.459					**Nonparametric Statistics**					
452	Adjusted Level of Significance	0.0267					95% CLT UCL	121.9				
453	Adjusted Chi Square Value	3.776					95% Jackknife UCL	128.1				
454							95% Standard Bootstrap UCL	118.9				
455	Anderson-Darling Test Statistic	0.538					95% Bootstrap-t UCL	230.1				
456	Anderson-Darling 5% Critical Value	0.763					95% Hall's Bootstrap UCL	319.7				
457	Kolmogorov-Smirnov Test Statistic	0.206					95% Percentile Bootstrap UCL	124.8				
458	Kolmogorov-Smirnov 5% Critical Value	0.277					95% BCA Bootstrap UCL	151.2				
459	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	211.7				
460							97.5% Chebyshev(Mean, Sd) UCL	274.2				
461	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	396.8				
462	95% Approximate Gamma UCL	163.7										
463	95% Adjusted Gamma UCL	193.3										
464												
465	**Potential UCL to Use**						Use 95% Approximate Gamma UCL	163.7				
466												
467												
468	**Iron (mg/kg)**											

469												
470	**General Statistics**											
471					Number of Valid Samples	10				Number of Unique Samples	10	
472												
473	**Raw Statistics**						**Log-transformed Statistics**					
474					Minimum	6880				Minimum of Log Data	8.836	
475					Maximum	24900				Maximum of Log Data	10.12	
476					Mean	15716				Mean of log Data	9.571	
477					Median	16450				SD of log Data	0.474	
478					SD	6462						
479					Coefficient of Variation	0.411						
480					Skewness	-0.162						
481												
482	**Relevant UCL Statistics**											
483	**Normal Distribution Test**						**Lognormal Distribution Test**					
484					Shapiro Wilk Test Statistic	0.922				Shapiro Wilk Test Statistic	0.875	
485					Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842	
486	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
487												
488	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
489					95% Student's-t UCL	19462				95% H-UCL	22664	
490	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	26383	
491					95% Adjusted-CLT UCL	18965				97.5% Chebyshev (MVUE) UCL	30941	
492					95% Modified-t UCL	19444				99% Chebyshev (MVUE) UCL	39893	
493												
494	**Gamma Distribution Test**						**Data Distribution**					
495					k star (bias corrected)	3.992	**Data appear Normal at 5% Significance Level**					
496					Theta Star	3936						
497					nu star	79.85						
498					Approximate Chi Square Value (.05)	60.26	**Nonparametric Statistics**					
499					Adjusted Level of Significance	0.0267				95% CLT UCL	19077	
500					Adjusted Chi Square Value	57.31				95% Jackknife UCL	19462	
501										95% Standard Bootstrap UCL	18981	
502					Anderson-Darling Test Statistic	0.526				95% Bootstrap-t UCL	19353	
503					Anderson-Darling 5% Critical Value	0.729				95% Hall's Bootstrap UCL	18888	
504					Kolmogorov-Smirnov Test Statistic	0.205				95% Percentile Bootstrap UCL	18840	
505					Kolmogorov-Smirnov 5% Critical Value	0.267				95% BCA Bootstrap UCL	18708	
506	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	24623	
507										97.5% Chebyshev(Mean, Sd) UCL	28478	
508	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	36048	
509					95% Approximate Gamma UCL	20825						
510					95% Adjusted Gamma UCL	21896						
511												
512	**Potential UCL to Use**									Use 95% Student's-t UCL	19462	
513												
514												
515	**Lead (mg/kg)**											
516												
517	**General Statistics**											
518					Number of Valid Samples	10				Number of Unique Samples	10	
519												
520	**Raw Statistics**						**Log-transformed Statistics**					

521					Minimum	4.9				Minimum of Log Data	1.589	
522					Maximum	150				Maximum of Log Data	5.011	
523					Mean	59.06				Mean of log Data	3.594	
524					Median	40.65				SD of log Data	1.152	
525					SD	53.69						
526					Coefficient of Variation	0.909						
527					Skewness	0.896						
528												
529	**Relevant UCL Statistics**											
530	**Normal Distribution Test**							**Lognormal Distribution Test**				
531					Shapiro Wilk Test Statistic	0.854				Shapiro Wilk Test Statistic	0.945	
532					Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842	
533	**Data appear Normal at 5% Significance Level**							**Data appear Lognormal at 5% Significance Level**				
534												
535	**Assuming Normal Distribution**							**Assuming Lognormal Distribution**				
536					95% Student's-t UCL	90.18				95% H-UCL	263	
537	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	171.7	
538					95% Adjusted-CLT UCL	92.12				97.5% Chebyshev (MVUE) UCL	218.2	
539					95% Modified-t UCL	90.98				99% Chebyshev (MVUE) UCL	309.6	
540												
541	**Gamma Distribution Test**							**Data Distribution**				
542					k star (bias corrected)	0.885		**Data appear Normal at 5% Significance Level**				
543					Theta Star	66.7						
544					nu star	17.71						
545					Approximate Chi Square Value (.05)	9.182		**Nonparametric Statistics**				
546					Adjusted Level of Significance	0.0267				95% CLT UCL	86.99	
547					Adjusted Chi Square Value	8.135				95% Jackknife UCL	90.18	
548										95% Standard Bootstrap UCL	84.85	
549					Anderson-Darling Test Statistic	0.239				95% Bootstrap-t UCL	101.3	
550					Anderson-Darling 5% Critical Value	0.745				95% Hall's Bootstrap UCL	91.29	
551					Kolmogorov-Smirnov Test Statistic	0.138				95% Percentile Bootstrap UCL	86.96	
552					Kolmogorov-Smirnov 5% Critical Value	0.273				95% BCA Bootstrap UCL	89.71	
553	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	133.1	
554										97.5% Chebyshev(Mean, Sd) UCL	165.1	
555	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	228	
556					95% Approximate Gamma UCL	113.9						
557					95% Adjusted Gamma UCL	128.6						
558												
559	**Potential UCL to Use**									Use 95% Student's-t UCL	90.18	
560												
561												
562	**Magnesium (mg/kg)**											
563												
564	**General Statistics**											
565					Number of Valid Samples	10				Number of Unique Samples	10	
566												
567	**Raw Statistics**							**Log-transformed Statistics**				
568					Minimum	1620				Minimum of Log Data	7.39	
569					Maximum	83000				Maximum of Log Data	11.33	
570					Mean	11797				Mean of log Data	8.461	
571					Median	3235				SD of log Data	1.114	
572					SD	25108						

Coefficient of Variation	2.128	
Skewness	3.121	

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.435	Shapiro Wilk Test Statistic	0.758
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	26352	95% H-UCL	30429
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21088
95% Adjusted-CLT UCL	33230	97.5% Chebyshev (MVUE) UCL	26727
95% Modified-t UCL	27658	99% Chebyshev (MVUE) UCL	37804
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.533	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	22154		
nu star	10.65		
Approximate Chi Square Value (.05)	4.352	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	24857
Adjusted Chi Square Value	3.679	95% Jackknife UCL	26352
		95% Standard Bootstrap UCL	24399
Anderson-Darling Test Statistic	1.792	95% Bootstrap-t UCL	194974
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	104101
Kolmogorov-Smirnov Test Statistic	0.341	95% Percentile Bootstrap UCL	27255
Kolmogorov-Smirnov 5% Critical Value	0.278	95% BCA Bootstrap UCL	35786
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46407
		97.5% Chebyshev(Mean, Sd) UCL	61382
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	90799
95% Approximate Gamma UCL	28869		
95% Adjusted Gamma UCL	34154		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	90799

Recommended UCL exceeds the maximum observation

Manganese (mg/kg)

General Statistics

Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	130	Minimum of Log Data	4.868
Maximum	1240	Maximum of Log Data	7.123
Mean	601.7	Mean of log Data	6.15
Median	595	SD of log Data	0.81
SD	389.5		
Coefficient of Variation	0.647		
Skewness	0.411		

Relevant UCL Statistics

	A	B	C	D	E	F	G	H	I	J	K	L
625	**Normal Distribution Test**						**Lognormal Distribution Test**					
626	Shapiro Wilk Test Statistic					0.915	Shapiro Wilk Test Statistic					0.884
627	Shapiro Wilk Critical Value					0.842	Shapiro Wilk Critical Value					0.842
628	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
629												
630	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
631	95% Student's-t UCL					827.5	95% H-UCL					1361
632	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					1351
633	95% Adjusted-CLT UCL					821.4	97.5% Chebyshev (MVUE) UCL					1665
634	95% Modified-t UCL					830.1	99% Chebyshev (MVUE) UCL					2281
635												
636	**Gamma Distribution Test**						**Data Distribution**					
637	k star (bias corrected)					1.577	**Data appear Normal at 5% Significance Level**					
638	Theta Star					381.6						
639	nu star					31.53						
640	Approximate Chi Square Value (.05)					19.7	**Nonparametric Statistics**					
641	Adjusted Level of Significance					0.0267	95% CLT UCL					804.3
642	Adjusted Chi Square Value					18.09	95% Jackknife UCL					827.5
643							95% Standard Bootstrap UCL					791.1
644	Anderson-Darling Test Statistic					0.46	95% Bootstrap-t UCL					864.7
645	Anderson-Darling 5% Critical Value					0.735	95% Hall's Bootstrap UCL					879.8
646	Kolmogorov-Smirnov Test Statistic					0.195	95% Percentile Bootstrap UCL					791.2
647	Kolmogorov-Smirnov 5% Critical Value					0.27	95% BCA Bootstrap UCL					818.4
648	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					1139
649							97.5% Chebyshev(Mean, Sd) UCL					1371
650	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					1827
651	95% Approximate Gamma UCL					963						
652	95% Adjusted Gamma UCL					1049						
653												
654	**Potential UCL to Use**						Use 95% Student's-t UCL					827.5
655												
656												
657	**Mercury (mg/kg)**											
658												
659	**General Statistics**											
660	Number of Valid Samples					10	Number of Detected Data					5
661	Number of Unique Samples					4	Number of Non-Detect Data					5
662							Percent Non-Detects					50.00%
663												
664	**Raw Statistics**						**Log-transformed Statistics**					
665	Minimum Detected					0.01	Minimum Detected					-4.605
666	Maximum Detected					0.091	Maximum Detected					-2.397
667	Mean of Detected					0.046	Mean of Detected					-3.481
668	SD of Detected					0.0387	SD of Detected					1.084
669	Minimum Non-Detect					0.05	Minimum Non-Detect					-2.996
670	Maximum Non-Detect					0.05	Maximum Non-Detect					-2.996
671												
672												
673	**UCL Statistics**											
674	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
675	Shapiro Wilk Test Statistic					0.846	Shapiro Wilk Test Statistic					0.831
676	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762

	A	B	C	D	E	F	G	H	I	J	K	L
677	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
678												
679	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
680					DL/2 Substitution Method						DL/2 Substitution Method	
681					Mean	0.0355					Mean	-3.585
682					SD	0.0281					SD	0.731
683					95% DL/2 (t) UCL	0.0518					95% H-Stat (DL/2) UCL	0.0537
684												
685					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
686	**MLE method failed to converge properly**										Mean in Log Scale	-3.831
687											SD in Log Scale	0.92
688											Mean in Original Scale	0.0319
689											SD in Original Scale	0.0306
690											95% Percentile Bootstrap UCL	0.0484
691											95% BCA Bootstrap UCL	0.0512
692												
693	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
694					k star (bias corrected)	0.688	**Data appear Normal at 5% Significance Level**					
695					Theta Star	0.0668						
696					nu star	6.882						
697												
698					A-D Test Statistic	0.48	**Nonparametric Statistics**					
699					5% A-D Critical Value	0.688	Kaplan-Meier (KM) Method					
700					K-S Test Statistic	0.688					Mean	0.0325
701					5% K-S Critical Value	0.362					SD	0.0294
702	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.0116
703											95% KM (t) UCL	0.0538
704	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0516
705					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0548
706					Minimum	0.01					95% KM (bootstrap t) UCL	0.0558
707					Maximum	0.091					95% KM (BCA) UCL	0.0559
708					Mean	0.0431					95% KM (Percentile Bootstrap) UCL	0.0559
709					Median	0.0394					95% KM (Chebyshev) UCL	0.0831
710					SD	0.0279					97.5% KM (Chebyshev) UCL	0.105
711					k star	1.65					99% KM (Chebyshev) UCL	0.148
712					Theta star	0.0261						
713					Nu star	33	**Potential UCLs to Use**					
714					AppChi2	20.86					95% KM (t) UCL	0.0538
715					95% Gamma Approximate UCL	0.0681					95% KM (Percentile Bootstrap) UCL	0.0559
716					95% Adjusted Gamma UCL	0.074						
717	**Note: DL/2 is not a recommended method.**											
718												
719												
720	**Nickel (mg/kg)**											
721												
722	**General Statistics**											
723					Number of Valid Samples	10					Number of Unique Samples	10
724												
725	**Raw Statistics**						**Log-transformed Statistics**					
726					Minimum	6.6					Minimum of Log Data	1.887
727					Maximum	33.4					Maximum of Log Data	3.509
728					Mean	13.49					Mean of log Data	2.487

729					Median	11.65					SD of log Data	0.48
730					SD	7.815						
731					Coefficient of Variation	0.579						
732					Skewness	2.087						
733												
734					**Relevant UCL Statistics**							
735					**Normal Distribution Test**						**Lognormal Distribution Test**	
736					Shapiro Wilk Test Statistic	0.779					Shapiro Wilk Test Statistic	0.937
737					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
738					**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
739												
740					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
741					95% Student's-t UCL	18.02					95% H-UCL	19.16
742					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	22.29
743					95% Adjusted-CLT UCL	19.3					97.5% Chebyshev (MVUE) UCL	26.16
744					95% Modified-t UCL	18.29					99% Chebyshev (MVUE) UCL	33.78
745												
746					**Gamma Distribution Test**						**Data Distribution**	
747					k star (bias corrected)	3.221					**Data appear Gamma Distributed at 5% Significance Level**	
748					Theta Star	4.189						
749					nu star	64.42						
750					Approximate Chi Square Value (.05)	46.95					**Nonparametric Statistics**	
751					Adjusted Level of Significance	0.0267					95% CLT UCL	17.56
752					Adjusted Chi Square Value	44.37					95% Jackknife UCL	18.02
753											95% Standard Bootstrap UCL	17.36
754					Anderson-Darling Test Statistic	0.414					95% Bootstrap-t UCL	22.29
755					Anderson-Darling 5% Critical Value	0.729					95% Hall's Bootstrap UCL	35.53
756					Kolmogorov-Smirnov Test Statistic	0.168					95% Percentile Bootstrap UCL	17.67
757					Kolmogorov-Smirnov 5% Critical Value	0.268					95% BCA Bootstrap UCL	19.02
758					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	24.26
759											97.5% Chebyshev(Mean, Sd) UCL	28.92
760					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	38.08
761					95% Approximate Gamma UCL	18.51						
762					95% Adjusted Gamma UCL	19.59						
763												
764					**Potential UCL to Use**						Use 95% Approximate Gamma UCL	18.51
765												
766												
767	**Potassium (mg/kg)**											
768												
769					**General Statistics**							
770					Number of Valid Samples	8					Number of Unique Samples	7
771					Number of Missing Values	2						
772												
773					**Raw Statistics**						**Log-transformed Statistics**	
774					Minimum	932					Minimum of Log Data	6.837
775					Maximum	1740					Maximum of Log Data	7.462
776					Mean	1299					Mean of log Data	7.156
777					Median	1265					SD of log Data	0.173
778					SD	225.8						
779					Coefficient of Variation	0.174						
780					Skewness	0.603						

	A	B	C	D	E	F	G	H	I	J	K	L
781												
782	**Relevant UCL Statistics**											
783	**Normal Distribution Test**						**Lognormal Distribution Test**					
784					Shapiro Wilk Test Statistic	0.908					Shapiro Wilk Test Statistic	0.917
785					Shapiro Wilk Critical Value	0.818					Shapiro Wilk Critical Value	0.818
786	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
787												
788	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
789					95% Student's-t UCL	1450					95% H-UCL	1477
790	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1647
791					95% Adjusted-CLT UCL	1448					97.5% Chebyshev (MVUE) UCL	1797
792					95% Modified-t UCL	1453					99% Chebyshev (MVUE) UCL	2093
793												
794	**Gamma Distribution Test**						**Data Distribution**					
795					k star (bias corrected)	24.02	**Data appear Normal at 5% Significance Level**					
796					Theta Star	54.08						
797					nu star	384.4						
798					Approximate Chi Square Value (.05)	339.9	**Nonparametric Statistics**					
799					Adjusted Level of Significance	0.0195					95% CLT UCL	1430
800					Adjusted Chi Square Value	329.3					95% Jackknife UCL	1450
801											95% Standard Bootstrap UCL	1419
802					Anderson-Darling Test Statistic	0.462					95% Bootstrap-t UCL	1477
803					Anderson-Darling 5% Critical Value	0.715					95% Hall's Bootstrap UCL	1597
804					Kolmogorov-Smirnov Test Statistic	0.246					95% Percentile Bootstrap UCL	1423
805					Kolmogorov-Smirnov 5% Critical Value	0.294					95% BCA Bootstrap UCL	1436
806	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1647
807											97.5% Chebyshev(Mean, Sd) UCL	1797
808	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	2093
809					95% Approximate Gamma UCL	1469						
810					95% Adjusted Gamma UCL	1516						
811												
812	**Potential UCL to Use**										Use 95% Student's-t UCL	1450
813												
814												
815	**Selenium (mg.kg)**											
816												
817	**General Statistics**											
818					Number of Valid Samples	10					Number of Detected Data	5
819					Number of Unique Samples	5					Number of Non-Detect Data	5
820											Percent Non-Detects	50.00%
821												
822	**Raw Statistics**						**Log-transformed Statistics**					
823					Minimum Detected	2.4					Minimum Detected	0.875
824					Maximum Detected	5.6					Maximum Detected	1.723
825					Mean of Detected	3.5					Mean of Detected	1.196
826					SD of Detected	1.378					SD of Detected	0.369
827					Minimum Non-Detect	0.25					Minimum Non-Detect	-1.386
828					Maximum Non-Detect	0.25					Maximum Non-Detect	-1.386
829												
830												
831	**UCL Statistics**											
832	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					

833				Shapiro Wilk Test Statistic	0.847					Shapiro Wilk Test Statistic	0.872	
834				5% Shapiro Wilk Critical Value	0.762					5% Shapiro Wilk Critical Value	0.762	
835	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
836												
837	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
838				DL/2 Substitution Method						DL/2 Substitution Method		
839				Mean	1.813					Mean	-0.442	
840				SD	2.002					SD	1.744	
841				95% DL/2 (t) UCL	2.973					95% H-Stat (DL/2) UCL	3.198	
842												
843				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
844				Mean	0.626					Mean in Log Scale	0.623	
845				SD	3.295					SD in Log Scale	0.694	
846				95% MLE (t) UCL	2.537					Mean in Original Scale	2.302	
847				95% MLE (Tiku) UCL	2.976					SD in Original Scale	1.581	
848										95% Percentile Bootstrap UCL	3.142	
849										95% BCA Bootstrap UCL	3.255	
850												
851	**Gamma Distribution Test with Detected Values Only**									**Data Distribution Test with Detected Values Only**		
852				k star (bias corrected)	3.713					**Data appear Normal at 5% Significance Level**		
853				Theta Star	0.943							
854				nu star	37.13							
855												
856				A-D Test Statistic	0.456					**Nonparametric Statistics**		
857				5% A-D Critical Value	0.679					Kaplan-Meier (KM) Method		
858				K-S Test Statistic	0.679					Mean	2.95	
859				5% K-S Critical Value	0.358					SD	1.031	
860	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean	0.364	
861										95% KM (t) UCL	3.618	
862	**Assuming Gamma Distribution**									95% KM (z) UCL	3.549	
863				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	3.552	
864				Minimum	1.799					95% KM (bootstrap t) UCL	5.944	
865				Maximum	5.6					95% KM (BCA) UCL	4.06	
866				Mean	3.5					95% KM (Percentile Bootstrap) UCL	3.69	
867				Median	3.273					95% KM (Chebyshev) UCL	4.539	
868				SD	1.219					97.5% KM (Chebyshev) UCL	5.226	
869				k star	6.369					99% KM (Chebyshev) UCL	6.576	
870				Theta star	0.55							
871				Nu star	127.4					**Potential UCLs to Use**		
872				AppChi2	102.3					95% KM (t) UCL	3.618	
873				95% Gamma Approximate UCL	4.358					95% KM (Percentile Bootstrap) UCL	3.69	
874				95% Adjusted Gamma UCL	4.53							
875	**Note: DL/2 is not a recommended method.**											
876												
877												
878	**Silver (mg.kg)**											
879												
880	**General Statistics**											
881				Number of Valid Samples	10					Number of Detected Data	2	
882				Number of Unique Samples	2					Number of Non-Detect Data	8	
883										Percent Non-Detects	80.00%	
884												

	A	B	C	D	E	F	G	H	I	J	K	L
885	**Raw Statistics**						**Log-transformed Statistics**					
886					Minimum Detected	0.692					Minimum Detected	-0.368
887					Maximum Detected	1.79					Maximum Detected	0.582
888					Mean of Detected	1.241					Mean of Detected	0.107
889					SD of Detected	0.776					SD of Detected	0.672
890					Minimum Non-Detect	0.073					Minimum Non-Detect	-2.617
891					Maximum Non-Detect	0.589					Maximum Non-Detect	-0.529
892												
893	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	8
894	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
895	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	80.00%
896												
897	**UCL Statistics**											
898	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
899					Shapiro Wilk Test Statistic	1					Shapiro Wilk Test Statistic	1
900					5% Shapiro Wilk Critical Value	N/A					5% Shapiro Wilk Critical Value	N/A
901	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
902												
903	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
904					DL/2 Substitution Method						DL/2 Substitution Method	
905					Mean	0.356					Mean	-1.97
906					SD	0.546					SD	1.452
907					95% DL/2 (t) UCL	0.672					95% H-Stat (DL/2) UCL	2.802
908												
909					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
910	**MLE method failed to converge properly**										Mean in Log Scale	N/A
911											SD in Log Scale	N/A
912											Mean in Original Scale	N/A
913											SD in Original Scale	N/A
914											95% Percentile Bootstrap UCL	N/A
915											95% BCA Bootstrap UCL	N/A
916												
917	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
918					k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**					
919					Theta Star	N/A						
920					nu star	N/A						
921												
922					A-D Test Statistic	0.359	**Nonparametric Statistics**					
923					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
924					K-S Test Statistic	N/A					Mean	0.802
925					5% K-S Critical Value	N/A					SD	0.329
926	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.147
927											95% KM (t) UCL	1.072
928	**Assuming Gamma Distribution**										95% KM (z) UCL	1.044
929					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1.568
930					Minimum	N/A					95% KM (bootstrap t) UCL	1.8E+308
931					Maximum	N/A					95% KM (BCA) UCL	1.79
932					Mean	N/A					95% KM (Percentile Bootstrap) UCL	1.79
933					Median	N/A					95% KM (Chebyshev) UCL	1.444
934					SD	N/A					97.5% KM (Chebyshev) UCL	1.722
935					k star	N/A					99% KM (Chebyshev) UCL	2.268
936					Theta star	N/A						

937					Nu star	N/A		**Potential UCLs to Use**				
938					AppChi2	N/A				95% KM (t) UCL		1.072
939					95% Gamma Approximate UCL	N/A				95% KM (% Bootstrap) UCL		1.79
940					95% Adjusted Gamma UCL	N/A						
941	**Note: DL/2 is not a recommended method.**											
942												
943												
944	**Sodium (mg/kg)**											
945												
946					**General Statistics**							
947					Number of Valid Samples	8				Number of Detected Data		5
948					Number of Unique Samples	5				Number of Non-Detect Data		3
949					Number of Missing Values	2				Percent Non-Detects		37.50%
950												
951					**Raw Statistics**			**Log-transformed Statistics**				
952					Minimum Detected	179				Minimum Detected		5.187
953					Maximum Detected	281				Maximum Detected		5.638
954					Mean of Detected	229.8				Mean of Detected		5.424
955					SD of Detected	41.24				SD of Detected		0.181
956					Minimum Non-Detect	26				Minimum Non-Detect		3.258
957					Maximum Non-Detect	28				Maximum Non-Detect		3.332
958												
959	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		3
960	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		5
961	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		37.50%
962												
963					**UCL Statistics**							
964					**Normal Distribution Test with Detected Values Only**			**Lognormal Distribution Test with Detected Values Only**				
965					Shapiro Wilk Test Statistic	0.966				Shapiro Wilk Test Statistic		0.969
966					5% Shapiro Wilk Critical Value	0.762				5% Shapiro Wilk Critical Value		0.762
967					**Data appear Normal at 5% Significance Level**			**Data appear Lognormal at 5% Significance Level**				
968												
969					**Assuming Normal Distribution**			**Assuming Lognormal Distribution**				
970					DL/2 Substitution Method					DL/2 Substitution Method		
971					Mean	148.7				Mean		4.366
972					SD	116.2				SD		1.467
973					95% DL/2 (t) UCL	226.5				95% H-Stat (DL/2) UCL		3243
974												
975					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
976					Mean	118.3				Mean in Log Scale		5.238
977					SD	154.5				SD in Log Scale		0.291
978					95% MLE (t) UCL	221.7				Mean in Original Scale		195.4
979					95% MLE (Tiku) UCL	235.8				SD in Original Scale		56.81
980										95% Percentile Bootstrap UCL		228.1
981										95% BCA Bootstrap UCL		228.1
982												
983					**Gamma Distribution Test with Detected Values Only**			**Data Distribution Test with Detected Values Only**				
984					k star (bias corrected)	15.53		**Data appear Normal at 5% Significance Level**				
985					Theta Star	14.8						
986					nu star	155.3						
987												
988					A-D Test Statistic	0.222		**Nonparametric Statistics**				

989				5% A-D Critical Value	0.678					Kaplan-Meier (KM) Method		
990				K-S Test Statistic	0.678					Mean	210.8	
991				5% K-S Critical Value	0.357					SD	38.15	
992	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean	15.08	
993										95% KM (t) UCL	239.3	
994	**Assuming Gamma Distribution**									95% KM (z) UCL	235.6	
995	Gamma ROS Statistics using Extrapolated Data									95% KM (jackknife) UCL	238.6	
996				Minimum	179					95% KM (bootstrap t) UCL	245.4	
997				Maximum	281					95% KM (BCA) UCL	261	
998				Mean	219.4					95% KM (Percentile Bootstrap) UCL	243.5	
999				Median	204.1					95% KM (Chebyshev) UCL	276.5	
1000				SD	34.3					97.5% KM (Chebyshev) UCL	304.9	
1001				k star	31.26					99% KM (Chebyshev) UCL	360.8	
1002				Theta star	7.02							
1003				Nu star	500.1					**Potential UCLs to Use**		
1004				AppChi2	449.3					95% KM (t) UCL	239.3	
1005				95% Gamma Approximate UCL	244.3					95% KM (Percentile Bootstrap) UCL	243.5	
1006				95% Adjusted Gamma UCL	251.1							
1007	**Note: DL/2 is not a recommended method.**											
1008												
1009												
1010	**Vanadium (mg/kg)**											
1011												
1012	**General Statistics**											
1013				Number of Valid Samples	10					Number of Unique Samples	10	
1014												
1015	**Raw Statistics**									**Log-transformed Statistics**		
1016				Minimum	11.5					Minimum of Log Data	2.442	
1017				Maximum	41.4					Maximum of Log Data	3.723	
1018				Mean	24.07					Mean of log Data	3.082	
1019				Median	21.6					SD of log Data	0.477	
1020				SD	10.97							
1021				Coefficient of Variation	0.456							
1022				Skewness	0.47							
1023												
1024	**Relevant UCL Statistics**											
1025	**Normal Distribution Test**									**Lognormal Distribution Test**		
1026				Shapiro Wilk Test Statistic	0.902					Shapiro Wilk Test Statistic	0.907	
1027				Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842	
1028	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
1029												
1030	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
1031				95% Student's-t UCL	30.43					95% H-UCL	34.59	
1032	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	40.26	
1033				95% Adjusted-CLT UCL	30.33					97.5% Chebyshev (MVUE) UCL	47.24	
1034				95% Modified-t UCL	30.52					99% Chebyshev (MVUE) UCL	60.94	
1035												
1036	**Gamma Distribution Test**									**Data Distribution**		
1037				k star (bias corrected)	3.725					**Data appear Normal at 5% Significance Level**		
1038				Theta Star	6.461							
1039				nu star	74.51							
1040				Approximate Chi Square Value (.05)	55.63					**Nonparametric Statistics**		

1041					Adjusted Level of Significance	0.0267					95% CLT UCL	29.78
1042					Adjusted Chi Square Value	52.8					95% Jackknife UCL	30.43
1043											95% Standard Bootstrap UCL	29.63
1044					Anderson-Darling Test Statistic	0.394					95% Bootstrap-t UCL	31.67
1045					Anderson-Darling 5% Critical Value	0.729					95% Hall's Bootstrap UCL	31.79
1046					Kolmogorov-Smirnov Test Statistic	0.187					95% Percentile Bootstrap UCL	29.55
1047					Kolmogorov-Smirnov 5% Critical Value	0.267					95% BCA Bootstrap UCL	29.5
1048					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	39.19
1049											97.5% Chebyshev(Mean, Sd) UCL	45.74
1050					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	58.59
1051					95% Approximate Gamma UCL	32.24						
1052					95% Adjusted Gamma UCL	33.96						
1053												
1054					**Potential UCL to Use**						Use 95% Student's-t UCL	30.43
1055												
1056												
1057	**Zinc (mg/kg)**											
1058												
1059					**General Statistics**							
1060					Number of Valid Samples	10					Number of Unique Samples	10
1061												
1062					**Raw Statistics**						**Log-transformed Statistics**	
1063					Minimum	36.5					Minimum of Log Data	3.597
1064					Maximum	1060					Maximum of Log Data	6.966
1065					Mean	209					Mean of log Data	4.874
1066					Median	124.5					SD of log Data	0.883
1067					SD	301.9						
1068					Coefficient of Variation	1.445						
1069					Skewness	3.045						
1070												
1071					**Relevant UCL Statistics**							
1072					**Normal Distribution Test**						**Lognormal Distribution Test**	
1073					Shapiro Wilk Test Statistic	0.499					Shapiro Wilk Test Statistic	0.841
1074					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
1075					**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
1076												
1077					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
1078					95% Student's-t UCL	384.1					95% H-UCL	449.7
1079					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	417.5
1080					95% Adjusted-CLT UCL	464.3					97.5% Chebyshev (MVUE) UCL	518.5
1081					95% Modified-t UCL	399.4					99% Chebyshev (MVUE) UCL	716.9
1082												
1083					**Gamma Distribution Test**						**Data Distribution**	
1084					k star (bias corrected)	0.912					**Data do not follow a Discernable Distribution (0.05)**	
1085					Theta Star	229.2						
1086					nu star	18.24						
1087					Approximate Chi Square Value (.05)	9.566					**Nonparametric Statistics**	
1088					Adjusted Level of Significance	0.0267					95% CLT UCL	366.1
1089					Adjusted Chi Square Value	8.495					95% Jackknife UCL	384.1
1090											95% Standard Bootstrap UCL	362.6
1091					Anderson-Darling Test Statistic	1.283					95% Bootstrap-t UCL	1063
1092					Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	1251

	A	B	C	D	E	F	G	H	I	J	K	L
1093					Kolmogorov-Smirnov Test Statistic	0.388				95% Percentile Bootstrap UCL		397.8
1094					Kolmogorov-Smirnov 5% Critical Value	0.273				95% BCA Bootstrap UCL		495.1
1095					**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL		625.2
1096										97.5% Chebyshev(Mean, Sd) UCL		805.3
1097					**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL		1159
1098					95% Approximate Gamma UCL	398.6						
1099					95% Adjusted Gamma UCL	448.9						
1100												
1101					**Potential UCL to Use**					Use 95% Chebyshev (Mean, Sd) UCL		625.2
1102												

1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	C:\Documents and Settings\debbi.freer\My Documents\Radford\AOC P\TS ProUCL output.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8	**Aroclor 1254 (mg/kg)**											
9												
10						**General Statistics**						
11						Number of Valid Samples	10				Number of Detected Data	2
12						Number of Unique Samples	2				Number of Non-Detect Data	8
13											Percent Non-Detects	80.00%
14												
15						**Raw Statistics**					**Log-transformed Statistics**	
16						Minimum Detected	0.0402				Minimum Detected	-3.214
17						Maximum Detected	0.403				Maximum Detected	-0.909
18						Mean of Detected	0.222				Mean of Detected	-2.061
19						SD of Detected	0.257				SD of Detected	1.63
20						Minimum Non-Detect	0.018				Minimum Non-Detect	-4.017
21						Maximum Non-Detect	0.019				Maximum Non-Detect	-3.963
22												
23	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	8
24	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
25	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	80.00%
26												
27						**UCL Statistics**						
28						**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**	
29						Shapiro Wilk Test Statistic	1				Shapiro Wilk Test Statistic	1
30						5% Shapiro Wilk Critical Value	N/A				5% Shapiro Wilk Critical Value	N/A
31						**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**	
32												
33						**Assuming Normal Distribution**					**Assuming Lognormal Distribution**	
34						DL/2 Substitution Method					DL/2 Substitution Method	
35						Mean	0.0517				Mean	-4.164
36						SD	0.124				SD	1.235
37						95% DL/2 (t) UCL	0.123				95% H-Stat (DL/2) UCL	0.0648
38												
39						Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method	
40						**MLE method failed to converge properly**					Mean in Log Scale	N/A
41											SD in Log Scale	N/A
42											Mean in Original Scale	N/A
43											SD in Original Scale	N/A
44											95% Percentile Bootstrap UCL	N/A
45											95% BCA Bootstrap UCL	N/A
46												
47						**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**	
48						k star (bias corrected)	N/A				**Data do not follow a Discernable Distribution (0.05)**	
49						Theta Star	N/A					
50						nu star	N/A					
51												
52						A-D Test Statistic	0.357				**Nonparametric Statistics**	
53						5% A-D Critical Value	N/A				Kaplan-Meier (KM) Method	

54				K-S Test Statistic	N/A					Mean	0.0765	
55				5% K-S Critical Value	N/A					SD	0.109	
56	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean	0.0487	
57										95% KM (t) UCL	0.166	
58	**Assuming Gamma Distribution**									95% KM (z) UCL	0.157	
59				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.33	
60				Minimum	N/A					95% KM (bootstrap t) UCL	0.0765	
61				Maximum	N/A					95% KM (BCA) UCL	0.403	
62				Mean	N/A					95% KM (Percentile Bootstrap) UCL	0.403	
63				Median	N/A					95% KM (Chebyshev) UCL	0.289	
64				SD	N/A					97.5% KM (Chebyshev) UCL	0.38	
65				k star	N/A					99% KM (Chebyshev) UCL	0.561	
66				Theta star	N/A							
67				Nu star	N/A					**Potential UCLs to Use**		
68				AppChi2	N/A					97.5% KM (Chebyshev) UCL	0.38	
69				95% Gamma Approximate UCL	N/A							
70				95% Adjusted Gamma UCL	N/A							
71	**Note: DL/2 is not a recommended method.**											
72												
73	**Aluminum (mg/kg)**											
74												
75	**General Statistics**											
76				Number of Valid Samples	20					Number of Unique Samples	20	
77												
78	**Raw Statistics**									**Log-transformed Statistics**		
79				Minimum	3620					Minimum of Log Data	8.194	
80				Maximum	18200					Maximum of Log Data	9.809	
81				Mean	10017					Mean of log Data	9.112	
82				Median	10350					SD of log Data	0.477	
83				SD	4290							
84				Coefficient of Variation	0.428							
85				Skewness	0.171							
86												
87	**Relevant UCL Statistics**											
88	**Normal Distribution Test**									**Lognormal Distribution Test**		
89				Shapiro Wilk Test Statistic	0.945					Shapiro Wilk Test Statistic	0.925	
90				Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905	
91	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
92												
93	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
94				95% Student's-t UCL	11676					95% H-UCL	12617	
95	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	14946	
96				95% Adjusted-CLT UCL	11634					97.5% Chebyshev (MVUE) UCL	17045	
97				95% Modified-t UCL	11682					99% Chebyshev (MVUE) UCL	21169	
98												
99	**Gamma Distribution Test**									**Data Distribution**		
100				k star (bias corrected)	4.428					**Data appear Normal at 5% Significance Level**		
101				Theta Star	2262							
102				nu star	177.1							
103				Approximate Chi Square Value (.05)	147.4					**Nonparametric Statistics**		
104				Adjusted Level of Significance	0.038					95% CLT UCL	11595	
105				Adjusted Chi Square Value	145.2					95% Jackknife UCL	11676	
106										95% Standard Bootstrap UCL	11529	

107					Anderson-Darling Test Statistic	0.598					95% Bootstrap-t UCL	11722
108					Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	11634
109					Kolmogorov-Smirnov Test Statistic	0.175					95% Percentile Bootstrap UCL	11510
110					Kolmogorov-Smirnov 5% Critical Value	0.194					95% BCA Bootstrap UCL	11571
111					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	14198
112											97.5% Chebyshev(Mean, Sd) UCL	16007
113					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	19561
114					95% Approximate Gamma UCL	12042						
115					95% Adjusted Gamma UCL	12219						
116												
117					**Potential UCL to Use**						Use 95% Student's-t UCL	11676
118												
119												
120	**Arsenic (mg/kg)**											
121												
122					**General Statistics**							
123					Number of Valid Samples	20					Number of Unique Samples	19
124												
125					**Raw Statistics**						**Log-transformed Statistics**	
126					Minimum	0.618					Minimum of Log Data	-0.481
127					Maximum	4.3					Maximum of Log Data	1.459
128					Mean	1.645					Mean of log Data	0.364
129					Median	1.555					SD of log Data	0.526
130					SD	0.924						
131					Coefficient of Variation	0.561						
132					Skewness	1.495						
133												
134					**Relevant UCL Statistics**							
135					**Normal Distribution Test**						**Lognormal Distribution Test**	
136					Shapiro Wilk Test Statistic	0.865					Shapiro Wilk Test Statistic	0.966
137					Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
138					**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
139												
140					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
141					95% Student's-t UCL	2.002					95% H-UCL	2.11
142					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	2.514
143					95% Adjusted-CLT UCL	2.058					97.5% Chebyshev (MVUE) UCL	2.893
144					95% Modified-t UCL	2.013					99% Chebyshev (MVUE) UCL	3.636
145												
146					**Gamma Distribution Test**						**Data Distribution**	
147					k star (bias corrected)	3.358					**Data appear Gamma Distributed at 5% Significance Level**	
148					Theta Star	0.49						
149					nu star	134.3						
150					Approximate Chi Square Value (.05)	108.5					**Nonparametric Statistics**	
151					Adjusted Level of Significance	0.038					95% CLT UCL	1.984
152					Adjusted Chi Square Value	106.7					95% Jackknife UCL	2.002
153											95% Standard Bootstrap UCL	1.975
154					Anderson-Darling Test Statistic	0.326					95% Bootstrap-t UCL	2.132
155					Anderson-Darling 5% Critical Value	0.746					95% Hall's Bootstrap UCL	2.313
156					Kolmogorov-Smirnov Test Statistic	0.103					95% Percentile Bootstrap UCL	1.98
157					Kolmogorov-Smirnov 5% Critical Value	0.195					95% BCA Bootstrap UCL	2.031
158					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	2.545
159											97.5% Chebyshev(Mean, Sd) UCL	2.934

	A	B	C	D	E	F	G	H	I	J	K	L
160	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					3.699
161	95% Approximate Gamma UCL					2.035						
162	95% Adjusted Gamma UCL					2.07						
163												
164	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					2.035
165												
166												
167	**Barium (mg/kg)**											
168												
169	**General Statistics**											
170	Number of Valid Samples					20	Number of Unique Samples					20
171												
172	**Raw Statistics**						**Log-transformed Statistics**					
173	Minimum					44.6	Minimum of Log Data					3.798
174	Maximum					257	Maximum of Log Data					5.549
175	Mean					127.4	Mean of log Data					4.734
176	Median					123.5	SD of log Data					0.514
177	SD					57.73						
178	Coefficient of Variation					0.453						
179	Skewness					0.303						
180												
181	**Relevant UCL Statistics**											
182	**Normal Distribution Test**						**Lognormal Distribution Test**					
183	Shapiro Wilk Test Statistic					0.956	Shapiro Wilk Test Statistic					0.929
184	Shapiro Wilk Critical Value					0.905	Shapiro Wilk Critical Value					0.905
185	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
186												
187	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
188	95% Student's-t UCL					149.7	95% H-UCL					164.5
189	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					195.8
190	95% Adjusted-CLT UCL					149.6	97.5% Chebyshev (MVUE) UCL					224.8
191	95% Modified-t UCL					149.9	99% Chebyshev (MVUE) UCL					281.7
192												
193	**Gamma Distribution Test**						**Data Distribution**					
194	k star (bias corrected)					3.911	**Data appear Normal at 5% Significance Level**					
195	Theta Star					32.57						
196	nu star					156.5						
197	Approximate Chi Square Value (.05)					128.5	**Nonparametric Statistics**					
198	Adjusted Level of Significance					0.038	95% CLT UCL					148.6
199	Adjusted Chi Square Value					126.5	95% Jackknife UCL					149.7
200							95% Standard Bootstrap UCL					148.4
201	Anderson-Darling Test Statistic					0.421	95% Bootstrap-t UCL					151.4
202	Anderson-Darling 5% Critical Value					0.745	95% Hall's Bootstrap UCL					150.7
203	Kolmogorov-Smirnov Test Statistic					0.124	95% Percentile Bootstrap UCL					148
204	Kolmogorov-Smirnov 5% Critical Value					0.195	95% BCA Bootstrap UCL					148
205	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					183.7
206							97.5% Chebyshev(Mean, Sd) UCL					208
207	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					255.8
208	95% Approximate Gamma UCL					155.1						
209	95% Adjusted Gamma UCL					157.5						
210												
211	**Potential UCL to Use**						Use 95% Student's-t UCL					149.7
212												

Beryllium (mg/kg)

General Statistics

Number of Valid Samples	20	Number of Detected Data	15
Number of Unique Samples	15	Number of Non-Detect Data	5
		Percent Non-Detects	25.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.37	Minimum Detected	-0.994
Maximum Detected	0.97	Maximum Detected	-0.0305
Mean of Detected	0.688	Mean of Detected	-0.418
SD of Detected	0.199	SD of Detected	0.321
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	0.5	Maximum Non-Detect	-0.693

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.925	Shapiro Wilk Test Statistic	0.888
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.579	Mean	-0.66
SD	0.259	SD	0.511
95% DL/2 (t) UCL	0.679	95% H-Stat (DL/2) UCL	0.605
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.571	Mean in Log Scale	-0.52
SD	0.274	SD in Log Scale	0.338
95% MLE (t) UCL	0.677	Mean in Original Scale	0.627
95% MLE (Tiku) UCL	0.696	SD in Original Scale	0.205
		95% Percentile Bootstrap UCL	0.7
		95% BCA Bootstrap UCL	0.698

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	9.136	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0753		
nu star	274.1		
A-D Test Statistic	0.631	**Nonparametric Statistics**	
5% A-D Critical Value	0.737	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.737	Mean	0.619
5% K-S Critical Value	0.221	SD	0.205
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0477
		95% KM (t) UCL	0.702
Assuming Gamma Distribution		95% KM (z) UCL	0.698
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.701
Minimum	0.37	95% KM (bootstrap t) UCL	0.704
Maximum	0.97	95% KM (BCA) UCL	0.7
Mean	0.663	95% KM (Percentile Bootstrap) UCL	0.699

266					Median	0.68				95% KM (Chebyshev) UCL		0.827
267					SD	0.184				97.5% KM (Chebyshev) UCL		0.917
268					k star	10.74				99% KM (Chebyshev) UCL		1.094
269					Theta star	0.0617						
270					Nu star	429.7				**Potential UCLs to Use**		
271					AppChi2	382.6				95% KM (t) UCL		0.702
272					95% Gamma Approximate UCL	0.745				95% KM (Percentile Bootstrap) UCL		0.699
273					95% Adjusted Gamma UCL	0.752						
274	**Note: DL/2 is not a recommended method.**											
275												
276												
277	**Cadmium (mg/kg)**											
278												
279					**General Statistics**							
280					Number of Valid Samples	20				Number of Detected Data		2
281					Number of Unique Samples	2				Number of Non-Detect Data		18
282										Percent Non-Detects		90.00%
283												
284					**Raw Statistics**					**Log-transformed Statistics**		
285					Minimum Detected	0.18				Minimum Detected		-1.715
286					Maximum Detected	0.39				Maximum Detected		-0.942
287					Mean of Detected	0.285				Mean of Detected		-1.328
288					SD of Detected	0.148				SD of Detected		0.547
289					Minimum Non-Detect	0.052				Minimum Non-Detect		-2.957
290					Maximum Non-Detect	0.7				Maximum Non-Detect		-0.357
291												
292	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		20
293	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		0
294	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		100.00%
295												
296					**UCL Statistics**							
297					**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**		
298					Shapiro Wilk Test Statistic	1				Shapiro Wilk Test Statistic		1
299					5% Shapiro Wilk Critical Value	N/A				5% Shapiro Wilk Critical Value		N/A
300					**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
301												
302					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
303					DL/2 Substitution Method					DL/2 Substitution Method		
304					Mean	0.227				Mean		-1.979
305					SD	0.156				SD		1.227
306					95% DL/2 (t) UCL	0.288				95% H-Stat (DL/2) UCL		0.538
307												
308					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
309					**MLE method failed to converge properly**					Mean in Log Scale		N/A
310										SD in Log Scale		N/A
311										Mean in Original Scale		N/A
312										SD in Original Scale		N/A
313										95% Percentile Bootstrap UCL		N/A
314										95% BCA Bootstrap UCL		N/A
315												
316					**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
317					k star (bias corrected)	N/A				**Data do not follow a Discernable Distribution (0.05)**		
318					Theta Star	N/A						

319					nu star	N/A						
320												
321					A-D Test Statistic	0.359	**Nonparametric Statistics**					
322					5% A-D Critical Value	N/A				Kaplan-Meier (KM) Method		
323					K-S Test Statistic	N/A				Mean		0.203
324					5% K-S Critical Value	N/A				SD		0.066
325			**Data not Gamma Distributed at 5% Significance Level**							SE of Mean		0.0311
326										95% KM (t) UCL		0.257
327			**Assuming Gamma Distribution**							95% KM (z) UCL		0.255
328			Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL		0.338
329					Minimum	N/A				95% KM (bootstrap t) UCL		1.8E+308
330					Maximum	N/A				95% KM (BCA) UCL		0.39
331					Mean	N/A				95% KM (Percentile Bootstrap) UCL		0.39
332					Median	N/A				95% KM (Chebyshev) UCL		0.339
333					SD	N/A				97.5% KM (Chebyshev) UCL		0.398
334					k star	N/A				99% KM (Chebyshev) UCL		0.513
335					Theta star	N/A						
336					Nu star	N/A	**Potential UCLs to Use**					
337					AppChi2	N/A				95% KM (t) UCL		0.257
338					95% Gamma Approximate UCL	N/A				95% KM (% Bootstrap) UCL		0.39
339					95% Adjusted Gamma UCL	N/A						
340	**Note: DL/2 is not a recommended method.**											
341												
342												
343	**Calcium (mg/kg)**											
344												
345	**General Statistics**											
346					Number of Valid Samples	20				Number of Unique Samples		20
347												
348	**Raw Statistics**						**Log-transformed Statistics**					
349					Minimum	815				Minimum of Log Data		6.703
350					Maximum	160000				Maximum of Log Data		11.98
351					Mean	10875				Mean of log Data		7.905
352					Median	2110				SD of log Data		1.211
353					SD	35233						
354					Coefficient of Variation	3.24						
355					Skewness	4.418						
356												
357	**Relevant UCL Statistics**											
358	**Normal Distribution Test**						**Lognormal Distribution Test**					
359					Shapiro Wilk Test Statistic	0.293				Shapiro Wilk Test Statistic		0.78
360					Shapiro Wilk Critical Value	0.905				Shapiro Wilk Critical Value		0.905
361	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
362												
363	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
364					95% Student's-t UCL	24497				95% H-UCL		12630
365	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		12572
366					95% Adjusted-CLT UCL	32149				97.5% Chebyshev (MVUE) UCL		15709
367					95% Modified-t UCL	25794				99% Chebyshev (MVUE) UCL		21871
368												
369	**Gamma Distribution Test**						**Data Distribution**					
370					k star (bias corrected)	0.427	**Data do not follow a Discernable Distribution (0.05)**					
371					Theta Star	25492						

372					nu star	17.06						
373					Approximate Chi Square Value (.05)	8.718		**Nonparametric Statistics**				
374					Adjusted Level of Significance	0.038					95% CLT UCL	23833
375					Adjusted Chi Square Value	8.248					95% Jackknife UCL	24497
376											95% Standard Bootstrap UCL	23238
377					Anderson-Darling Test Statistic	3.567					95% Bootstrap-t UCL	162803
378					Anderson-Darling 5% Critical Value	0.81					95% Hall's Bootstrap UCL	110105
379					Kolmogorov-Smirnov Test Statistic	0.36					95% Percentile Bootstrap UCL	26330
380					Kolmogorov-Smirnov 5% Critical Value	0.206					95% BCA Bootstrap UCL	35119
381					**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	45215
382											97.5% Chebyshev(Mean, Sd) UCL	60074
383					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	89262
384					95% Approximate Gamma UCL	21285						
385					95% Adjusted Gamma UCL	22497						
386												
387					**Potential UCL to Use**						Use 99% Chebyshev (Mean, Sd) UCL	89262
388												
389												
390	**Chromium (mg/kg)**											
391												
392					**General Statistics**							
393					Number of Valid Samples	20					Number of Unique Samples	20
394												
395					**Raw Statistics**			**Log-transformed Statistics**				
396					Minimum	7.63					Minimum of Log Data	2.032
397					Maximum	59.6					Maximum of Log Data	4.088
398					Mean	19.68					Mean of log Data	2.847
399					Median	16.9					SD of log Data	0.509
400					SD	11.87						
401					Coefficient of Variation	0.603						
402					Skewness	2.14						
403												
404					**Relevant UCL Statistics**							
405					**Normal Distribution Test**			**Lognormal Distribution Test**				
406					Shapiro Wilk Test Statistic	0.798					Shapiro Wilk Test Statistic	0.97
407					Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
408					**Data not Normal at 5% Significance Level**			**Data appear Lognormal at 5% Significance Level**				
409												
410					**Assuming Normal Distribution**			**Assuming Lognormal Distribution**				
411					95% Student's-t UCL	24.28					95% H-UCL	24.8
412					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	29.5
413					95% Adjusted-CLT UCL	25.41					97.5% Chebyshev (MVUE) UCL	33.84
414					95% Modified-t UCL	24.49					99% Chebyshev (MVUE) UCL	42.36
415												
416					**Gamma Distribution Test**			**Data Distribution**				
417					k star (bias corrected)	3.359		**Data appear Gamma Distributed at 5% Significance Level**				
418					Theta Star	5.86						
419					nu star	134.4						
420					Approximate Chi Square Value (.05)	108.6		**Nonparametric Statistics**				
421					Adjusted Level of Significance	0.038					95% CLT UCL	24.05
422					Adjusted Chi Square Value	106.7					95% Jackknife UCL	24.28
423											95% Standard Bootstrap UCL	23.93
424					Anderson-Darling Test Statistic	0.392					95% Bootstrap-t UCL	27.05

425					Anderson-Darling 5% Critical Value	0.746					95% Hall's Bootstrap UCL	44.34
426					Kolmogorov-Smirnov Test Statistic	0.133					95% Percentile Bootstrap UCL	24.2
427					Kolmogorov-Smirnov 5% Critical Value	0.195					95% BCA Bootstrap UCL	25.72
428					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	31.26
429											97.5% Chebyshev(Mean, Sd) UCL	36.27
430					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	46.1
431					95% Approximate Gamma UCL	24.36						
432					95% Adjusted Gamma UCL	24.78						
433												
434					**Potential UCL to Use**						Use 95% Approximate Gamma UCL	24.36
435												
436												
437	**Cobalt (mg/kg)**											
438												
439					**General Statistics**							
440					Number of Valid Samples	20					Number of Unique Samples	20
441												
442					**Raw Statistics**						**Log-transformed Statistics**	
443					Minimum	2.65					Minimum of Log Data	0.975
444					Maximum	13.5					Maximum of Log Data	2.603
445					Mean	8.191					Mean of log Data	2.014
446					Median	8					SD of log Data	0.455
447					SD	3.269						
448					Coefficient of Variation	0.399						
449					Skewness	-0.0218						
450												
451					**Relevant UCL Statistics**							
452					**Normal Distribution Test**						**Lognormal Distribution Test**	
453					Shapiro Wilk Test Statistic	0.949					Shapiro Wilk Test Statistic	0.931
454					Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
455					**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
456												
457					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
458					95% Student's-t UCL	9.454					95% H-UCL	10.2
459					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	12.04
460					95% Adjusted-CLT UCL	9.389					97.5% Chebyshev (MVUE) UCL	13.67
461					95% Modified-t UCL	9.454					99% Chebyshev (MVUE) UCL	16.88
462												
463					**Gamma Distribution Test**						**Data Distribution**	
464					k star (bias corrected)	4.933					**Data appear Normal at 5% Significance Level**	
465					Theta Star	1.66						
466					nu star	197.3						
467					Approximate Chi Square Value (.05)	165.8					**Nonparametric Statistics**	
468					Adjusted Level of Significance	0.038					95% CLT UCL	9.393
469					Adjusted Chi Square Value	163.5					95% Jackknife UCL	9.454
470											95% Standard Bootstrap UCL	9.341
471					Anderson-Darling Test Statistic	0.453					95% Bootstrap-t UCL	9.454
472					Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	9.347
473					Kolmogorov-Smirnov Test Statistic	0.147					95% Percentile Bootstrap UCL	9.293
474					Kolmogorov-Smirnov 5% Critical Value	0.194					95% BCA Bootstrap UCL	9.285
475					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	11.38
476											97.5% Chebyshev(Mean, Sd) UCL	12.76
477					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	15.46

	A	B	C	D	E	F	G	H	I	J	K	L
478					95% Approximate Gamma UCL	9.746						
479					95% Adjusted Gamma UCL	9.882						
480												
481					**Potential UCL to Use**						Use 95% Student's-t UCL	9.454
482												
483												
484	**Copper (mg/kg)**											
485												
486						**General Statistics**							
487						Number of Valid Samples	20				Number of Unique Samples	20
488												
489						**Raw Statistics**					**Log-transformed Statistics**	
490						Minimum	3.1				Minimum of Log Data	1.131
491						Maximum	347				Maximum of Log Data	5.849
492						Mean	43.58				Mean of log Data	2.864
493						Median	10.6				SD of log Data	1.282
494						SD	78.49					
495						Coefficient of Variation	1.801					
496						Skewness	3.364					
497												
498						**Relevant UCL Statistics**							
499						**Normal Distribution Test**					**Lognormal Distribution Test**	
500						Shapiro Wilk Test Statistic	0.537				Shapiro Wilk Test Statistic	0.921
501						Shapiro Wilk Critical Value	0.905				Shapiro Wilk Critical Value	0.905
502						**Data not Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**	
503												
504						**Assuming Normal Distribution**					**Assuming Lognormal Distribution**	
505						95% Student's-t UCL	73.93				95% H-UCL	96.75
506						**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	91.57
507						95% Adjusted-CLT UCL	86.56				97.5% Chebyshev (MVUE) UCL	115.1
508						95% Modified-t UCL	76.13				99% Chebyshev (MVUE) UCL	161.2
509												
510						**Gamma Distribution Test**					**Data Distribution**	
511						k star (bias corrected)	0.601				**Data appear Lognormal at 5% Significance Level**	
512						Theta Star	72.47					
513						nu star	24.05					
514						Approximate Chi Square Value (.05)	13.89				**Nonparametric Statistics**	
515						Adjusted Level of Significance	0.038				95% CLT UCL	72.45
516						Adjusted Chi Square Value	13.28				95% Jackknife UCL	73.93
517											95% Standard Bootstrap UCL	71.93
518						Anderson-Darling Test Statistic	1.407				95% Bootstrap-t UCL	117.3
519						Anderson-Darling 5% Critical Value	0.787				95% Hall's Bootstrap UCL	169.5
520						Kolmogorov-Smirnov Test Statistic	0.261				95% Percentile Bootstrap UCL	73.88
521						Kolmogorov-Smirnov 5% Critical Value	0.203				95% BCA Bootstrap UCL	91.06
522						**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	120.1
523											97.5% Chebyshev(Mean, Sd) UCL	153.2
524						**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	218.2
525						95% Approximate Gamma UCL	75.47					
526						95% Adjusted Gamma UCL	78.93					
527												
528						**Potential UCL to Use**					Use 95% Chebyshev (MVUE) UCL	91.57
529												
530												

531	**Iron (mg/kg)**										
532											
533	**General Statistics**										
534	Number of Valid Samples	20			Number of Unique Samples	20					
535											
536	**Raw Statistics**				**Log-transformed Statistics**						
537	Minimum	6880			Minimum of Log Data	8.836					
538	Maximum	27500			Maximum of Log Data	10.22					
539	Mean	15993			Mean of log Data	9.579					
540	Median	16450			SD of log Data	0.477					
541	SD	6883									
542	Coefficient of Variation	0.43									
543	Skewness	0.116									
544											
545	**Relevant UCL Statistics**										
546	**Normal Distribution Test**				**Lognormal Distribution Test**						
547	Shapiro Wilk Test Statistic	0.924			Shapiro Wilk Test Statistic	0.906					
548	Shapiro Wilk Critical Value	0.905			Shapiro Wilk Critical Value	0.905					
549	**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**						
550											
551	**Assuming Normal Distribution**				**Assuming Lognormal Distribution**						
552	95% Student's-t UCL	18654			95% H-UCL	20128					
553	**95% UCLs (Adjusted for Skewness)**				95% Chebyshev (MVUE) UCL	23843					
554	95% Adjusted-CLT UCL	18567			97.5% Chebyshev (MVUE) UCL	27191					
555	95% Modified-t UCL	18661			99% Chebyshev (MVUE) UCL	33767					
556											
557	**Gamma Distribution Test**				**Data Distribution**						
558	k star (bias corrected)	4.401			**Data appear Normal at 5% Significance Level**						
559	Theta Star	3634									
560	nu star	176									
561	Approximate Chi Square Value (.05)	146.3			**Nonparametric Statistics**						
562	Adjusted Level of Significance	0.038			95% CLT UCL	18525					
563	Adjusted Chi Square Value	144.2			95% Jackknife UCL	18654					
564					95% Standard Bootstrap UCL	18448					
565	Anderson-Darling Test Statistic	0.574			95% Bootstrap-t UCL	18760					
566	Anderson-Darling 5% Critical Value	0.745			95% Hall's Bootstrap UCL	18602					
567	Kolmogorov-Smirnov Test Statistic	0.148			95% Percentile Bootstrap UCL	18284					
568	Kolmogorov-Smirnov 5% Critical Value	0.194			95% BCA Bootstrap UCL	18251					
569	**Data appear Gamma Distributed at 5% Significance Level**				95% Chebyshev(Mean, Sd) UCL	22702					
570					97.5% Chebyshev(Mean, Sd) UCL	25605					
571	**Assuming Gamma Distribution**				99% Chebyshev(Mean, Sd) UCL	31307					
572	95% Approximate Gamma UCL	19237									
573	95% Adjusted Gamma UCL	19522									
574											
575	**Potential UCL to Use**				Use 95% Student's-t UCL	18654					
576											
577											
578	**Lead (mg/kg)**										
579											
580	**General Statistics**										
581	Number of Valid Samples	20			Number of Detected Data	17					
582	Number of Unique Samples	16			Number of Non-Detect Data	3					
583					Percent Non-Detects	15.00%					

584												
585	**Raw Statistics**						**Log-transformed Statistics**					
586					Minimum Detected	2.7					Minimum Detected	0.993
587					Maximum Detected	150					Maximum Detected	5.011
588					Mean of Detected	40.65					Mean of Detected	3.014
589					SD of Detected	47.34					SD of Detected	1.281
590					Minimum Non-Detect	10.5					Minimum Non-Detect	2.351
591					Maximum Non-Detect	10.5					Maximum Non-Detect	2.351
592												
593												
594	**UCL Statistics**											
595	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
596					Shapiro Wilk Test Statistic	0.766					Shapiro Wilk Test Statistic	0.948
597					5% Shapiro Wilk Critical Value	0.892					5% Shapiro Wilk Critical Value	0.892
598	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
599												
600	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
601					DL/2 Substitution Method						DL/2 Substitution Method	
602					Mean	35.34					Mean	2.811
603					SD	45.33					SD	1.276
604					95% DL/2 (t) UCL	52.87					95% H-Stat (DL/2) UCL	60.72
605												
606					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
607					Mean	8.535					Mean in Log Scale	2.835
608					SD	72.25					SD in Log Scale	1.269
609					95% MLE (t) UCL	36.47					Mean in Original Scale	35.58
610					95% MLE (Tiku) UCL	42.98					SD in Original Scale	45.18
611											95% Percentile Bootstrap UCL	52.11
612											95% BCA Bootstrap UCL	56.81
613												
614	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
615					k star (bias corrected)	0.741	**Data appear Gamma Distributed at 5% Significance Level**					
616					Theta Star	54.87						
617					nu star	25.19						
618												
619					A-D Test Statistic	0.478	**Nonparametric Statistics**					
620					5% A-D Critical Value	0.772	Kaplan-Meier (KM) Method					
621					K-S Test Statistic	0.772	Mean					35.45
622					5% K-S Critical Value	0.216	SD					44.12
623	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					10.17
624							95% KM (t) UCL					53.04
625	**Assuming Gamma Distribution**						95% KM (z) UCL					52.18
626					Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL					52.96
627					Minimum	0	95% KM (bootstrap t) UCL					63.08
628					Maximum	150	95% KM (BCA) UCL					53.52
629					Mean	36.37	95% KM (Percentile Bootstrap) UCL					51.83
630					Median	20.25	95% KM (Chebyshev) UCL					79.79
631					SD	44.92	97.5% KM (Chebyshev) UCL					98.97
632					k star	0.349	99% KM (Chebyshev) UCL					136.7
633					Theta star	104.2						
634					Nu star	13.96	**Potential UCLs to Use**					
635					AppChi2	6.541	95% KM (Chebyshev) UCL					79.79
636					95% Gamma Approximate UCL	77.6						

637					95% Adjusted Gamma UCL	82.63						
638	**Note: DL/2 is not a recommended method.**											
639												
640												
641	**Magnesium (mg/kg)**											
642												
643	**General Statistics**											
644					Number of Valid Samples	20				Number of Unique Samples	20	
645												
646	**Raw Statistics**						**Log-transformed Statistics**					
647					Minimum	1390				Minimum of Log Data	7.237	
648					Maximum	83000				Maximum of Log Data	11.33	
649					Mean	7567				Mean of log Data	8.229	
650					Median	3235				SD of log Data	0.88	
651					SD	17852						
652					Coefficient of Variation	2.359						
653					Skewness	4.393						
654												
655	**Relevant UCL Statistics**											
656	**Normal Distribution Test**						**Lognormal Distribution Test**					
657					Shapiro Wilk Test Statistic	0.32				Shapiro Wilk Test Statistic	0.777	
658					Shapiro Wilk Critical Value	0.905				Shapiro Wilk Critical Value	0.905	
659	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
660												
661	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
662					95% Student's-t UCL	14469				95% H-UCL	9015	
663	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	10444	
664					95% Adjusted-CLT UCL	18323				97.5% Chebyshev (MVUE) UCL	12635	
665					95% Modified-t UCL	15122				99% Chebyshev (MVUE) UCL	16940	
666												
667	**Gamma Distribution Test**						**Data Distribution**					
668					k star (bias corrected)	0.747	**Data do not follow a Discernable Distribution (0.05)**					
669					Theta Star	10133						
670					nu star	29.87						
671					Approximate Chi Square Value (.05)	18.39	**Nonparametric Statistics**					
672					Adjusted Level of Significance	0.038				95% CLT UCL	14132	
673					Adjusted Chi Square Value	17.68				95% Jackknife UCL	14469	
674										95% Standard Bootstrap UCL	14098	
675					Anderson-Darling Test Statistic	3.085				95% Bootstrap-t UCL	64531	
676					Anderson-Darling 5% Critical Value	0.775				95% Hall's Bootstrap UCL	44625	
677					Kolmogorov-Smirnov Test Statistic	0.334				95% Percentile Bootstrap UCL	15287	
678					Kolmogorov-Smirnov 5% Critical Value	0.201				95% BCA Bootstrap UCL	19815	
679	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	24966	
680										97.5% Chebyshev(Mean, Sd) UCL	32495	
681	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	47284	
682					95% Approximate Gamma UCL	12290						
683					95% Adjusted Gamma UCL	12784						
684												
685	**Potential UCL to Use**									Use 95% Chebyshev (Mean, Sd) UCL	24966	
686												
687												
688	**Manganese (mg/kg)**											
689												

690	**General Statistics**											
691	Number of Valid Samples	20					Number of Unique Samples	20				
692												
693	**Raw Statistics**						**Log-transformed Statistics**					
694	Minimum	130					Minimum of Log Data	4.868				
695	Maximum	1240					Maximum of Log Data	7.123				
696	Mean	487.7					Mean of log Data	5.983				
697	Median	458.3					SD of log Data	0.687				
698	SD	313.2										
699	Coefficient of Variation	0.642										
700	Skewness	1.062										
701												
702	**Relevant UCL Statistics**											
703	**Normal Distribution Test**						**Lognormal Distribution Test**					
704	Shapiro Wilk Test Statistic	0.893					Shapiro Wilk Test Statistic	0.939				
705	Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905				
706	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
707												
708	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
709	95% Student's-t UCL	608.8					95% H-UCL	709.4				
710	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	847.8				
711	95% Adjusted-CLT UCL	620.7					97.5% Chebyshev (MVUE) UCL	1000				
712	95% Modified-t UCL	611.6					99% Chebyshev (MVUE) UCL	1300				
713												
714	**Gamma Distribution Test**						**Data Distribution**					
715	k star (bias corrected)	2.219					**Data appear Gamma Distributed at 5% Significance Level**					
716	Theta Star	219.8										
717	nu star	88.75										
718	Approximate Chi Square Value (.05)	68.03					**Nonparametric Statistics**					
719	Adjusted Level of Significance	0.038					95% CLT UCL	602.9				
720	Adjusted Chi Square Value	66.6					95% Jackknife UCL	608.8				
721							95% Standard Bootstrap UCL	602.8				
722	Anderson-Darling Test Statistic	0.375					95% Bootstrap-t UCL	640.3				
723	Anderson-Darling 5% Critical Value	0.75					95% Hall's Bootstrap UCL	667.3				
724	Kolmogorov-Smirnov Test Statistic	0.13					95% Percentile Bootstrap UCL	602.6				
725	Kolmogorov-Smirnov 5% Critical Value	0.195					95% BCA Bootstrap UCL	611.1				
726	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	793				
727							97.5% Chebyshev(Mean, Sd) UCL	925				
728	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	1184				
729	95% Approximate Gamma UCL	636.3										
730	95% Adjusted Gamma UCL	650										
731												
732	**Potential UCL to Use**						Use 95% Approximate Gamma UCL	636.3				
733												
734												
735	**Mercury (mg/kg)**											
736												
737	**General Statistics**											
738	Number of Valid Samples	20					Number of Detected Data	9				
739	Number of Unique Samples	8					Number of Non-Detect Data	11				
740							Percent Non-Detects	55.00%				
741												
742	**Raw Statistics**						**Log-transformed Statistics**					

	A	B	C	D	E	F	G	H	I	J	K	L
743					Minimum Detected	0.01					Minimum Detected	-4.605
744					Maximum Detected	0.091					Maximum Detected	-2.397
745					Mean of Detected	0.0349					Mean of Detected	-3.669
746					SD of Detected	0.0306					SD of Detected	0.829
747					Minimum Non-Detect	0.011					Minimum Non-Detect	-4.51
748					Maximum Non-Detect	0.05					Maximum Non-Detect	-2.996
749												
750	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	18
751	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
752	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	90.00%
753												
754	**UCL Statistics**											
755	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
756					Shapiro Wilk Test Statistic	0.782					Shapiro Wilk Test Statistic	0.905
757					5% Shapiro Wilk Critical Value	0.829					5% Shapiro Wilk Critical Value	0.829
758	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
759												
760	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
761					DL/2 Substitution Method						DL/2 Substitution Method	
762					Mean	0.0285					Mean	-3.756
763					SD	0.0212					SD	0.637
764					95% DL/2 (t) UCL	0.0367					95% H-Stat (DL/2) UCL	0.0321
765												
766					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
767	**MLE method failed to converge properly**										Mean in Log Scale	-3.923
768											SD in Log Scale	0.729
769											Mean in Original Scale	0.0261
770											SD in Original Scale	0.0229
771											95% Percentile Bootstrap UCL	0.0343
772											95% BCA Bootstrap UCL	0.0361
773												
774	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
775					k star (bias corrected)	1.231	**Data appear Gamma Distributed at 5% Significance Level**					
776					Theta Star	0.0284						
777					nu star	22.16						
778												
779					A-D Test Statistic	0.503	**Nonparametric Statistics**					
780					5% A-D Critical Value	0.732					Kaplan-Meier (KM) Method	
781					K-S Test Statistic	0.732					Mean	0.0257
782					5% K-S Critical Value	0.283					SD	0.0222
783	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.00579
784											95% KM (t) UCL	0.0357
785	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0352
786					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0356
787					Minimum	0.01					95% KM (bootstrap t) UCL	0.0387
788					Maximum	0.091					95% KM (BCA) UCL	0.0358
789					Mean	0.0352					95% KM (Percentile Bootstrap) UCL	0.0357
790					Median	0.0324					95% KM (Chebyshev) UCL	0.0509
791					SD	0.0203					97.5% KM (Chebyshev) UCL	0.0618
792					k star	3.038					99% KM (Chebyshev) UCL	0.0833
793					Theta star	0.0116						
794					Nu star	121.5	**Potential UCLs to Use**					
795					AppChi2	97.06					95% KM (t) UCL	0.0357

796				95% Gamma Approximate UCL	0.044							
797				95% Adjusted Gamma UCL	0.0448							
798	**Note: DL/2 is not a recommended method.**											
799												
800												
801	**Nickel (mg/kg)**											
802												
803	**General Statistics**											
804				Number of Valid Samples	20				Number of Unique Samples	20		
805												
806	**Raw Statistics**						**Log-transformed Statistics**					
807				Minimum	5.7				Minimum of Log Data	1.74		
808				Maximum	33.4				Maximum of Log Data	3.509		
809				Mean	12.72				Mean of log Data	2.441		
810				Median	11.65				SD of log Data	0.45		
811				SD	6.485							
812				Coefficient of Variation	0.51							
813				Skewness	1.8							
814												
815	**Relevant UCL Statistics**											
816	**Normal Distribution Test**						**Lognormal Distribution Test**					
817				Shapiro Wilk Test Statistic	0.84				Shapiro Wilk Test Statistic	0.965		
818				Shapiro Wilk Critical Value	0.905				Shapiro Wilk Critical Value	0.905		
819	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
820												
821	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
822				95% Student's-t UCL	15.23				95% H-UCL	15.56		
823	**95% UCLs (Adjusted for Skewness)**								95% Chebyshev (MVUE) UCL	18.36		
824				95% Adjusted-CLT UCL	15.73				97.5% Chebyshev (MVUE) UCL	20.84		
825				95% Modified-t UCL	15.33				99% Chebyshev (MVUE) UCL	25.7		
826												
827	**Gamma Distribution Test**						**Data Distribution**					
828				k star (bias corrected)	4.336		**Data appear Gamma Distributed at 5% Significance Level**					
829				Theta Star	2.934							
830				nu star	173.4							
831				Approximate Chi Square Value (.05)	144		**Nonparametric Statistics**					
832				Adjusted Level of Significance	0.038				95% CLT UCL	15.11		
833				Adjusted Chi Square Value	141.9				95% Jackknife UCL	15.23		
834									95% Standard Bootstrap UCL	14.96		
835				Anderson-Darling Test Statistic	0.378				95% Bootstrap-t UCL	16.06		
836				Anderson-Darling 5% Critical Value	0.745				95% Hall's Bootstrap UCL	17.29		
837				Kolmogorov-Smirnov Test Statistic	0.122				95% Percentile Bootstrap UCL	15.08		
838				Kolmogorov-Smirnov 5% Critical Value	0.194				95% BCA Bootstrap UCL	15.47		
839	**Data appear Gamma Distributed at 5% Significance Level**								95% Chebyshev(Mean, Sd) UCL	19.04		
840									97.5% Chebyshev(Mean, Sd) UCL	21.78		
841	**Assuming Gamma Distribution**								99% Chebyshev(Mean, Sd) UCL	27.15		
842				95% Approximate Gamma UCL	15.32							
843				95% Adjusted Gamma UCL	15.55							
844												
845	**Potential UCL to Use**								Use 95% Approximate Gamma UCL	15.32		
846												
847												
848	**Potassium (mg/kg)**											

849												
850					**General Statistics**							
851				Number of Valid Samples	16			Number of Unique Samples	15			
852				Number of Missing Values	4							
853												
854				**Raw Statistics**				**Log-transformed Statistics**				
855				Minimum	626			Minimum of Log Data	6.439			
856				Maximum	1920			Maximum of Log Data	7.56			
857				Mean	1336			Mean of log Data	7.159			
858				Median	1295			SD of log Data	0.292			
859				SD	363.5							
860				Coefficient of Variation	0.272							
861				Skewness	0.122							
862												
863					**Relevant UCL Statistics**							
864				**Normal Distribution Test**				**Lognormal Distribution Test**				
865				Shapiro Wilk Test Statistic	0.939			Shapiro Wilk Test Statistic	0.926			
866				Shapiro Wilk Critical Value	0.887			Shapiro Wilk Critical Value	0.887			
867				**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**				
868												
869				**Assuming Normal Distribution**				**Assuming Lognormal Distribution**				
870				95% Student's-t UCL	1495			95% H-UCL	1545			
871				**95% UCLs (Adjusted for Skewness)**				95% Chebyshev (MVUE) UCL	1770			
872				95% Adjusted-CLT UCL	1488			97.5% Chebyshev (MVUE) UCL	1956			
873				95% Modified-t UCL	1495			99% Chebyshev (MVUE) UCL	2323			
874												
875				**Gamma Distribution Test**				**Data Distribution**				
876				k star (bias corrected)	10.95			**Data appear Normal at 5% Significance Level**				
877				Theta Star	122							
878				nu star	350.4							
879				Approximate Chi Square Value (.05)	308			**Nonparametric Statistics**				
880				Adjusted Level of Significance	0.0335			95% CLT UCL	1485			
881				Adjusted Chi Square Value	303.5			95% Jackknife UCL	1495			
882								95% Standard Bootstrap UCL	1480			
883				Anderson-Darling Test Statistic	0.434			95% Bootstrap-t UCL	1498			
884				Anderson-Darling 5% Critical Value	0.738			95% Hall's Bootstrap UCL	1490			
885				Kolmogorov-Smirnov Test Statistic	0.157			95% Percentile Bootstrap UCL	1477			
886				Kolmogorov-Smirnov 5% Critical Value	0.215			95% BCA Bootstrap UCL	1471			
887				**Data appear Gamma Distributed at 5% Significance Level**				95% Chebyshev(Mean, Sd) UCL	1732			
888								97.5% Chebyshev(Mean, Sd) UCL	1903			
889				**Assuming Gamma Distribution**				99% Chebyshev(Mean, Sd) UCL	2240			
890				95% Approximate Gamma UCL	1519							
891				95% Adjusted Gamma UCL	1542							
892												
893				**Potential UCL to Use**				Use 95% Student's-t UCL	1495			
894												
895												
896	**Selenium (mg.kg)**											
897												
898					**General Statistics**							
899				Number of Valid Samples	20			Number of Detected Data	10			
900				Number of Unique Samples	8			Number of Non-Detect Data	10			
901								Percent Non-Detects	50.00%			

902												
903	**Raw Statistics**						**Log-transformed Statistics**					
904					Minimum Detected	2					Minimum Detected	0.693
905					Maximum Detected	6.05					Maximum Detected	1.8
906					Mean of Detected	3.615					Mean of Detected	1.203
907					SD of Detected	1.586					SD of Detected	0.421
908					Minimum Non-Detect	0.25					Minimum Non-Detect	-1.386
909					Maximum Non-Detect	0.25					Maximum Non-Detect	-1.386
910												
911												
912	**UCL Statistics**											
913	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
914					Shapiro Wilk Test Statistic	0.808					Shapiro Wilk Test Statistic	0.845
915					5% Shapiro Wilk Critical Value	0.842					5% Shapiro Wilk Critical Value	0.842
916	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
917												
918	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
919					DL/2 Substitution Method						DL/2 Substitution Method	
920					Mean	1.87					Mean	-0.438
921					SD	2.097					SD	1.708
922					95% DL/2 (t) UCL	2.681					95% H-Stat (DL/2) UCL	1.984
923												
924					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
925					Mean	3.654					Mean in Log Scale	0.605
926					SD	1.505					SD in Log Scale	0.732
927					95% MLE (t) UCL	4.236					Mean in Original Scale	2.346
928					95% MLE (Tiku) UCL	4.473					SD in Original Scale	1.72
929											95% Percentile Bootstrap UCL	3.026
930											95% BCA Bootstrap UCL	3.1
931												
932	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
933					k star (bias corrected)	4.424	**Data appear Lognormal at 5% Significance Level**					
934					Theta Star	0.817						
935					nu star	88.48						
936												
937					A-D Test Statistic	0.867	**Nonparametric Statistics**					
938					5% A-D Critical Value	0.728	Kaplan-Meier (KM) Method					
939					K-S Test Statistic	0.728					Mean	2.808
940					5% K-S Critical Value	0.267					SD	1.336
941	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.315
942											95% KM (t) UCL	3.352
943	**Assuming Gamma Distribution**										95% KM (z) UCL	3.325
944					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	3.279
945					Minimum	1.083					95% KM (bootstrap t) UCL	3.5
946					Maximum	6.05					95% KM (BCA) UCL	3.573
947					Mean	3.615					95% KM (Percentile Bootstrap) UCL	3.44
948					Median	3.444					95% KM (Chebyshev) UCL	4.18
949					SD	1.437					97.5% KM (Chebyshev) UCL	4.774
950					k star	5.118					99% KM (Chebyshev) UCL	5.94
951					Theta star	0.706						
952					Nu star	204.7	**Potential UCLs to Use**					
953					AppChi2	172.6					95% KM (t) UCL	3.352
954					95% Gamma Approximate UCL	4.287					95% KM (% Bootstrap) UCL	3.44

955					95% Adjusted Gamma UCL	4.346						
956	**Note: DL/2 is not a recommended method.**											
957												
958												
959	**Silver (mg.kg)**											
960												
961	**General Statistics**											
962					Number of Valid Samples	20				Number of Detected Data	4	
963					Number of Unique Samples	4				Number of Non-Detect Data	16	
964										Percent Non-Detects	80.00%	
965												
966	**Raw Statistics**						**Log-transformed Statistics**					
967					Minimum Detected	0.68				Minimum Detected	-0.386	
968					Maximum Detected	1.79				Maximum Detected	0.582	
969					Mean of Detected	0.986				Mean of Detected	-0.105	
970					SD of Detected	0.538				SD of Detected	0.462	
971					Minimum Non-Detect	0.073				Minimum Non-Detect	-2.617	
972					Maximum Non-Detect	0.589				Maximum Non-Detect	-0.529	
973												
974	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	16	
975	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	4	
976	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	80.00%	
977												
978	**UCL Statistics**											
979	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
980					Shapiro Wilk Test Statistic	0.697				Shapiro Wilk Test Statistic	0.734	
981					5% Shapiro Wilk Critical Value	0.748				5% Shapiro Wilk Critical Value	0.748	
982	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
983												
984	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
985					DL/2 Substitution Method					DL/2 Substitution Method		
986					Mean	0.305				Mean	-2.01	
987					SD	0.425				SD	1.341	
988					95% DL/2 (t) UCL	0.469				95% H-Stat (DL/2) UCL	0.775	
989												
990					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
991	**MLE yields a negative mean**									Mean in Log Scale	-1.766	
992										SD in Log Scale	0.975	
993										Mean in Original Scale	0.298	
994										SD in Original Scale	0.416	
995										95% Percentile Bootstrap UCL	0.46	
996										95% BCA Bootstrap UCL	0.518	
997												
998	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
999					k star (bias corrected)	1.591	**Data do not follow a Discernable Distribution (0.05)**					
1000					Theta Star	0.62						
1001					nu star	12.73						
1002												
1003					A-D Test Statistic	0.737	**Nonparametric Statistics**					
1004					5% A-D Critical Value	0.659				Kaplan-Meier (KM) Method		
1005					K-S Test Statistic	0.659				Mean	0.741	
1006					5% K-S Critical Value	0.396				SD	0.242	
1007	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean	0.0624	

1008											95% KM (t) UCL	0.849
1009			**Assuming Gamma Distribution**								95% KM (z) UCL	0.844
1010			Gamma ROS Statistics using Extrapolated Data								95% KM (jackknife) UCL	0.83
1011					Minimum	0					95% KM (bootstrap t) UCL	1.366
1012					Maximum	1.79					95% KM (BCA) UCL	N/A
1013					Mean	0.197					95% KM (Percentile Bootstrap) UCL	0.916
1014					Median	0					95% KM (Chebyshev) UCL	1.013
1015					SD	0.458					97.5% KM (Chebyshev) UCL	1.131
1016					k star	0.0823					99% KM (Chebyshev) UCL	1.362
1017					Theta star	2.395						
1018					Nu star	3.294					**Potential UCLs to Use**	
1019					AppChi2	0.465					95% KM (t) UCL	0.849
1020					95% Gamma Approximate UCL	1.398					95% KM (% Bootstrap) UCL	0.916
1021					95% Adjusted Gamma UCL	N/A						
1022	**Note: DL/2 is not a recommended method.**											
1023												
1024												
1025	**Sodium (mg/kg)**											
1026												
1027						**General Statistics**							
1028					Number of Valid Samples	18					Number of Detected Data	10
1029					Number of Unique Samples	10					Number of Non-Detect Data	8
1030					Number of Missing Values	2					Percent Non-Detects	44.44%
1031												
1032				**Raw Statistics**						**Log-transformed Statistics**		
1033					Minimum Detected	179					Minimum Detected	5.187
1034					Maximum Detected	281					Maximum Detected	5.638
1035					Mean of Detected	212					Mean of Detected	5.345
1036					SD of Detected	34.73					SD of Detected	0.155
1037					Minimum Non-Detect	26					Minimum Non-Detect	3.258
1038					Maximum Non-Detect	28.5					Maximum Non-Detect	3.35
1039												
1040	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	8
1041	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	10
1042	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	44.44%
1043												
1044						**UCL Statistics**							
1045				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
1046					Shapiro Wilk Test Statistic	0.86					Shapiro Wilk Test Statistic	0.887
1047					5% Shapiro Wilk Critical Value	0.842					5% Shapiro Wilk Critical Value	0.842
1048				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**		
1049												
1050				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
1051					DL/2 Substitution Method						DL/2 Substitution Method	
1052					Mean	123.9					Mean	4.136
1053					SD	104.4					SD	1.395
1054					95% DL/2 (t) UCL	166.7					95% H-Stat (DL/2) UCL	503.2
1055												
1056					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
1057					Mean	82.37					Mean in Log Scale	5.159
1058					SD	157.7					SD in Log Scale	0.248
1059					95% MLE (t) UCL	147					Mean in Original Scale	179.2
1060					95% MLE (Tiku) UCL	158.6					SD in Original Scale	45.94

1061											95% Percentile Bootstrap UCL	196
1062											95% BCA Bootstrap UCL	198.8
1063												
1064	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1065					k star (bias corrected)	31.47	**Data appear Normal at 5% Significance Level**					
1066					Theta Star	6.735						
1067					nu star	629.4						
1068												
1069					A-D Test Statistic	0.533	**Nonparametric Statistics**					
1070					5% A-D Critical Value	0.724	Kaplan-Meier (KM) Method					
1071					K-S Test Statistic	0.724					Mean	197.3
1072					5% K-S Critical Value	0.266					SD	29.51
1073	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	7.333
1074											95% KM (t) UCL	210.1
1075	**Assuming Gamma Distribution**										95% KM (z) UCL	209.4
1076	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	209.1
1077					Minimum	172.8					95% KM (bootstrap t) UCL	219.7
1078					Maximum	281					95% KM (BCA) UCL	212.9
1079					Mean	207.7					95% KM (Percentile Bootstrap) UCL	209.7
1080					Median	204.9					95% KM (Chebyshev) UCL	229.3
1081					SD	28.54					97.5% KM (Chebyshev) UCL	243.1
1082					k star	50.55					99% KM (Chebyshev) UCL	270.3
1083					Theta star	4.108						
1084					Nu star	1820	**Potential UCLs to Use**					
1085					AppChi2	1722					95% KM (t) UCL	210.1
1086					95% Gamma Approximate UCL	219.5					95% KM (Percentile Bootstrap) UCL	209.7
1087					95% Adjusted Gamma UCL	220.7						
1088	**Note: DL/2 is not a recommended method.**											
1089												
1090												
1091	**Vanadium (mg/kg)**											
1092												
1093	**General Statistics**											
1094					Number of Valid Samples	20					Number of Unique Samples	19
1095												
1096	**Raw Statistics**						**Log-transformed Statistics**					
1097					Minimum	10.8					Minimum of Log Data	2.38
1098					Maximum	49.8					Maximum of Log Data	3.908
1099					Mean	25.96					Mean of log Data	3.13
1100					Median	21.6					SD of log Data	0.524
1101					SD	13.11						
1102					Coefficient of Variation	0.505						
1103					Skewness	0.518						
1104												
1105	**Relevant UCL Statistics**											
1106	**Normal Distribution Test**						**Lognormal Distribution Test**					
1107					Shapiro Wilk Test Statistic	0.903					Shapiro Wilk Test Statistic	0.924
1108					Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
1109	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1110												
1111	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1112					95% Student's-t UCL	31.03					95% H-UCL	33.46
1113	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	39.86

1114				95% Adjusted-CLT UCL	31.15					97.5% Chebyshev (MVUE) UCL	45.84
1115				95% Modified-t UCL	31.09					99% Chebyshev (MVUE) UCL	57.59
1116											
1117				**Gamma Distribution Test**						**Data Distribution**	
1118				k star (bias corrected)	3.526					**Data appear Gamma Distributed at 5% Significance Level**	
1119				Theta Star	7.363						
1120				nu star	141						
1121				Approximate Chi Square Value (.05)	114.6					**Nonparametric Statistics**	
1122				Adjusted Level of Significance	0.038					95% CLT UCL	30.78
1123				Adjusted Chi Square Value	112.7					95% Jackknife UCL	31.03
1124										95% Standard Bootstrap UCL	30.56
1125				Anderson-Darling Test Statistic	0.51					95% Bootstrap-t UCL	31.47
1126				Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	30.86
1127				Kolmogorov-Smirnov Test Statistic	0.127					95% Percentile Bootstrap UCL	30.97
1128				Kolmogorov-Smirnov 5% Critical Value	0.195					95% BCA Bootstrap UCL	30.95
1129				**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	38.74
1130										97.5% Chebyshev(Mean, Sd) UCL	44.26
1131				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	55.12
1132				95% Approximate Gamma UCL	31.95						
1133				95% Adjusted Gamma UCL	32.49						
1134											
1135				**Potential UCL to Use**						Use 95% Approximate Gamma UCL	31.95
1136											
1137											
1138	**Zinc (mg/kg)**										
1139											
1140					**General Statistics**						
1141				Number of Valid Samples	20					Number of Unique Samples	20
1142											
1143				**Raw Statistics**						**Log-transformed Statistics**	
1144				Minimum	25.9					Minimum of Log Data	3.254
1145				Maximum	1060					Maximum of Log Data	6.966
1146				Mean	131.9					Mean of log Data	4.403
1147				Median	79.25					SD of log Data	0.828
1148				SD	222.8						
1149				Coefficient of Variation	1.689						
1150				Skewness	4.189						
1151											
1152					**Relevant UCL Statistics**						
1153				**Normal Distribution Test**						**Lognormal Distribution Test**	
1154				Shapiro Wilk Test Statistic	0.408					Shapiro Wilk Test Statistic	0.881
1155				Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
1156				**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
1157											
1158				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
1159				95% Student's-t UCL	218.1					95% H-UCL	180.4
1160				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	211.6
1161				95% Adjusted-CLT UCL	263.8					97.5% Chebyshev (MVUE) UCL	254.4
1162				95% Modified-t UCL	225.9					99% Chebyshev (MVUE) UCL	338.5
1163											
1164				**Gamma Distribution Test**						**Data Distribution**	
1165				k star (bias corrected)	1.038					**Data do not follow a Discernable Distribution (0.05)**	
1166				Theta Star	127.1						

	A	B	C	D	E	F	G	H	I	J	K	L
1167					nu star	41.51						
1168					Approximate Chi Square Value (.05)	27.74	**Nonparametric Statistics**					
1169					Adjusted Level of Significance	0.038					95% CLT UCL	213.9
1170					Adjusted Chi Square Value	26.85					95% Jackknife UCL	218.1
1171											95% Standard Bootstrap UCL	213.1
1172					Anderson-Darling Test Statistic	1.682					95% Bootstrap-t UCL	468
1173					Anderson-Darling 5% Critical Value	0.764					95% Hall's Bootstrap UCL	530.5
1174					Kolmogorov-Smirnov Test Statistic	0.251					95% Percentile Bootstrap UCL	229.9
1175					Kolmogorov-Smirnov 5% Critical Value	0.199					95% BCA Bootstrap UCL	280.3
1176				**Data not Gamma Distributed at 5% Significance Level**							95% Chebyshev(Mean, Sd) UCL	349.1
1177											97.5% Chebyshev(Mean, Sd) UCL	443.1
1178				**Assuming Gamma Distribution**							99% Chebyshev(Mean, Sd) UCL	627.7
1179					95% Approximate Gamma UCL	197.4						
1180					95% Adjusted Gamma UCL	203.9						
1181												
1182				**Potential UCL to Use**							Use 95% Chebyshev (Mean, Sd) UCL	349.1
1183												

Appendix E-4

J&E Models

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	7.92E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.8E-08	NA

MESSAGE SUMMARY BELOW:

END

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RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.2E-08	1.5E-05

MESSAGE SUMMARY BELOW:

END

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Appendix E-5

Goodness-of-fit Test Statistics and Background Statistical Comparisons

Appendix E.5A
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Arsenic (mg/kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	0.923	4.3	2.071	1.9	1.082

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	4.357	3.117	0.475	0.609	0.516	0.848

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.95	0.95	0.95	0.95

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.9	0.842	Data Appear Normal
Lilliefors (Full: no NDs)	0.189	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.986	0.986	0.986	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.294	0.729	
Kolmogorov-Smirnov (Full: no NDs)	0.148	0.268	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.977	0.977	0.977

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.942	0.842	Data Appear Lognormal

Appendix E.5A
Goodness-of-Fit Test Statistics

Lilliefors (Full: no NDs)	0.162	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	28	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	28	1.5	10.2	3.732	2.75	2.33

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.494	3.143	1.068	1.167	0.532	0.456

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.898	0.898	0.898	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.803	0.924	Data Not Normal
Lilliefors (Full: no NDs)	0.203	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.969	0.969	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.02	0.752	
Kolmogorov-Smirnov (Full: no NDs)	0.165	0.166	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.972	0.972	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.932	0.924	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.138	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Copper (mg/kg) (area p ss)

Appendix E.5A
Goodness-of-Fit Test Statistics

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	5	347	67.47	20.4	104.7

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	0.677	0.541	99.59	3.316	1.404	0.424

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.789	0.789	0.789	0.789

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.644	0.842	Data Not Normal
Lilliefors (Full: no NDs)	0.275	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.968	0.968	0.968

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.538	0.763	
Kolmogorov-Smirnov (Full: no NDs)	0.206	0.277	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.973	0.973	0.973

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.936	0.842	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.155	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Copper (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	26	2	7.14%

Appendix E.5A
Goodness-of-Fit Test Statistics

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.17	0.17	0.17	0.17	0
Statistics (Detects Only)	26	2.2	13.6	6.919	5.35	3.696
Statistics (All: NDs treated as DL value)	28	0.17	13.6	6.437	5.2	3.973
Statistics (All: NDs treated as DL/2 value)	28	0.085	13.6	6.431	5.2	3.983
Statistics (Normal ROS Estimated Data)	28	-2.356	13.6	6.306	5.2	4.214
Statistics (Gamma ROS Estimated Data)	28	1E-09	13.6	6.44	5.2	3.969
Statistics (Lognormal ROS Estimated Data)	28	1.502	13.6	6.545	5.2	3.814

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	3.738	3.361	1.851	1.795	0.544	0.303
Statistics (NDs = DL)	1.699	1.541	3.788	1.54	1.072	0.696
Statistics (NDs = DL/2)	1.493	1.357	4.307	1.49	1.234	0.828
Statistics (Gamma ROS Estimates)	0.633	0.589	10.17	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.703	0.623	0.366

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.947	0.966	0.967	0.973

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.88	0.92	Data Not Normal
Lilliefors (Detects Only)	0.206	0.174	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.919	0.924	Data Not Normal
Lilliefors (NDs = DL)	0.181	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.92	0.924	Data Not Normal
Lilliefors (NDs = DL/2)	0.18	0.167	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.939	0.924	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.164	0.167	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.96	0.946	0.941	0.888

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.717	0.749	
Kolmogorov-Smirnov (Detects Only)	0.151	0.172	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.918	0.761	
Kolmogorov-Smirnov (NDs = DL)	0.152	0.168	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.191	0.763	
Kolmogorov-Smirnov (NDs = DL/2)	0.177	0.168	Data Not Gamma Distributed

Appendix E.5A
Goodness-of-Fit Test Statistics

Anderson-Darling (Gamma ROS Estimates)	3.942	0.797	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.345	0.173	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.861	0.825	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.939	0.92	Data Appear Lognormal
Lilliefors (Detects Only)	0.135	0.174	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.748	0.924	Data Not Lognormal
Lilliefors (NDs = DL)	0.222	0.167	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.69	0.924	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.258	0.167	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.952	0.924	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.118	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chromium (mg/kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	7.63	59.6	20.78	16.9	15.05

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	2.994	2.162	6.942	2.858	0.596	0.208

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.861	0.861	0.861	0.861

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.762	0.842	Data Not Normal
Lilliefors (Full: no NDs)	0.249	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.944	0.944	0.944	0.944

Appendix E.5A
Goodness-of-Fit Test Statistics

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.369	0.732	
Kolmogorov-Smirnov (Full: no NDs)	0.164	0.268	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.976	0.976	0.976	0.976

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.961	0.842	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.129	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chromium (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	28	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	28	6.3	53.3	21.09	22.4	10.5

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	4.111	3.695	5.13	2.922	0.529	0.181

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.956	0.956	0.956	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.92	0.924	Data Not Normal
Lilliefors (Full: no NDs)	0.11	0.167	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.974	0.974	0.974	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.612	0.75	
Kolmogorov-Smirnov (Full: no NDs)	0.145	0.166	Data Appear Gamma Distributed

Appendix E.5A
Goodness-of-Fit Test Statistics

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.974	0.974	0.974	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.946	0.924	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.17	0.167	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Selenium (mg.kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	5	5	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.25	0.25	0.25	0.25	0
Statistics (Detects Only)	5	2.4	5.6	3.5	2.8	1.378
Statistics (All: NDs treated as DL value)	10	0.25	5.6	1.875	1.325	1.944
Statistics (All: NDs treated as DL/2 value)	10	0.125	5.6	1.813	1.263	2.002
Statistics (Normal ROS Estimated Data)	10	-2.626	5.6	1.377	1.584	2.576
Statistics (Gamma ROS Estimated Data)	10	1.799	5.6	3.5	3.273	1.219
Statistics (Lognormal ROS Estimated Data)	10	0.633	5.6	2.302	1.991	1.581

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	8.948	6.33	0.391	1.196	0.369	0.308
Statistics (NDs = DL)	0.818	0.639	2.293	-0.0952	1.383	-14.52
Statistics (NDs = DL/2)	0.597	0.484	3.038	-0.442	1.744	-3.947
Statistics (Gamma ROS Estimates)	9.003	6.369	0.389	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.623	0.694	1.114

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.926	0.912	0.913	0.993

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.847	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.294	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.819	0.842	Data Not Normal
Lilliefors (NDs = DL)	0.298	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.82	0.842	Data Not Normal

Appendix E.5A
Goodness-of-Fit Test Statistics

Lilliefors (NDs = DL/2)	0.3	0.28	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.979	0.842	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.154	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.966	0.954	0.938	0.987

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.456	0.679	
Kolmogorov-Smirnov (Detects Only)	0.302	0.358	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.082	0.755	
Kolmogorov-Smirnov (NDs = DL)	0.334	0.275	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.15	0.769	
Kolmogorov-Smirnov (NDs = DL/2)	0.336	0.279	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.241	0.726	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.174	0.267	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.942	0.885	0.876	0.994

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.872	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.274	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.754	0.842	Data Not Lognormal
Lilliefors (NDs = DL)	0.325	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.736	0.842	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.326	0.28	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.978	0.842	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.142	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Selenium (mg.kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	2	26	92.86%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	26	N/A	N/A	N/A	N/A	N/A
Statistics (Detects Only)	2	N/A	N/A	N/A	N/A	N/A

Appendix E.5A
Goodness-of-Fit Test Statistics

Statistics (All: NDs treated as DL value)	28	N/A	N/A	N/A	N/A	N/A
Statistics (All: NDs treated as DL/2 value)	28	N/A	N/A	N/A	N/A	N/A
Statistics (Normal ROS Estimated Data)	28	N/A	N/A	N/A	N/A	N/A

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	N/A	N/A	
Lilliefors (Detects Only)	N/A	N/A	
Shapiro-Wilks (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	N/A	N/A	
Shapiro-Wilks (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	N/A	N/A	
Shapiro-Wilks (Normal ROS Estimates)	N/A	N/A	
Lilliefors (Normal ROS Estimates)	N/A	N/A	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	N/A	N/A	
Kolmogorov-Smirnov (Detects Only)	N/A	N/A	
Anderson-Darling (NDs = DL)	N/A	N/A	
Kolmogorov-Smirnov (NDs = DL)	N/A	N/A	
Anderson-Darling (NDs = DL/2)	N/A	N/A	
Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A	
Anderson-Darling (Gamma ROS Estimates)	N/A	N/A	
Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A	

Note: Substitution methods such as DL or DL/2 are not recommended.

Zinc (mg/kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	36.5	1060	209	124.5	301.9

Appendix E.5A
Goodness-of-Fit Test Statistics

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	1.208	0.912	173.1	4.874	0.883	0.181

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.682	0.682	0.682	0.682

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.499	0.842	Data Not Normal
Lilliefors (Full: no NDs)	0.464	0.28	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.852	0.852	0.852	0.852

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.283	0.745	
Kolmogorov-Smirnov (Full: no NDs)	0.388	0.273	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.9	0.9	0.9	0.9

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.841	0.842	Data Not Lognormal
Lilliefors (Full: no NDs)	0.31	0.28	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Zinc (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	28	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	28	7.1	216	41.21	29.7	40.24

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	1.826	1.654	22.56	3.421	0.761	0.223

Normal Distribution Test Results

Appendix E.5A
Goodness-of-Fit Test Statistics

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.798	0.798	0.798	0.798

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.665	0.924	Data Not Normal
Lilliefors (Full: no NDs)	0.203	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma RO
Correlation Coefficient R	0.913	0.913	0.913	0.913

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.54	0.76	
Kolmogorov-Smirnov (Full: no NDs)	0.105	0.168	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.985	0.985	0.985	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.975	0.924	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.1	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Goodness-of-Fit Test Statistics for Full Data Sets without Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Lead (mg/kg) (area p ss)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.9
Maximum	150
Mean of Raw Data	59.06

Appendix E.5A
Goodness-of-Fit Test Statistics

Standard Deviation of Raw Data	53.69
Kstar	0.885
Mean of Log Transformed Data	3.594
Standard Deviation of Log Transformed Data	1.152

Normal Distribution Test Results

Correlation Coefficient R	0.934
Shapiro Wilk Test Statistic	0.854
Shapiro Wilk Critical (0.95) Value	0.842
Lilliefors Test Statistic	0.243
Lilliefors Critical (0.95) Value	0.28

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.956
A-D Test Statistic	0.239
A-D Critical (0.95) Value	0.745
K-S Test Statistic	0.138
K-S Critical(0.95) Value	0.273

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.979
Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical (0.95) Value	0.842
Lilliefors Test Statistic	0.123
Lilliefors Critical (0.95) Value	0.28

Data appear Lognormal at (0.05) Significance Level

Lead (mg/kg) (rfaap bkgrd-ss)

Raw Statistics

Number of Valid Observations	28
Number of Distinct Observations	26
Minimum	8.9
Maximum	225
Mean of Raw Data	26.96
Standard Deviation of Raw Data	41.34
Kstar	1.324
Mean of Log Transformed Data	2.913

Appendix E.5A
Goodness-of-Fit Test Statistics

Standard Deviation of Log Transformed Data	0.702

Normal Distribution Test Results

Correlation Coefficient R	0.619
Shapiro Wilk Test Statistic	0.416
Shapiro Wilk Critical (0.95) Value	0.924
Lilliefors Test Statistic	0.375
Lilliefors Critical (0.95) Value	0.167

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.807
A-D Test Statistic	3.163
A-D Critical (0.95) Value	0.764
K-S Test Statistic	0.253
K-S Critical(0.95) Value	0.169

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.886
Shapiro Wilk Test Statistic	0.798
Shapiro Wilk Critical (0.95) Value	0.924
Lilliefors Test Statistic	0.192
Lilliefors Critical (0.95) Value	0.167

Data not Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Full Data Sets without Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Aluminum (mg/kg) (area p ss)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	3620
Maximum	13200

Appendix E.5A
Goodness-of-Fit Test Statistics

Mean of Raw Data	9343
Standard Deviation of Raw Data	3306
Kstar	4.838
Mean of Log Transformed Data	9.067
Standard Deviation of Log Transformed Data	0.44

Normal Distribution Test Results

Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.865
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.103
Lilliefors Test Statistic	0.302
Lilliefors Critical (0.95) Value	0.28

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.889
A-D Test Statistic	0.908
A-D Critical (0.95) Value	0.728
K-S Test Statistic	0.34
K-S Critical(0.95) Value	0.267

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.903
Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.0218
Lilliefors Test Statistic	0.344
Lilliefors Critical (0.95) Value	0.28

Data not Lognormal at (0.05) Significance Level

Aluminum (mg/kg) (rfaap bkgrd-ss)

Raw Statistics

Number of Valid Observations	28
Number of Distinct Observations	28
Minimum	3620
Maximum	20100
Mean of Raw Data	8300

Appendix E.5A
Goodness-of-Fit Test Statistics

Standard Deviation of Raw Data	4279
Kstar	4.078
Mean of Log Transformed Data	8.91
Standard Deviation of Log Transformed Data	0.477

Normal Distribution Test Results

Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.00229
Lilliefors Test Statistic	0.208
Lilliefors Critical (0.95) Value	0.167

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.741
A-D Critical (0.95) Value	0.749
K-S Test Statistic	0.171
K-S Critical(0.95) Value	0.166

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.948
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.201
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.95) Value	0.167

Data appear Lognormal at (0.05) Significance Level

Iron (mg/kg) (area p ss)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	6880
Maximum	24900
Mean of Raw Data	15716
Standard Deviation of Raw Data	6462

Appendix E.5A
Goodness-of-Fit Test Statistics

Kstar	3.992
Mean of Log Transformed Data	9.571
Standard Deviation of Log Transformed Data	0.474

Normal Distribution Test Results

Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.922
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.512
Lilliefors Test Statistic	0.186
Lilliefors Critical (0.95) Value	0.28

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.95
A-D Test Statistic	0.526
A-D Critical (0.95) Value	0.729
K-S Test Statistic	0.205
K-S Critical(0.95) Value	0.267

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.875
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.16
Lilliefors Test Statistic	0.204
Lilliefors Critical (0.95) Value	0.28

Data appear Lognormal at (0.05) Significance Level

Iron (mg/kg) (rfaap bkgrd-ss)

Raw Statistics

Number of Valid Observations	28
Number of Distinct Observations	26
Minimum	7250
Maximum	63000
Mean of Raw Data	20108
Standard Deviation of Raw Data	11869
Kstar	3.069

Appendix E.5A
Goodness-of-Fit Test Statistics

Mean of Log Transformed Data	9.755
Standard Deviation of Log Transformed Data	0.57

Normal Distribution Test Results

Correlation Coefficient R	0.912
Shapiro Wilk Test Statistic	0.846
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.0005686
Lilliefors Test Statistic	0.139
Lilliefors Critical (0.95) Value	0.167

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.961
A-D Test Statistic	0.612
A-D Critical (0.95) Value	0.752
K-S Test Statistic	0.151
K-S Critical(0.95) Value	0.166

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.0795
Lilliefors Test Statistic	0.153
Lilliefors Critical (0.95) Value	0.167

Data appear Lognormal at (0.05) Significance Level

Manganese (mg/kg) (area p ss)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	130
Maximum	1240
Mean of Raw Data	601.7
Standard Deviation of Raw Data	389.5
Kstar	1.577
Mean of Log Transformed Data	6.15

Appendix E.5A
Goodness-of-Fit Test Statistics

Standard Deviation of Log Transformed Data	0.81

Normal Distribution Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.411
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.95) Value	0.28

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.96
A-D Test Statistic	0.46
A-D Critical (0.95) Value	0.735
K-S Test Statistic	0.195
K-S Critical(0.95) Value	0.27

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.949
Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.192
Lilliefors Test Statistic	0.229
Lilliefors Critical (0.95) Value	0.28

Data appear Lognormal at (0.05) Significance Level

Manganese (mg/kg) (rfaap bkgrd-ss)

Raw Statistics

Number of Valid Observations	28
Number of Distinct Observations	28
Minimum	43
Maximum	2040
Mean of Raw Data	695.9
Standard Deviation of Raw Data	591.5
Kstar	1.311
Mean of Log Transformed Data	6.16
Standard Deviation of Log Transformed Data	0.971

Appendix E.5A
Goodness-of-Fit Test Statistics

Normal Distribution Test Results

Correlation Coefficient R	0.923
Shapiro Wilk Test Statistic	0.84
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.0004208
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.95) Value	0.167

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.971
A-D Test Statistic	0.306
A-D Critical (0.95) Value	0.764
K-S Test Statistic	0.102
K-S Critical(0.95) Value	0.169

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.415
Lilliefors Test Statistic	0.106
Lilliefors Critical (0.95) Value	0.167

Data appear Lognormal at (0.05) Significance Level

Vanadium (mg/kg) (area p ss)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	11.5
Maximum	41.4
Mean of Raw Data	24.07
Standard Deviation of Raw Data	10.97
Kstar	3.725
Mean of Log Transformed Data	3.082
Standard Deviation of Log Transformed Data	0.477

Appendix E.5A
Goodness-of-Fit Test Statistics

Normal Distribution Test Results

Correlation Coefficient R	0.961
Shapiro Wilk Test Statistic	0.902
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.329
Lilliefors Test Statistic	0.178
Lilliefors Critical (0.95) Value	0.28

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.969
A-D Test Statistic	0.394
A-D Critical (0.95) Value	0.729
K-S Test Statistic	0.187
K-S Critical(0.95) Value	0.267

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical (0.95) Value	0.842
Approximate Shapiro Wilk P Value	0.381
Lilliefors Test Statistic	0.182
Lilliefors Critical (0.95) Value	0.28

Data appear Lognormal at (0.05) Significance Level

Vanadium (mg/kg) (rfaap bkgrd-ss)

Raw Statistics

Number of Valid Observations	28
Number of Distinct Observations	27
Minimum	12.2
Maximum	101
Mean of Raw Data	33.89
Standard Deviation of Raw Data	17.78
Kstar	3.946
Mean of Log Transformed Data	3.405
Standard Deviation of Log Transformed Data	0.497

Normal Distribution Test Results

Appendix E.5A
Goodness-of-Fit Test Statistics

Correlation Coefficient R	0.902
Shapiro Wilk Test Statistic	0.832
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.0002824
Lilliefors Test Statistic	0.141
Lilliefors Critical (0.95) Value	0.167

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.943
A-D Test Statistic	0.622
A-D Critical (0.95) Value	0.749
K-S Test Statistic	0.111
K-S Critical(0.95) Value	0.166

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical (0.95) Value	0.924
Approximate Shapiro Wilk P Value	0.12
Lilliefors Test Statistic	0.138
Lilliefors Critical (0.95) Value	0.167

Data appear Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Antimony (mg/kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	1	9	90.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

Appendix E.5A
Goodness-of-Fit Test Statistics

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony (mg/kg) (area p ss) was not processed!

Antimony (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	14	14	0	14	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony (mg/kg) (rfaap bkgrd-ss) was not processed!

Cobalt (mg/kg) (area p ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	2.65	12.6	7.985	8	3.249

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.421	3.861	1.473	1.983	0.493	0.249

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.986	0.986	0.986	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.96	0.842	Data Appear Normal
Lilliefors (Full: no NDs)	0.142	0.28	Data Appear Normal

Gamma Distribution Test Results

Appendix E.5A
Goodness-of-Fit Test Statistics

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.956	0.956	0.956	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.351	0.729	
Kolmogorov-Smirnov (Full: no NDs)	0.176	0.267	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.954	0.954	0.954	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.908	0.842	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.204	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cobalt (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	20	8	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.11	0.75	0.501	0.72	0.319
Statistics (Detects Only)	20	5.9	45.4	15.95	12.1	10.07
Statistics (All: NDs treated as DL value)	28	0.11	45.4	11.53	10.15	11.04
Statistics (All: NDs treated as DL/2 value)	28	0.055	45.4	11.46	10.15	11.11
Statistics (Normal ROS Estimated Data)	28	-10.02	45.4	9.494	10.15	13.45
Statistics (Gamma ROS Estimated Data)	28	3.774	45.4	13.39	10.15	9.473
Statistics (Lognormal ROS Estimated Data)	28	3.134	45.4	12.48	10.15	10.13

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	3.439	3.095	4.636	2.617	0.545	0.208
Statistics (NDs = DL)	0.701	0.65	16.45	1.583	1.793	1.132
Statistics (NDs = DL/2)	0.588	0.549	19.49	1.385	2.092	1.51
Statistics (Gamma ROS Estimates)	2.851	2.569	4.697	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	2.25	0.749	0.333

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.901	0.93	0.93	0.968

Appendix E.5A
Goodness-of-Fit Test Statistics

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.819	0.905	Data Not Normal
Lilliefors (Detects Only)	0.236	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.867	0.924	Data Not Normal
Lilliefors (NDs = DL)	0.158	0.167	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.867	0.924	Data Not Normal
Lilliefors (NDs = DL/2)	0.156	0.167	Data Appear Normal
Shapiro-Wilks (Normal ROS Estimates)	0.936	0.924	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.128	0.167	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.973	0.98	0.973	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.596	0.747	
Kolmogorov-Smirnov (Detects Only)	0.167	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.122	0.79	
Kolmogorov-Smirnov (NDs = DL)	0.195	0.172	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.507	0.801	
Kolmogorov-Smirnov (NDs = DL/2)	0.221	0.174	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.785	0.754	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.155	0.167	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.982	0.918	0.903	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.96	0.905	Data Appear Lognormal
Lilliefors (Detects Only)	0.132	0.198	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.831	0.924	Data Not Lognormal
Lilliefors (NDs = DL)	0.257	0.167	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.802	0.924	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.288	0.167	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.954	0.924	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.126	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Arsenic (mg/kg)(area p ss)
Background Data: Arsenic (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	24
Minimum	0.923	1.5
Maximum	4.3	10.2
Mean	2.071	3.732
Median	1.9	2.75
SD	1.082	2.33
SE of Mean	0.342	0.44

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	119.5
WMW Test U-Stat	64.5
WMW Critical Value (0.050)	217
Approximate P-Value	0.994

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	**95%**
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Copper (mg/kg)(area p ss)
Background Data: Copper (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	28
Number of Non-Detect Data	0	2
Number of Detect Data	10	26
Minimum Non-Detect	N/A	0.17
Maximum Non-Detect	N/A	0.17
Percent Non detects	0.00%	7.14%
Minimum Detected	5	2.2
Maximum Detected	347	13.6
Mean of Detected Data	67.47	6.919
Median of Detected Data	20.4	5.35
SD of Detected Data	104.7	3.696

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	3.249
Critical z (0.95)	1.645
P-Value	5.79E-04

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Chromium (mg/kg)(area p ss)
Background Data: Chromium (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	27
Minimum	7.63	6.3
Maximum	59.6	53.3
Mean	20.78	21.09
Median	16.9	22.4
SD	15.05	10.5
SE of Mean	4.759	1.985

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	175.5
WMW Test U-Stat	120.5
WMW Critical Value (0.050)	217
Approximate P-Value	0.746

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Selenium (mg.kg)(area p ss)
Background Data: Selenium (mg.kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	28
Number of Non-Detect Data	5	26
Number of Detect Data	5	2
Minimum Non-Detect	0.25	0.14
Maximum Non-Detect	0.25	0.36
Percent Non detects	50.00%	92.86%
Minimum Detected	2.4	0.64
Maximum Detected	5.6	0.77
Mean of Detected Data	3.5	0.705
Median of Detected Data	2.8	0.705
SD of Detected Data	1.378	0.0919

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	3.186
Critical z (0.95)	1.645
P-Value	7.20E-04

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Zinc (mg/kg)(area p ss)
Background Data: Zinc (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	28
Minimum	36.5	7.1
Maximum	1060	216
Mean	209	41.21
Median	124.5	29.7
SD	301.9	40.24
SE of Mean	95.48	7.605

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	30800.00%
WMW Test U-Stat	253
WMW Critical Value (0.050)	217
Approximate P-Value	9.60E-05

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Lead (mg/kg)(area p ss)
Background Data: Lead (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	28
Number of Non-Detect Data	0	0
Number of Detect Data	10	28
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	4.9	8.9
Maximum Detected	150	225
Mean of Detected Data	59.06	26.96
Median of Detected Data	40.65	15.15
SD of Detected Data	53.69	41.34

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	1.989
Critical z (0.95)	1.645
P-Value	0.0234

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Aluminum (mg/kg)(area p ss)
Background Data: Aluminum (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	28
Minimum	3620	3620
Maximum	13200	20100
Mean	9343	8300
Median	10350	6705
SD	3306	4279
SE of Mean	1045	808.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	219.5
WMW Test U-Stat	0.796
WMW Critical Value (0.050)	164.50%
P-Value	0.213

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Iron (mg/kg)(area p ss)
Background Data: Iron (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	26
Minimum	6880	7250
Maximum	24900	63000
Mean	15716	20108
Median	16450	19750
SD	6462	11869
SE of Mean	2043	2243

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	160
WMW Test U-Stat	-1.177
WMW Critical Value (0.050)	1.645
P-Value	0.88

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Manganese (mg/kg)(area p ss)
Background Data: Manganese (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	28
Minimum	130	43
Maximum	1240	2040
Mean	601.7	695.9
Median	595	490
SD	389.5	591.5
SE of Mean	123.2	111.8

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	198
WMW Test U-Stat	0.0829
WMW Critical Value (0.050)	1.645
P-Value	0.467

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Vanadium (mg/kg)(area p ss)
Background Data: Vanadium (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	27
Minimum	11.5	12.2
Maximum	41.4	101
Mean	24.07	33.89
Median	21.6	33.8
SD	10.97	17.78
SE of Mean	3.469	3.36

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	142.5
WMW Test U-Stat	-1.757
WMW Critical Value (0.050)	1.645
P-Value	0.961

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background
P-Value >= alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Antimony (mg/kg)(area p ss)
Background Data: Antimony (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	14
Number of Missing Values	0	14
Number of Non-Detect Data	9	14
Number of Detect Data	1	0
Minimum Non-Detect	0.2	0.24
Maximum Non-Detect	7.14	0.36
Percent Non detects	90.00%	100.00%
Minimum Detected	10.5	N/A
Maximum Detected	10.5	N/A
Mean of Detected Data	10.5	N/A
Median of Detected Data	10.5	N/A
SD of Detected Data	N/A	N/A

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	1.183
Critical z (0.95)	1.645
P-Value	0.118

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background
P-Value >= alpha (0.05)

Appendix E.5A
RFAAP Area P Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	ProUCL Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Cobalt (mg/kg)(area p ss)
Background Data: Cobalt (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	28
Number of Non-Detect Data	0	8
Number of Detect Data	10	20
Minimum Non-Detect	N/A	0.11
Maximum Non-Detect	N/A	0.75
Percent Non detects	0.00%	28.57%
Minimum Detected	2.65	5.9
Maximum Detected	12.6	45.4
Mean of Detected Data	7.985	15.95
Median of Detected Data	8	12.1
SD of Detected Data	3.249	10.07

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	-0.799
Critical z (0.95)	1.645
P-Value	0.788

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Arsenic (mg/kg) (area p ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	20	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	20	0.618	4.3	1.645	1.555	0.924

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.911	3.358	0.421	0.364	0.526	1.443

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.927	0.927	0.927	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.865	0.905	Data Not Normal
Lilliefors (Full: no NDs)	0.162	0.198	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.978	0.978	0.978

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.326	0.746	
Kolmogorov-Smirnov (Full: no NDs)	0.103	0.195	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.986	0.986	0.986	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.966	0.905	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.0971	0.198	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (mg/kg) (rfaap bkgrd ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	79	0	79	76	3	3.80%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.09	0.12	0.103	0.1	0.0153

Appendix E.5B
Goodness-of-Fit Test Statistics

Statistics (Detects Only)	76	1.2	35.9	4.989	3.2	5.36
Statistics (All: NDs treated as DL value)	79	0.09	35.9	4.804	3.1	5.339
Statistics (All: NDs treated as DL/2 value)	79	0.045	35.9	4.802	3.1	5.341
Statistics (Normal ROS Estimated Data)	79	-5.169	35.9	4.604	3.1	5.608
Statistics (Gamma ROS Estimated Data)	79	1E-09	35.9	4.8	3.1	5.343
Statistics (Lognormal ROS Estimated Data)	79	0.728	35.9	4.828	3.1	5.32

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.819	1.759	2.742	1.308	0.692	0.529
Statistics (NDs = DL)	1.401	1.356	3.429	1.172	0.968	0.826
Statistics (NDs = DL/2)	1.323	1.281	3.631	1.146	1.067	0.932
Statistics (Gamma ROS Estimates)	0.568	0.555	8.454	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.246	0.748	0.6

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.765	0.778	0.778	0.817

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.282	0.102	Data Not Normal
Lilliefors (NDs = DL)	0.279	0.0997	Data Not Normal
Lilliefors (NDs = DL/2)	0.279	0.0997	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.263	0.0997	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.916	0.932	0.935	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	4.409	0.766	
Kolmogorov-Smirnov (Detects Only)	0.213	0.104	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.469	0.772	
Kolmogorov-Smirnov (NDs = DL)	0.182	0.102	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.587	0.774	
Kolmogorov-Smirnov (NDs = DL/2)	0.176	0.103	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	10.23	0.812	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.332	0.106	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.919	0.886	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.151	0.102	Data Not Lognormal
Lilliefors (NDs = DL)	0.159	0.0997	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.187	0.0997	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.134	0.0997	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5B
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Full Data Sets without Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Aluminum (mg/kg) (area p ts)

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	20
Minimum	3620
Maximum	18200
Mean of Raw Data	10017
Standard Deviation of Raw Data	4290
Kstar	4.428
Mean of Log Transformed Data	9.112
Standard Deviation of Log Transformed Data	0.477

Normal Distribution Test Results

Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.154
Lilliefors Critical (0.95) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.972
A-D Test Statistic	0.598
A-D Critical (0.95) Value	0.745
K-S Test Statistic	0.175
K-S Critical(0.95) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.925
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.198
Lilliefors Critical (0.95) Value	0.198

Data appear Lognormal at (0.05) Significance Level

Aluminum (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	75
Minimum	3620

Appendix E.5B
Goodness-of-Fit Test Statistics

Maximum	47900
Mean of Raw Data	14204
Standard Deviation of Raw Data	9433
Kstar	2.689
Mean of Log Transformed Data	9.371
Standard Deviation of Log Transformed Data	0.618

Normal Distribution Test Results

Correlation Coefficient R	0.923
Lilliefors Test Statistic	0.15
Lilliefors Critical (0.95) Value	0.0997

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.988
A-D Test Statistic	0.604
A-D Critical (0.95) Value	0.76
K-S Test Statistic	0.0772
K-S Critical(0.95) Value	0.101

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.995
Lilliefors Test Statistic	0.0626
Lilliefors Critical (0.95) Value	0.0997

Data appear Lognormal at (0.05) Significance Level

Iron (mg/kg) (area p ts)

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	20
Minimum	6880
Maximum	27500
Mean of Raw Data	15993
Standard Deviation of Raw Data	6883
Kstar	4.401
Mean of Log Transformed Data	9.579
Standard Deviation of Log Transformed Data	0.477

Normal Distribution Test Results

Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.13
Lilliefors Critical (0.95) Value	0.198

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Appendix E.5B
Goodness-of-Fit Test Statistics

Correlation Coefficient R	0.96
A-D Test Statistic	0.574
A-D Critical (0.95) Value	0.745
K-S Test Statistic	0.148
K-S Critical(0.95) Value	0.194

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.963
Shapiro Wilk Test Statistic	0.906
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.147
Lilliefors Critical (0.95) Value	0.198

Data appear Lognormal at (0.05) Significance Level

Iron (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	72
Minimum	7250
Maximum	67700
Mean of Raw Data	26963
Standard Deviation of Raw Data	11990
Kstar	4.441
Mean of Log Transformed Data	10.09
Standard Deviation of Log Transformed Data	0.508

Normal Distribution Test Results

Correlation Coefficient R	0.979
Lilliefors Test Statistic	0.0648
Lilliefors Critical (0.95) Value	0.0997

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.984
A-D Test Statistic	0.831
A-D Critical (0.95) Value	0.755
K-S Test Statistic	0.082
K-S Critical(0.95) Value	0.101

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.97
Lilliefors Test Statistic	0.115
Lilliefors Critical (0.95) Value	0.0997

Data not Lognormal at (0.05) Significance Level

Appendix E.5B
Goodness-of-Fit Test Statistics

Manganese (mg/kg) (area p ts)

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	20
Minimum	130
Maximum	1240
Mean of Raw Data	487.7
Standard Deviation of Raw Data	313.2
Kstar	2.219
Mean of Log Transformed Data	5.983
Standard Deviation of Log Transformed Data	0.687

Normal Distribution Test Results

Correlation Coefficient R	0.948
Shapiro Wilk Test Statistic	0.893
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.148
Lilliefors Critical (0.95) Value	0.198

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.984
A-D Test Statistic	0.375
A-D Critical (0.95) Value	0.75
K-S Test Statistic	0.13
K-S Critical(0.95) Value	0.195

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.156
Lilliefors Critical (0.95) Value	0.198

Data appear Lognormal at (0.05) Significance Level

Manganese (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	78
Minimum	16.7
Maximum	2040
Mean of Raw Data	471.4
Standard Deviation of Raw Data	467.1
Kstar	1.087
Mean of Log Transformed Data	5.647
Standard Deviation of Log Transformed Data	1.118

Appendix E.5B
Goodness-of-Fit Test Statistics

Normal Distribution Test Results

Correlation Coefficient R	0.894
Lilliefors Test Statistic	0.165
Lilliefors Critical (0.95) Value	0.0997

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.359
A-D Critical (0.95) Value	0.779
K-S Test Statistic	0.0515
K-S Critical(0.95) Value	0.103

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.985
Lilliefors Test Statistic	0.093
Lilliefors Critical (0.95) Value	0.0997

Data appear Lognormal at (0.05) Significance Level

Vanadium (mg/kg) (area p ts)

Raw Statistics

Number of Valid Observations	20
Number of Distinct Observations	19
Minimum	10.8
Maximum	49.8
Mean of Raw Data	25.96
Standard Deviation of Raw Data	13.11
Kstar	3.526
Mean of Log Transformed Data	3.13
Standard Deviation of Log Transformed Data	0.524

Normal Distribution Test Results

Correlation Coefficient R	0.96
Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.172
Lilliefors Critical (0.95) Value	0.198

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.972
A-D Test Statistic	0.51
A-D Critical (0.95) Value	0.745
K-S Test Statistic	0.127
K-S Critical(0.95) Value	0.195

Data appear Gamma Distributed at (0.05) Significance Level

Appendix E.5B
Goodness-of-Fit Test Statistics

Lognormal Distribution Test Results

Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.95) Value	0.905
Lilliefors Test Statistic	0.129
Lilliefors Critical (0.95) Value	0.198

Data appear Lognormal at (0.05) Significance Level

Vanadium (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	76
Minimum	12.2
Maximum	114
Mean of Raw Data	45.84
Standard Deviation of Raw Data	20.38
Kstar	4.792
Mean of Log Transformed Data	3.721
Standard Deviation of Log Transformed Data	0.477

Normal Distribution Test Results

Correlation Coefficient R	0.98
Lilliefors Test Statistic	0.0967
Lilliefors Critical (0.95) Value	0.0997

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.997
A-D Test Statistic	0.228
A-D Critical (0.95) Value	0.754
K-S Test Statistic	0.054
K-S Critical(0.95) Value	0.101

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.988
Lilliefors Test Statistic	0.0843
Lilliefors Critical (0.95) Value	0.0997

Data appear Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Appendix E.5B
Goodness-of-Fit Test Statistics

Antimony (mg/kg) (area p ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	1	19	95.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony (mg/kg) (area p ts) was not processed!

Antimony (mg/kg) (rfaap bkgrd ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	79	41	38	0	38	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony (mg/kg) (rfaap bkgrd ts) was not processed!

Cobalt (mg/kg) (area p ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	0	20	20	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	20	2.65	13.5	8.191	8	3.269

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.764	4.933	1.421	2.014	0.455	0.226

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.981	0.981	0.981	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.949	0.905	Data Appear Normal
Lilliefors (Full: no NDs)	0.12	0.198	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.961	0.961	0.961	0.961

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.453	0.745	
Kolmogorov-Smirnov (Full: no NDs)	0.147	0.194	Data Appear Gamma Distributed

Appendix E.5B
Goodness-of-Fit Test Statistics

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.969	0.969	0.969	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.931	0.905	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.153	0.198	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cobalt (mg/kg) (rfaap bkgrd ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	79	0	79	56	23	29.11%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	23	0.11	0.84	0.587	0.73	0.286
Statistics (Detects Only)	56	5.9	130	22.23	13.3	23.94
Statistics (All: NDs treated as DL value)	79	0.11	130	15.93	11.4	22.41
Statistics (All: NDs treated as DL/2 value)	79	0.055	130	15.84	11.4	22.47
Statistics (Normal ROS Estimated Data)	79	-40.83	130	8.784	11.4	29.44
Statistics (Gamma ROS Estimated Data)	79	1E-09	130	17.57	11.9	21.54
Statistics (Lognormal ROS Estimated Data)	79	1.86	130	16.76	11.4	21.87

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.78	1.721	12.49	2.795	0.701	0.251
Statistics (NDs = DL)	0.61	0.595	26.11	1.758	1.787	1.017
Statistics (NDs = DL/2)	0.523	0.511	30.31	1.556	2.08	1.337
Statistics (Gamma ROS Estimates)	0.504	0.494	34.83	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	2.331	0.947	0.406

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.767	0.788	0.789	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.263	0.118	Data Not Normal
Lilliefors (NDs = DL)	0.24	0.0997	Data Not Normal
Lilliefors (NDs = DL/2)	0.241	0.0997	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.17	0.0997	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.914	0.965	0.969	0.961

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.203	0.765	
Kolmogorov-Smirnov (Detects Only)	0.162	0.121	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.127	0.807	
Kolmogorov-Smirnov (NDs = DL)	0.155	0.105	Data Not Gamma Distributed

Appendix E.5B
Goodness-of-Fit Test Statistics

Anderson-Darling (NDs = DL/2)	2.851	0.816	
Kolmogorov-Smirnov (NDs = DL/2)	0.171	0.106	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	9.036	0.818	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.36	0.106	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.956	0.941	0.924	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.13	0.118	Data Not Lognormal
Lilliefors (NDs = DL)	0.213	0.0997	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.251	0.0997	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0915	0.0997	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Arsenic (mg/kg)(area p ts)
Background Data: Arsenic (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Data	20	79
Number of Non-Detect Data	0	3
Number of Detect Data	20	76
Minimum Non-Detect	N/A	0.09
Maximum Non-Detect	N/A	0.12
Percent Non detects	0.00%	3.80%
Minimum Detected	0.618	1.2
Maximum Detected	4.3	35.9
Mean of Detected Data	1.645	4.989
Median of Detected Data	1.555	3.2
SD of Detected Data	0.924	5.36

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	-4.758
Critical z (0.95)	1.645
P-Value	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Aluminum (mg/kg)(area p ts)
Background Data: Aluminum (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	20	79
Number of Distinct Observations	20	75
Minimum	3620	3620
Maximum	18200	47900
Mean	10017	14204
Median	10350	12100
SD	4290	9433
SE of Mean	959.2	1061

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	809
WMW Test U-Stat	599
WMW Critical Value (0.050)	1441
Approximate P-Value	0.952

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Antimony (mg/kg)(area p ts)
Background Data: Antimony (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Data	20	38
Number of Missing Values	0	41
Number of Non-Detect Data	19	38
Number of Detect Data	1	0
Minimum Non-Detect	0.2	0.23
Maximum Non-Detect	7.14	0.36
Percent Non detects	95.00%	100.00%
Minimum Detected	10.5	N/A
Maximum Detected	10.5	N/A
Mean of Detected Data	10.5	N/A
Median of Detected Data	10.5	N/A
SD of Detected Data	N/A	N/A

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	1.378
Critical z (0.95)	1.645
P-Value	0.084

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Cobalt (mg/kg)(area p ts)
Background Data: Cobalt (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Data	20	79
Number of Non-Detect Data	0	23
Number of Detect Data	20	56
Minimum Non-Detect	N/A	0.11
Maximum Non-Detect	N/A	0.84
Percent Non detects	0.00%	29.11%
Minimum Detected	2.65	5.9
Maximum Detected	13.5	130
Mean of Detected Data	8.191	22.23
Median of Detected Data	8	13.3
SD of Detected Data	3.269	23.94

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	-1.254
Critical z (0.95)	1.645
P-Value	0.895

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

t-Test Site vs Background Comparison for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean Less Than or Equal to Background Mean (Form 1)
Alternative Hypothesis	Site or AOC Mean Greater Than the Background Mean

Area of Concern Data: Iron (mg/kg)(area p ts)
Background Data: Iron (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	20	79
Number of Distinct Observations	20	72
Minimum	6880	7250
Maximum	27500	67700
Mean	15993	26963
Median	16450	25200
SD	6883	11990
SE of Mean	1539	1349

Site vs Background Two-Sample t-Test

H0: Mu of Site - Mu of Background <= 0

Method	DF	t-Test Value	Critical t (0.050)	P-Value
Pooled (Equal Variance)	97	-3.922	1.661	1
Satterthwaite (Unequal Variance)	51.9	-5.36	1.675	1

Pooled SD 11174.783
Conclusion with Alpha = 0.050

*** Student t (Pooled) Test: Do Not Reject H0, Conclude Site <= Background**
*** Satterthwaite Test: Do Not Reject H0, Conclude Site <= Background**

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Test of Equality of Variances

Numerator DF	Denominator DF	F-Test Value	P-Value
78	19	3.034	0.008

Conclusion with Alpha = 0.05
* Two variances are not equal

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Manganese (mg/kg)(area p ts)
Background Data: Manganese (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	20	79
Number of Distinct Observations	20	78
Minimum	130	16.7
Maximum	1240	2040
Mean	487.7	471.4
Median	458.3	359
SD	313.2	467.1
SE of Mean	70.02	52.55

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1124
WMW Test U-Stat	914
WMW Critical Value (0.050)	1441
Approximate P-Value	0.141

Appendix E.5B
RFAAP Area P Total Soil vs Background Statistical Comparisons

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\Area P_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Vanadium (mg/kg)(area p ts)
Background Data: Vanadium (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	20	79
Number of Distinct Observations	19	76
Minimum	10.8	12.2
Maximum	49.8	114
Mean	25.96	45.84
Median	21.6	41.4
SD	13.11	20.38
SE of Mean	2.931	2.293

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	538.5
WMW Test U-Stat	328.5
WMW Critical Value (0.050)	1441
Approximate P-Value	1

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background

Appendix F

Screening Level Ecological Risk Assessment

Appendix F-1

Site Reconnaissance Photos

Photo F-1. Area P Facing North (with conveyer structure shown).

Photo F-2. Area P Facing West (with conveyer structure shown).

Photo F-3. Area P Facing East (with conveyer structure shown).

Appendix F-2

SLERA Supporting Information

Table F-1
Data Used to Model Exposure[a] in the Indicator Wildlife Species

Indicator Species	Body Weight Range (average) (kg)	Average Home Range (ha) [ac]	Maximum Dietary Intake[b] (kg[dw]/day)	Average Dietary Intake[c] (kg[dw]/day)	Soil/Sed. Intake[d] (%Diet) (Avg – Max) (kg[dw]/day)	Maximum Water Intake[b] (L/day)	Average Water Intake[c] (L/day)	Trophic Level	Dietary Composition
Meadow vole (*Microtus pennsylvanicus*)	0.0170-0.0524 (0.037)	0.036 [0.089]	0.010	0.0080	(2.4%) 0.00019-0.00024	0.0070	0.0051	Herbivore	Plants: 100%
Short-tailed shrew *(Blarina brevicauda)*	0.0125-0.0225 (0.015)	0.39 [0.96]	0.0030	0.0022	(10.4%) 0.00023-0.00031	0.0033	0.0023	Insectivore	Terr. Inverts: 100%
American robin *(Turdus migratorius)*	0.0635-0.103 (0.0773)	0.48 [1.2]	0.020	0.016	(4%) 0.00064-0.00080	0.013	0.011	Omnivore	Plants: 62% Terr Inverts: 38%
Red-tailed hawk (*Buteo jamaicensis*)	0.957-1.235 (1.134)	842 [2081]	0.063	0.059	(0%)	0.068	0.064	Carnivore	Mammals: 76% Birds: 24%
Red fox *(Vulpes vulpes)*	2.95-7.04 (4.53)	892 [2204]	0.34	0.24	(2.8%) 0.0067-0.0095	0.57	0.39	Carnivore	Mammals: 65% Birds: 14% Plants: 17% Terr. Inverts: 4%
Great blue heron (*Ardea herodias*)	2.20-2.58 (2.34)	8.4 [21]	0.11	0.10	(2%) 0.0020-0.0022	0.11	0.10	Piscivore	Fish: 96% Aq. Inverts: 4%
Mink *(Mustela vison)*	0.55-1.73 (1.02)	14.1 [35]	0.11	0.070	(2%) 0.0014-0.0022	0.16	0.10	Omnivore	Plants: 18% Fish: 65% Aq. Inverts: 12% Birds: 2.5% Mammals: 2.5%

[a] From USEPA (1993), except as noted.
[b] Maximum dietary and water intake based on appropriate allometric equation using maximum body weight.
[c] Average dietary and water intake based on appropriate allometric equation using average body weight.
[d] Soil/sediment ingestion rate based on estimated percent soil in diet (dry weight), and maximum or average dietary intake.

Allometric equations for mammals and birds from USEPA (1993), as follows, where FI = food ingestion (dry weight [dw]), WI = water ingestion, Wt = body weight, kg = kilogram, L = liter, and g = gram:

Table E-1.1 (Continued)

FI (kg/day) = 0.0687 $Wt^{0.822}$ for mammals (shrew, red fox, and mink),
FI (g/day) = 0.577 $Wt^{0.727}$ for herbivores (meadow vole),
FI (g/day) = 0.301 $Wt^{0.751}$ for non-passerine birds (red-tail hawk, great blue heron),
FI (g/day) = 0.398 $Wt^{0.850}$ for passerine birds (American robin).
WI (L/day) = 0.099 $Wt^{0.90}$ (Wt in kg) for mammals,
WI (L/day) = 0.059 $Wt^{0.67}$ (Wt in kg) for birds.

ha = hectare
ac = acre, and a hectare = 2.471 acres.

Notes:
The soil ingestion rate for the shrew set equal to the rate for the American woodcock (10.4% of diet), as both species feed predominantly on earthworms.
The soil ingestion rate for the American robin set equal to 48% of the American woodcock value (0.38 x 10.4% = 4%), based on a robin diet of 38% invertebrates (earthworms).

Wildlife EEQ Hazard Summary for AOC P

Receptor	Tier 1[a]		Tier 2[b]	
	NOAEL-Based EEQ	LOAEL-Based EEQ	NOAEL-Based EEQ	LOAEL-Based EEQ
Meadow vole	66	37	16	8.7
Hazard Driver(s)[c]:				
Short-tailed shrew	503	141	26	10
Hazard Driver(s)[c]:				
American robin	291	56	24	5.2
Hazard Driver(s)[c]:				
Red-tailed hawk	9.9	2.7	0.001	0.0003
Hazard Driver(s)[c]:				
Red fox	26	10	0.001	0.001
Hazard Driver(s)[c]:				
Mink	72	19	0.06	0.02
Hazard Driver(s)[c]:				
Great blue heron	6.0	1.0	0.03	0.01
Hazard Driver(s)[c]:				

[a] Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
[b] Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR less than or equal to 1.
[c] Hazard drivers are those chemicals contributing the most to the total estimated EEQ, and the primary route of exposure associated with this driver.

Notes:
EEQ = Ecological Effects Quotient
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
FHR = Fraction home range
BW = Body weight
BAF/BCF = Bioaccumulation Factor/Bioconcentration Factor
EPC = Exposure point concentration

Wildlife EEQ Hazard Summary for AOC P

TABLE F-2
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR MEADOW VOLES AT AREA P

Hazard Estimate - Tier 1
Meadow Vole

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	1.00E-06	2.50E-07	0.00E+00	1.00E-05	2.50E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	5.69E-03	NA	0.00E+00	0.00E+00	8.48E-04	0.00E+00	0.00E+00	6.54E-03	8	1.40E-01	1.75E-02	3.74E-01	6.80E-01	8.50E-02	7.69E-02
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA	2.19E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	1.00E+00	2.50E-01	0.00E+00	1.00E+01	2.50E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	0.00E+00	6.07E-02	NA	0.00E+00	0.00E+00	9.49E-02	0.00E+00	0.00E+00	1.56E-01	4	1.26E-01	3.15E-02	4.94E+00	1.26E+00	3.15E-01	4.94E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	0.00E+00	5.51E-03	NA	0.00E+00	0.00E+00	2.19E-01	0.00E+00	0.00E+00	2.24E-01	4	1.00E+00	2.50E-01	8.97E-01	1.00E+01	2.50E+00	8.97E-02
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	0.00E+00	8.41E-01	NA	0.00E+00	0.00E+00	1.44E+00	0.00E+00	0.00E+00	2.28E+00	4	2.74E+03	6.84E+02	3.33E-03	1.37E+04	3.42E+03	6.66E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	0.00E+00	4.90E+00	NA	0.00E+00	0.00E+00	1.15E+01	0.00E+00	0.00E+00	1.64E+01	8	1.17E+01	1.46E+00	1.12E+01	1.51E+01	1.89E+00	8.69E+00
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	0.00E+00	2.12E+00	NA	0.00E+00	0.00E+00	2.59E+00	0.00E+00	0.00E+00	4.71E+00	4	8.00E+00	2.00E+00	2.35E+00	8.00E+01	2.00E+01	2.35E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	1.28E-03	NA	NA	0.00E+00	5.93E-02	0.00E+00	0.00E+00	6.06E-02	8	1.00E+00	1.25E-01	4.85E-01	5.00E+00	6.25E-01	9.70E-02
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	0.00E+00	4.72E-01	NA	0.00E+00	0.00E+00	8.79E-01	0.00E+00	0.00E+00	1.35E+00	4	4.00E+01	1.00E+01	1.35E-01	8.00E+01	2.00E+01	6.75E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	0.00E+00	7.91E-02	NA	0.00E+00	0.00E+00	2.00E+00	0.00E+00	0.00E+00	2.08E+00	4	2.00E-01	5.00E-02	4.16E+01	3.30E-01	8.25E-02	2.52E+01
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	2.53E-02	NA	NA	0.00E+00	1.47E-02	0.00E+00	0.00E+00	4.00E-02	4	2.22E+01	5.55E+00	7.21E-03	2.22E+02	5.55E+01	7.21E-04
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	0.00E+00	1.50E+01	NA	0.00E+00	0.00E+00	1.35E+02	0.00E+00	0.00E+00	1.50E+02	4	1.60E+02	4.00E+01	3.74E+00	3.20E+02	8.00E+01	1.87E+00
																					Hazard Index (Total EEQ):				6.6E+01			3.7E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	1	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00024	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.01	kg/d
Body weight =	0.017	kg
Home range =	0.089	acres
Water intake rate =	0.007	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-3
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR MEADOW VOLES AT AREA P

Hazard Estimate - Tier 2
Meadow Vole

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	1.00E-06	2.50E-07	0.00E+00	1.00E-05	2.50E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	2.07E-03	NA	0.00E+00	0.00E+00	3.12E-04	0.00E+00	0.00E+00	2.38E-03	8	1.40E-01	1.75E-02	1.36E-01	6.80E-01	8.50E-02	2.80E-02
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA	4.67E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	1.00E+00	2.50E-01	0.00E+00	1.00E+01	2.50E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	4	6.15E-01	1.54E-01	0.00E+00	3.07E+00	7.68E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	6.56E-03	6.56E-03	0.00E+00	0.00E+00	1.39E-02	NA	0.00E+00	0.00E+00	2.19E-02	0.00E+00	0.00E+00	3.58E-02	4	1.26E-01	3.15E-02	1.14E+00	1.26E+00	3.15E-01	1.14E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	0.00E+00	1.83E-03	NA	0.00E+00	0.00E+00	7.65E-02	0.00E+00	0.00E+00	7.83E-02	4	1.00E+00	2.50E-01	3.13E-01	1.00E+01	2.50E+00	3.13E-02
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	0.00E+00	1.58E-01	NA	0.00E+00	0.00E+00	2.73E-01	0.00E+00	0.00E+00	4.31E-01	4	2.74E+03	6.84E+02	6.30E-04	1.37E+04	3.42E+03	1.26E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	0.00E+00	8.42E-01	NA	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00	3.99E+00	8	1.17E+01	1.46E+00	2.73E+00	1.51E+01	1.89E+00	2.11E+00
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	0.00E+00	4.63E-01	NA	0.00E+00	0.00E+00	7.16E-01	0.00E+00	0.00E+00	1.18E+00	4	8.00E+00	2.00E+00	5.90E-01	8.00E+01	2.00E+01	5.90E-02
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	2.87E-04	NA	NA	0.00E+00	1.68E-02	0.00E+00	0.00E+00	1.70E-02	8	1.00E+00	1.25E-01	1.36E-01	5.00E+00	6.25E-01	2.73E-02
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	0.00E+00	9.50E-02	NA	0.00E+00	0.00E+00	2.08E-01	0.00E+00	0.00E+00	3.03E-01	4	4.00E+01	1.00E+01	3.03E-02	8.00E+01	2.00E+01	1.51E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	0.00E+00	1.89E-02	NA	0.00E+00	0.00E+00	4.64E-01	0.00E+00	0.00E+00	4.83E-01	4	2.00E-01	5.00E-02	9.67E+00	3.30E-01	8.25E-02	5.86E+00
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	2.88E-03	NA	NA	0.00E+00	1.70E-03	0.00E+00	0.00E+00	4.57E-03	4	2.22E+01	5.55E+00	8.24E-04	2.22E+02	5.55E+01	8.24E-05
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	0.00E+00	3.21E+00	NA	0.00E+00	0.00E+00	3.70E+01	0.00E+00	0.00E+00	4.02E+01	4	1.60E+02	4.00E+01	1.00E+00	3.20E+02	8.00E+01	5.02E-01
																					Hazard Index (Total EEQ):				1.6E+01			8.7E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	1	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00019	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.008	kg/d
Body weight =	0.037	kg
Home range =	0.089	acres
Water intake rate =	0.0051	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-4
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR SHORT-TAILED SHREWS AT AREA P

Hazard Estimate - Tier 1
Short-tailed Shrew

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E-06	1.25E-07	0.00E+00	1.00E-05	1.25E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	9.99E-03	NA	0.00E+00	6.31E+00	0.00E+00	0.00E+00	0.00E+00	6.32E+00	8	1.40E-01	1.75E-02	3.61E+02	6.80E-01	8.50E-02	7.43E+01
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E+00	1.25E-01	0.00E+00	1.00E+01	1.25E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	0.00E+00	1.07E-01	NA	0.00E+00	1.62E-01	0.00E+00	0.00E+00	0.00E+00	2.69E-01	8	1.26E-01	1.58E-02	1.71E+01	1.26E+00	1.58E-01	1.71E+00
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	0.00E+00	9.67E-03	NA	0.00E+00	9.40E-01	0.00E+00	0.00E+00	0.00E+00	9.50E-01	8	1.00E+00	1.25E-01	7.60E+00	1.00E+01	1.25E+00	7.60E-01
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	0.00E+00	1.48E+00	NA	0.00E+00	4.38E+00	0.00E+00	0.00E+00	0.00E+00	5.86E+00	8	2.74E+03	3.42E+02	1.71E-02	1.37E+04	1.71E+03	3.42E-03
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	0.00E+00	8.61E+00	NA	0.00E+00	4.29E+01	0.00E+00	0.00E+00	0.00E+00	5.15E+01	8	1.17E+01	1.46E+00	3.52E+01	1.51E+01	1.89E+00	2.73E+01
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	0.00E+00	3.72E+00	NA	0.00E+00	1.10E+01	0.00E+00	0.00E+00	0.00E+00	1.47E+01	8	8.00E+00	1.00E+00	1.47E+01	8.00E+01	1.00E+01	1.47E+00
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	2.26E-03	NA	NA	7.21E-01	0.00E+00	0.00E+00	0.00E+00	7.23E-01	8	1.00E+00	1.25E-01	5.78E+00	5.00E+00	6.25E-01	1.16E+00
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	0.00E+00	8.28E-01	NA	0.00E+00	6.25E+01	0.00E+00	0.00E+00	0.00E+00	6.34E+01	8	4.00E+01	5.00E+00	1.27E+01	8.00E+01	1.00E+01	6.34E+00
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	0.00E+00	1.39E-01	NA	0.00E+00	7.87E-01	0.00E+00	0.00E+00	0.00E+00	9.26E-01	8	2.00E-01	2.50E-02	3.70E+01	3.30E-01	4.13E-02	2.24E+01
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	4.44E-02	NA	NA	8.79E-01	0.00E+00	0.00E+00	0.00E+00	9.23E-01	8	2.22E+01	2.78E+00	3.33E-01	2.22E+02	2.78E+01	3.33E-02
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	0.00E+00	2.63E+01	NA	0.00E+00	2.02E+02	0.00E+00	0.00E+00	0.00E+00	2.28E+02	8	1.60E+02	2.00E+01	1.14E+01	3.20E+02	4.00E+01	5.70E+00
																						Hazard Index (Total EEQ):			5.0E+02			1.4E+02

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	1	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00031	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.003	kg/d
Body weight =	0.0125	kg
Home range =	0.96	acres
Water intake rate =	0.0033	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-5
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR SHORT-TAILED SHREWS AT AREA P

Hazard Estimate - Tier 2
Short-tailed Shrew

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E-06	1.25E-07	0.00E+00	1.00E-05	1.25E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	2.43E-03	NA	0.00E+00	1.07E-01	0.00E+00	0.00E+00	0.00E+00	1.10E-01	8	1.40E-01	1.75E-02	6.26E+00	6.80E-01	8.50E-02	1.29E+00
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E+00	1.25E-01	0.00E+00	1.00E+01	1.25E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	6.56E-03	6.56E-03	0.00E+00	0.00E+00	1.63E-02	NA	0.00E+00	2.81E-02	0.00E+00	0.00E+00	0.00E+00	4.44E-02	8	1.26E-01	1.58E-02	2.82E+00	1.26E+00	1.58E-01	2.82E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	0.00E+00	2.15E-03	NA	0.00E+00	2.10E-01	0.00E+00	0.00E+00	0.00E+00	2.13E-01	8	1.00E+00	1.25E-01	1.70E+00	1.00E+01	1.25E+00	1.70E-01
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	0.00E+00	1.86E-01	NA	0.00E+00	5.44E-01	0.00E+00	0.00E+00	0.00E+00	7.30E-01	8	2.74E+03	3.42E+02	2.13E-03	1.37E+04	1.71E+03	4.27E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	0.00E+00	9.90E-01	NA	0.00E+00	4.88E+00	0.00E+00	0.00E+00	0.00E+00	5.87E+00	8	1.17E+01	1.46E+00	4.01E+00	1.51E+01	1.89E+00	3.11E+00
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	0.00E+00	5.45E-01	NA	0.00E+00	1.76E+00	0.00E+00	0.00E+00	0.00E+00	2.30E+00	8	8.00E+00	1.00E+00	2.30E+00	8.00E+01	1.00E+01	2.30E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	3.37E-04	NA	NA	2.41E-02	0.00E+00	0.00E+00	0.00E+00	2.44E-02	8	1.00E+00	1.25E-01	1.96E-01	5.00E+00	6.25E-01	3.91E-02
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	0.00E+00	1.12E-01	NA	0.00E+00	7.30E-01	0.00E+00	0.00E+00	0.00E+00	8.41E-01	8	4.00E+01	5.00E+00	1.68E-01	8.00E+01	1.00E+01	8.41E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	0.00E+00	2.23E-02	NA	0.00E+00	1.40E-01	0.00E+00	0.00E+00	0.00E+00	1.62E-01	8	2.00E-01	2.50E-02	6.47E+00	3.30E-01	4.13E-02	3.92E+00
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	3.38E-03	NA	NA	6.61E-02	0.00E+00	0.00E+00	0.00E+00	6.95E-02	8	2.22E+01	2.78E+00	2.51E-02	2.22E+02	2.78E+01	2.51E-03
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	0.00E+00	3.77E+00	NA	0.00E+00	4.08E+01	0.00E+00	0.00E+00	0.00E+00	4.46E+01	8	1.60E+02	2.00E+01	2.23E+00	3.20E+02	4.00E+01	1.11E+00
																						Hazard Index (Total EEQ):			2.6E+01			1.0E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	1	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00023	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.0022	kg/d
Body weight =	0.015	kg
Home range =	0.96	acres
Water intake rate =	0.0023	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	3.94E-01	unitless

TABLE F-6
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR AMERICAN ROBINS AT AREA P

Hazard Estimate - Tier 1
American Robin

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-05	1.75E-06	0.00E+00	1.40E-04	1.75E-05	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	5.08E-03	NA	0.00E+00	3.15E+00	2.82E-04	0.00E+00	0.00E+00	3.15E+00	8	1.80E-01	2.25E-02	1.40E+02	1.80E+00	2.25E-01	1.40E+01
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	0.00E+00	5.42E-02	NA	0.00E+00	8.09E-02	3.15E-02	0.00E+00	0.00E+00	1.67E-01	8	5.14E+00	6.43E-01	2.59E-01	1.28E+01	1.61E+00	1.04E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	0.00E+00	4.91E-03	NA	0.00E+00	4.69E-01	7.26E-02	0.00E+00	0.00E+00	5.46E-01	8	1.45E+00	1.81E-01	3.01E+00	2.00E+01	2.50E+00	2.19E-01
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	0.00E+00	7.51E-01	NA	0.00E+00	2.18E+00	4.77E-01	0.00E+00	0.00E+00	3.41E+00	8	2.66E+00	3.33E-01	1.03E+01	2.78E+00	3.48E-01	9.82E+00
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	0.00E+00	4.37E+00	NA	0.00E+00	2.14E+01	3.82E+00	0.00E+00	0.00E+00	2.96E+01	8	4.70E+01	5.88E+00	5.03E+00	6.20E+01	7.75E+00	3.82E+00
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	0.00E+00	1.89E+00	NA	0.00E+00	5.49E+00	8.60E-01	0.00E+00	0.00E+00	8.24E+00	8	3.85E+00	4.81E-01	1.71E+01	1.93E+01	2.41E+00	3.42E+00
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	1.15E-03	NA	NA	3.59E-01	1.97E-02	0.00E+00	0.00E+00	3.80E-01	8	4.50E-01	5.63E-02	6.76E+00	9.00E-01	1.13E-01	3.38E+00
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	0.00E+00	4.21E-01	NA	0.00E+00	3.12E+01	2.92E-01	0.00E+00	0.00E+00	3.19E+01	8	7.74E+01	9.68E+00	3.30E+00	1.07E+02	1.34E+01	2.38E+00
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	0.00E+00	7.06E-02	NA	0.00E+00	3.93E-01	6.65E-01	0.00E+00	0.00E+00	1.13E+00	8	5.00E-01	6.25E-02	1.80E+01	1.00E+00	1.25E-01	9.02E+00
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	2.26E-02	NA	NA	4.38E-01	4.89E-03	0.00E+00	0.00E+00	4.66E-01	8	1.78E+02	2.23E+01	2.09E-02	8.90E+02	1.11E+02	4.18E-03
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	0.00E+00	1.34E+01	NA	0.00E+00	1.01E+02	4.47E+01	0.00E+00	0.00E+00	1.59E+02	8	1.45E+01	1.81E+00	8.75E+01	1.31E+02	1.64E+01	9.69E+00

Hazard Index (Total EEQ): 2.9E+02 5.6E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.62	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.38	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.0008	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.02	kg/d
Body weight =	0.0635	kg
Home range =	1.2	acres
Water intake rate =	0.013	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-7
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR AMERICAN ROBINS AT AREA P

Hazard Estimate - Tier 2
American Robin

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-05	1.75E-06	0.00E+00	1.40E-04	1.75E-05	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	1.05E-03	NA	0.00E+00	4.59E-02	5.83E-05	0.00E+00	0.00E+00	4.71E-02	8	1.80E-01	2.25E-02	2.09E+00	1.80E+00	2.25E-01	2.09E-01
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	6.56E-03	6.56E-03	0.00E+00	0.00E+00	7.04E-03	NA	0.00E+00	1.21E-02	4.10E-03	0.00E+00	0.00E+00	2.32E-02	8	5.14E+00	6.43E-01	3.61E-02	1.28E+01	1.61E+00	1.45E-02
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	0.00E+00	9.28E-04	NA	0.00E+00	9.03E-02	1.43E-02	0.00E+00	0.00E+00	1.06E-01	8	1.45E+00	1.81E-01	5.82E-01	2.00E+01	2.50E+00	4.22E-02
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	0.00E+00	8.03E-02	NA	0.00E+00	2.34E-01	5.10E-02	0.00E+00	0.00E+00	3.65E-01	8	2.66E+00	3.33E-01	1.10E+00	2.78E+00	3.48E-01	1.05E+00
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	0.00E+00	4.28E-01	NA	0.00E+00	2.09E+00	5.88E-01	0.00E+00	0.00E+00	3.11E+00	8	4.70E+01	5.88E+00	5.29E-01	6.20E+01	7.75E+00	4.01E-01
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	0.00E+00	2.35E-01	NA	0.00E+00	7.54E-01	1.34E-01	0.00E+00	0.00E+00	1.12E+00	8	3.85E+00	4.81E-01	2.33E+00	1.93E+01	2.41E+00	4.67E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	1.46E-04	NA	NA	1.03E-02	3.13E-03	0.00E+00	0.00E+00	1.36E-02	8	4.50E-01	5.63E-02	2.42E-01	9.00E-01	1.13E-01	1.21E-01
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	0.00E+00	4.82E-02	NA	0.00E+00	3.13E-01	3.88E-02	0.00E+00	0.00E+00	4.00E-01	8	7.74E+01	9.68E+00	4.14E-02	1.07E+02	1.34E+01	2.99E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	0.00E+00	9.62E-03	NA	0.00E+00	5.99E-02	8.68E-02	0.00E+00	0.00E+00	1.56E-01	8	5.00E-01	6.25E-02	2.50E+00	1.00E+00	1.25E-01	1.25E+00
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	1.46E-03	NA	NA	2.84E-02	3.17E-04	0.00E+00	0.00E+00	3.02E-02	8	1.78E+02	2.23E+01	1.36E-03	8.90E+02	1.11E+02	2.71E-04
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	0.00E+00	1.63E+00	NA	0.00E+00	1.75E+01	6.91E+00	0.00E+00	0.00E+00	2.61E+01	8	1.45E+01	1.81E+00	1.44E+01	1.31E+02	1.64E+01	1.59E+00
																							Hazard Index (Total EEQ):			2.4E+01			5.2E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.62	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.38	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00064	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.016	kg/d
Body weight =	0.0773	kg
Home range =	1.2	acres
Water intake rate =	0.011	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	3.15E-01	unitless

TABLE F-8
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED-TAILED HAWKS AT AREA P

Hazard Estimate - Tier 1
Red-tailed Hawk

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-05	1.75E-06	0.00E+00	1.40E-04	1.75E-05	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	2.02E-02	6.37E-03	2.65E-02	8	1.80E-01	2.25E-02	1.18E+00	1.80E+00	2.25E-01	1.18E-01
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	1.30E-03	4.10E-04	1.71E-03	8	5.14E+00	6.43E-01	2.66E-03	1.28E+01	1.61E+00	1.06E-03
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	9.12E-03	2.88E-03	1.20E-02	8	1.45E+00	1.81E-01	6.62E-02	2.00E+01	2.50E+00	4.80E-03
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	2.33E-01	7.37E-02	3.07E-01	8	2.66E+00	3.33E-01	9.23E-01	2.78E+00	3.48E-01	8.83E-01
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	8.95E-01	2.83E-01	1.18E+00	8	4.70E+01	5.88E+00	2.00E-01	6.20E+01	7.75E+00	1.52E-01
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	4.95E-01	1.56E-01	6.51E-01	8	3.85E+00	4.81E-01	1.35E+00	1.93E+01	2.41E+00	2.71E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	4.76E-03	1.50E-03	6.27E-03	8	4.50E-01	5.63E-02	1.11E-01	9.00E-01	1.13E-01	5.57E-02
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	2.00E-01	6.33E-02	2.64E-01	8	7.74E+01	9.68E+00	2.73E-02	1.07E+02	1.34E+01	1.97E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	6.31E-02	1.99E-02	8.31E-02	8	5.00E-01	6.25E-02	1.33E+00	1.00E+00	1.25E-01	6.65E-01
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	3.58E-04	1.13E-04	4.71E-04	8	1.78E+02	2.23E+01	2.12E-05	8.90E+02	1.11E+02	4.24E-06
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	6.42E+00	2.03E+00	8.45E+00	8	1.45E+01	1.81E+00	4.66E+00	1.31E+02	1.64E+01	5.16E-01
																						Hazard Index (Total EEQ):				9.9E+00			2.7E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.76	unitless
Bird diet fraction =	0.24	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.063	kg/d
Body weight =	0.957	kg
Home range =	2081	acres
Water intake rate =	0.068	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-9
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR RED -TAILED HAWKS AT AREA P

Hazard Estimate - Tier 2
Red-tailed Hawk

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-05	1.75E-06	0.00E+00	1.40E-04	1.75E-05	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	1.45E-06	4.57E-07	1.90E-06	8	1.80E-01	2.25E-02	8.46E-05	1.80E+00	2.25E-01	8.46E-06
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	5.00E-03	5.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	9.71E-08	3.06E-08	1.28E-07	8	5.14E+00	6.43E-01	1.99E-07	1.28E+01	1.61E+00	7.96E-08
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	1.25E-06	3.96E-07	1.65E-06	8	1.45E+00	1.81E-01	9.11E-06	2.00E+01	2.50E+00	6.60E-07
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	2.06E-05	6.52E-06	2.71E-05	8	2.66E+00	3.33E-01	8.16E-05	2.78E+00	3.48E-01	7.81E-05
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	1.15E-04	3.64E-05	1.52E-04	8	4.70E+01	5.88E+00	2.58E-05	6.20E+01	7.75E+00	1.96E-05
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	5.67E-05	1.79E-05	7.47E-05	8	3.85E+00	4.81E-01	1.55E-04	1.93E+01	2.41E+00	3.10E-05
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	7.71E-08	2.43E-08	1.01E-07	8	4.50E-01	5.63E-02	1.80E-06	9.00E-01	1.13E-01	9.02E-07
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	2.19E-05	6.90E-06	2.88E-05	8	7.74E+01	9.68E+00	2.97E-06	1.07E+02	1.34E+01	2.15E-06
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	7.75E-06	2.45E-06	1.02E-05	8	5.00E-01	6.25E-02	1.63E-04	1.00E+00	1.25E-01	8.15E-05
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.61E-08	5.08E-09	2.12E-08	8	1.78E+02	2.23E+01	9.51E-10	8.90E+02	1.11E+02	1.90E-10
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	0.00E+00	8.88E-04	2.81E-04	1.17E-03	8	1.45E+01	1.81E+00	6.45E-04	1.31E+02	1.64E+01	7.14E-05
																						Hazard Index (Total EEQ):			1.2E-03			2.9E-04

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.76	unitless
Bird diet fraction =	0.24	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.059	kg/d
Body weight =	1.134	kg
Home range =	2081	acres
Water intake rate =	0.064	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.82E-04	unitless

TABLE F-10
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED FOXES AT AREA P

Hazard Estimate - Tier 1
Red Fox

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E-06	1.25E-07	0.00E+00	1.00E-05	1.25E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	1.30E-03	NA	0.00E+00	1.21E-01	2.82E-05	3.02E-02	6.50E-03	1.59E-01	8	1.40E-01	1.75E-02	9.10E+00	6.80E-01	8.50E-02	1.87E+00
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E+00	1.25E-01	0.00E+00	1.00E+01	1.25E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	0.00E+00	1.38E-02	NA	0.00E+00	3.12E-03	3.16E-03	1.94E-03	4.18E-04	2.25E-02	8	1.26E-01	1.58E-02	1.43E+00	1.26E+00	1.58E-01	1.43E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	0.00E+00	1.26E-03	NA	0.00E+00	1.81E-02	7.29E-03	1.37E-02	2.94E-03	4.32E-02	8	1.00E+00	1.25E-01	3.46E-01	1.00E+01	1.25E+00	3.46E-02
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	0.00E+00	1.92E-01	NA	0.00E+00	8.41E-02	4.79E-02	3.49E-01	7.52E-02	7.48E-01	8	2.74E+03	3.42E+02	2.19E-03	1.37E+04	1.71E+03	4.37E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	0.00E+00	1.12E+00	NA	0.00E+00	8.24E-01	3.83E-01	1.34E+00	2.89E-01	3.95E+00	8	1.17E+01	1.46E+00	2.70E+00	1.51E+01	1.89E+00	2.09E+00
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	0.00E+00	4.83E-01	NA	0.00E+00	2.11E-01	8.63E-02	7.41E-01	1.60E-01	1.68E+00	8	8.00E+00	1.00E+00	1.68E+00	8.00E+01	1.00E+01	1.68E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	2.93E-04	NA	NA	1.38E-02	1.98E-03	7.13E-03	1.54E-03	2.48E-02	8	1.00E+00	1.25E-01	1.98E-01	5.00E+00	6.25E-01	3.96E-02
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	0.00E+00	1.08E-01	NA	0.00E+00	1.20E+00	2.93E-02	3.00E-01	6.47E-02	1.70E+00	8	4.00E+01	5.00E+00	3.41E-01	8.00E+01	1.00E+01	1.70E-01
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	0.00E+00	1.80E-02	NA	0.00E+00	1.51E-02	6.67E-02	9.45E-02	2.04E-02	2.15E-01	8	2.00E-01	2.50E-02	8.59E+00	3.30E-01	4.13E-02	5.21E+00
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	5.76E-03	NA	NA	1.69E-02	4.91E-04	5.36E-04	1.16E-04	2.38E-02	8	2.22E+01	2.78E+00	8.57E-03	2.22E+02	2.78E+01	8.57E-04
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	0.00E+00	3.41E+00	NA	0.00E+00	3.87E+00	4.49E+00	9.62E+00	2.07E+00	2.35E+01	8	1.60E+02	2.00E+01	1.17E+00	3.20E+02	4.00E+01	5.87E-01
																					Hazard Index (Total EEQ):				2.6E+01			1.0E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.17	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.04	unitless
Mammal diet fraction =	0.65	unitless
Bird diet fraction =	0.14	unitless
Soil ingestion rate =	0.0095	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.34	kg/d
Body weight =	2.95	kg
Home range =	2204	acres
Water intake rate =	0.57	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-11
TIER 2 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED FOXES AT AREA P

Hazard Estimate - Tier 2
Red Fox

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E-06	1.25E-07	0.00E+00	1.00E-05	1.25E-06	0.00E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	1.02E-07	NA	0.00E+00	6.74E-07	2.23E-09	1.19E-06	2.56E-07	2.22E-06	8	1.40E-01	1.75E-02	1.27E-04	6.80E-01	8.50E-02	2.62E-05
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.40E-01	1.75E-02	0.00E+00	6.80E-01	8.50E-02	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	1.00E+00	1.25E-01	0.00E+00	1.00E+01	1.25E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	0.00E+00	8	6.15E-01	7.69E-02	0.00E+00	3.07E+00	3.84E-01	0.00E+00
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	5.00E-03	5.00E-03	0.00E+00	0.00E+00	6.85E-07	NA	0.00E+00	1.77E-07	1.56E-07	7.98E-08	1.72E-08	1.12E-06	8	1.26E-01	1.58E-02	7.08E-05	1.26E+00	1.58E-01	7.08E-06
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	0.00E+00	9.03E-08	NA	0.00E+00	1.32E-06	5.47E-07	1.03E-06	2.22E-07	3.21E-06	8	1.00E+00	1.25E-01	2.57E-05	1.00E+01	1.25E+00	2.57E-06
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	0.00E+00	7.81E-06	NA	0.00E+00	3.43E-06	1.95E-06	1.70E-05	3.65E-06	3.38E-05	8	2.74E+03	3.42E+02	9.88E-08	1.37E+04	1.71E+03	1.98E-08
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	0.00E+00	4.16E-05	NA	0.00E+00	3.07E-05	2.25E-05	9.49E-05	2.04E-05	2.10E-04	8	1.17E+01	1.46E+00	1.44E-04	1.51E+01	1.89E+00	1.11E-04
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	0.00E+00	2.29E-05	NA	0.00E+00	1.11E-05	5.12E-06	4.67E-05	1.00E-05	9.58E-05	8	8.00E+00	1.00E+00	9.58E-05	8.00E+01	1.00E+01	9.58E-06
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	1.42E-08	NA	NA	1.52E-07	1.20E-07	6.34E-08	1.37E-08	3.63E-07	8	1.00E+00	1.25E-01	2.90E-06	5.00E+00	6.25E-01	5.80E-07
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	0.00E+00	4.69E-06	NA	0.00E+00	4.59E-06	1.48E-06	1.80E-05	3.87E-06	3.26E-05	8	4.00E+01	5.00E+00	6.52E-06	8.00E+01	1.00E+01	3.26E-06
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	0.00E+00	9.36E-07	NA	0.00E+00	8.78E-07	3.32E-06	6.37E-06	1.37E-06	1.29E-05	8	2.00E-01	2.50E-02	5.15E-04	3.30E-01	4.13E-02	3.12E-04
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	1.42E-07	NA	NA	4.16E-07	1.21E-08	1.32E-08	2.85E-09	5.86E-07	8	2.22E+01	2.78E+00	2.11E-07	2.22E+02	2.78E+01	2.11E-08
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	0.00E+00	1.59E-04	NA	0.00E+00	2.57E-04	2.64E-04	7.30E-04	1.57E-04	1.57E-03	8	1.60E+02	2.00E+01	7.84E-05	3.20E+02	4.00E+01	3.92E-05
																							Hazard Index (Total EEQ):			1.1E-03			5.1E-04

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.17	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.04	unitless
Mammal diet fraction =	0.65	unitless
Bird diet fraction =	0.14	unitless
Soil ingestion rate =	0.0067	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.24	kg/d
Body weight =	4.53	kg
Home range =	2204	acres
Water intake rate =	0.39	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.72E-04	unitless

TABLE F-12
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR MINKS AT AREA P

Hazard Estimate - Tier 1
Mink

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	2.08E-08	0.00E+00	NA	5.25E-06	NA	NA	NA	NA	5.27E-06	8	1.00E-06	1.25E-07	4.21E+01	1.00E-05	1.25E-06	4.21E+00
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	1.68E-04	0.00E+00	NA	2.21E-02	0.00E+00	5.19E-05	2.02E-03	2.02E-03	2.63E-02	1	1.40E-01	1.40E-01	1.88E-01	6.80E-01	6.80E-01	3.87E-02
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	1.67E-04	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	1.67E-04	1	1.40E-01	1.40E-01	1.19E-03	6.80E-01	6.80E-01	2.46E-04
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	6.48E-05	0.00E+00	NA	6.18E-04	NA	NA	NA	NA	6.83E-04	8	6.15E-01	7.69E-02	8.88E-03	3.07E+00	3.84E-01	1.78E-03
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	7.20E-05	0.00E+00	NA	5.75E-04	NA	NA	NA	NA	6.47E-04	8	1.00E+00	1.25E-01	5.17E-03	1.00E+01	1.25E+00	5.17E-04
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	9.88E-05	0.00E+00	NA	1.54E-03	NA	NA	NA	NA	1.64E-03	8	6.15E-01	7.69E-02	2.13E-02	3.07E+00	3.84E-01	4.27E-03
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	6.04E-05	0.00E+00	NA	1.07E-03	NA	NA	NA	NA	1.13E-03	8	6.15E-01	7.69E-02	1.46E-02	3.07E+00	3.84E-01	2.93E-03
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	6.08E-05	0.00E+00	NA	9.48E-04	NA	NA	NA	NA	1.01E-03	8	6.15E-01	7.69E-02	1.31E-02	3.07E+00	3.84E-01	2.63E-03
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	8.44E-05	0.00E+00	NA	1.16E-03	NA	NA	NA	NA	1.24E-03	8	6.15E-01	7.69E-02	1.62E-02	3.07E+00	3.84E-01	3.24E-03
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	6.04E-05	0.00E+00	NA	1.04E-03	NA	NA	NA	NA	1.10E-03	8	6.15E-01	7.69E-02	1.43E-02	3.07E+00	3.84E-01	2.86E-03
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	6.00E-03	0.00E+00	NA	2.48E-02	0.00E+00	5.81E-03	1.30E-04	1.30E-04	3.69E-02	8	1.26E-01	1.58E-02	2.34E+00	1.26E+00	1.58E-01	2.34E-01
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	2.56E-04	0.00E+00	NA	1.23E-02	0.00E+00	1.34E-02	9.12E-04	9.12E-04	2.77E-02	8	1.00E+00	1.25E-01	2.22E-01	1.00E+01	1.25E+00	2.22E-02
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	5.36E-02	0.00E+00	NA	1.51E-01	0.00E+00	8.80E-02	2.33E-02	2.33E-02	3.39E-01	8	2.74E+03	3.42E+02	9.90E-04	1.37E+04	1.71E+03	1.98E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	3.92E-02	0.00E+00	NA	1.23E+00	0.00E+00	7.04E-01	8.95E-02	8.95E-02	2.16E+00	1	1.17E+01	1.17E+01	1.84E-01	1.51E+01	1.51E+01	1.43E-01
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	5.00E-01	0.00E+00	NA	1.82E+00	0.00E+00	1.59E-01	4.95E-02	4.95E-02	2.58E+00	8	8.00E+00	1.00E+00	2.58E+00	8.00E+01	1.00E+01	2.58E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	3.63E-03	4.76E-04	4.76E-04	4.58E-03	1	1.00E+00	1.00E+00	4.58E-03	5.00E+00	5.00E+00	9.16E-04
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	3.60E-02	0.00E+00	NA	5.01E-01	0.00E+00	5.38E-02	2.00E-02	2.00E-02	6.31E-01	8	4.00E+01	5.00E+00	1.26E-01	8.00E+01	1.00E+01	6.31E-02
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	2.56E-02	0.00E+00	NA	3.23E-01	0.00E+00	1.23E-01	6.31E-03	6.31E-03	4.83E-01	8	2.00E-01	2.50E-02	1.93E+01	3.30E-01	4.13E-02	1.17E+01
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	9.02E-04	3.58E-05	3.58E-05	9.74E-04	8	2.22E+01	2.78E+00	3.51E-04	2.22E+02	2.78E+01	3.51E-05
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	2.02E+00	0.00E+00	NA	9.10E+01	0.00E+00	8.25E+00	6.42E-01	6.42E-01	1.03E+02	8	1.60E+02	2.00E+01	5.13E+00	3.20E+02	4.00E+01	2.56E+00
																					Hazard Index (Total EEQ):				7.2E+01			1.9E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.18	unitless
Fish diet fraction =	0.65	unitless
Aq. Invert diet fraction =	0.12	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.025	unitless
Bird diet fraction =	0.025	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0022	kg/d
Food ingestion rate =	0.11	kg/d
Body weight =	0.55	kg
Home range =	35	acres
Water intake rate =	0.16	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-13
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR MINKS AT AREA P

Hazard Estimate - Tier 2
Mink

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	7.70E-11	0.00E+00	NA	1.76E-09	NA	NA	NA	NA	1.84E-09	8	1.00E-06	1.25E-07	1.47E-02	1.00E-05	1.25E-06	1.47E-03
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	6.23E-07	0.00E+00	NA	1.74E-05	0.00E+00	1.92E-07	3.73E-06	3.73E-06	2.57E-05	1	1.40E-01	1.40E-01	1.84E-04	6.80E-01	6.80E-01	3.78E-05
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	6.20E-07	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	6.20E-07	1	1.40E-01	1.40E-01	4.43E-06	6.80E-01	6.80E-01	9.11E-07
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	2.40E-07	0.00E+00	NA	2.29E-06	NA	NA	NA	NA	2.53E-06	8	6.15E-01	7.69E-02	3.29E-05	3.07E+00	3.84E-01	6.60E-06
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	2.67E-07	0.00E+00	NA	2.13E-06	NA	NA	NA	NA	2.40E-06	8	1.00E+00	1.25E-01	1.92E-05	1.00E+01	1.25E+00	1.92E-06
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	3.66E-07	0.00E+00	NA	5.71E-06	NA	NA	NA	NA	6.08E-06	8	6.15E-01	7.69E-02	7.91E-05	3.07E+00	3.84E-01	1.58E-05
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	2.24E-07	0.00E+00	NA	3.95E-06	NA	NA	NA	NA	4.17E-06	8	6.15E-01	7.69E-02	5.43E-05	3.07E+00	3.84E-01	1.09E-05
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	2.25E-07	0.00E+00	NA	3.51E-06	NA	NA	NA	NA	3.74E-06	8	6.15E-01	7.69E-02	4.87E-05	3.07E+00	3.84E-01	9.75E-06
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	3.13E-07	0.00E+00	NA	4.30E-06	NA	NA	NA	NA	4.61E-06	8	6.15E-01	7.69E-02	6.00E-05	3.07E+00	3.84E-01	1.20E-05
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	2.24E-07	0.00E+00	NA	3.84E-06	NA	NA	NA	NA	4.06E-06	8	6.15E-01	7.69E-02	5.29E-05	3.07E+00	3.84E-01	1.06E-05
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	6.56E-03	6.56E-03	0.00E+00	2.22E-05	0.00E+00	NA	1.91E-05	0.00E+00	1.35E-05	3.28E-07	3.28E-07	5.55E-05	8	1.26E-01	1.58E-02	3.52E-03	1.26E+00	1.58E-01	3.52E-04
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	9.49E-07	0.00E+00	NA	3.42E-06	0.00E+00	4.72E-05	3.24E-06	3.24E-06	5.80E-05	8	1.00E+00	1.25E-01	4.64E-04	1.00E+01	1.25E+00	4.64E-05
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	1.99E-04	0.00E+00	NA	1.19E-04	0.00E+00	1.68E-04	5.32E-05	5.32E-05	5.93E-04	8	2.74E+03	3.42E+02	1.73E-06	1.37E+04	1.71E+03	3.46E-07
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	1.45E-04	0.00E+00	NA	1.36E-03	0.00E+00	1.94E-03	2.98E-04	2.98E-04	4.04E-03	1	1.17E+01	1.17E+01	3.45E-04	1.51E+01	1.51E+01	2.67E-04
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	1.85E-03	0.00E+00	NA	7.89E-04	0.00E+00	4.42E-04	1.46E-04	1.46E-04	3.38E-03	8	8.00E+00	1.00E+00	3.38E-03	8.00E+01	1.00E+01	3.38E-04
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	1.03E-05	1.99E-07	1.99E-07	1.07E-05	1	1.00E+00	1.00E+00	1.07E-05	5.00E+00	5.00E+00	2.15E-06
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	1.33E-04	0.00E+00	NA	3.89E-04	0.00E+00	1.28E-04	5.64E-05	5.64E-05	7.63E-04	8	4.00E+01	5.00E+00	1.53E-04	8.00E+01	1.00E+01	7.63E-05
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	9.49E-05	0.00E+00	NA	2.39E-04	0.00E+00	2.87E-04	2.00E-05	2.00E-05	6.60E-04	8	2.00E-01	2.50E-02	2.64E-02	3.30E-01	4.13E-02	1.60E-02
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	1.05E-06	4.15E-08	4.15E-08	1.13E-06	8	2.22E+01	2.78E+00	4.07E-07	2.22E+02	2.78E+01	4.07E-08
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	7.47E-03	0.00E+00	NA	8.68E-02	0.00E+00	2.28E-02	2.29E-03	2.29E-03	1.22E-01	8	1.60E+02	2.00E+01	6.08E-03	3.20E+02	4.00E+01	3.04E-03

Hazard Index (Total EEQ): 5.6E-02 2.2E-02

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.18	unitless
Fish diet fraction =	0.65	unitless
Aq. Invert diet fraction =	0.12	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.025	unitless
Bird diet fraction =	0.025	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0014	kg/d
Food ingestion rate =	0.07	kg/d
Body weight =	1.02	kg
Home range =	35	acres
Water intake rate =	0.1	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.08E-02	unitless

TABLE F-14
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR GREAT BLUE HERONS AT AREA P

Hazard Estimate - Tier 1
Great Blue Heron

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	4.21E+01	NA	NA	NA	NA	0.00E+00	5.20E-09	0.00E+00	NA	4.37E-07	NA	NA	NA	NA	4.42E-07	8	1.40E-05	1.75E-06	2.53E-01	1.40E-04	1.75E-05	2.53E-02
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	2.19E+01	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	4.20E-05	0.00E+00	NA	1.84E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-03	8	1.80E-01	2.25E-02	8.36E-02	1.80E+00	2.25E-01	8.36E-03
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	4.18E-05	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	4.18E-05	8	1.80E-01	2.25E-02	1.86E-03	1.80E+00	2.25E-01	1.86E-04
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	1.62E-05	0.00E+00	NA	5.15E-05	NA	NA	NA	NA	6.77E-05	8	5.53E+02	6.91E+01	9.80E-07	2.77E+03	3.46E+02	1.96E-07
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	1.80E-05	0.00E+00	NA	4.79E-05	NA	NA	NA	NA	6.59E-05	8	5.53E+02	6.91E+01	9.53E-07	2.77E+03	3.46E+02	1.91E-07
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	2.47E-05	0.00E+00	NA	1.28E-04	NA	NA	NA	NA	1.53E-04	8	5.53E+02	6.91E+01	2.22E-06	2.77E+03	3.46E+02	4.43E-07
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	1.51E-05	0.00E+00	NA	8.88E-05	NA	NA	NA	NA	1.04E-04	8	5.53E+02	6.91E+01	1.50E-06	2.77E+03	3.46E+02	3.01E-07
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	1.52E-05	0.00E+00	NA	7.90E-05	NA	NA	NA	NA	9.42E-05	8	5.53E+02	6.91E+01	1.36E-06	2.77E+03	3.46E+02	2.73E-07
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	2.11E-05	0.00E+00	NA	9.66E-05	NA	NA	NA	NA	1.18E-04	8	5.53E+02	6.91E+01	1.70E-06	2.77E+03	3.46E+02	3.41E-07
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	1.51E-05	0.00E+00	NA	8.64E-05	NA	NA	NA	NA	1.01E-04	8	5.53E+02	6.91E+01	1.47E-06	2.77E+03	3.46E+02	2.94E-07
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	4.30E+00	mg/kg	NA	6.90E-01	1.57E-01	3.75E-02	6.03E-03	6.03E-03	0.00E+00	1.50E-03	0.00E+00	NA	2.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.57E-03	8	5.14E+00	6.43E-01	5.56E-03	1.28E+01	1.61E+00	2.22E-03
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.90E-01	mg/kg	NA	7.99E+00	1.00E+01	9.54E-01	4.68E-01	4.68E-01	0.00E+00	6.40E-05	0.00E+00	NA	1.02E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-03	8	1.45E+00	1.81E-01	6.00E-03	2.00E+01	2.50E+00	4.35E-04
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	5.96E+01	mg/kg	NA	4.68E-01	3.06E-01	4.10E-02	7.82E-02	7.82E-02	0.00E+00	1.34E-02	0.00E+00	NA	1.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.59E-02	8	2.66E+00	3.33E-01	7.80E-02	2.78E+00	3.48E-01	7.47E-02
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	3.47E+02	mg/kg	NA	5.25E+00	5.15E-01	5.63E-02	5.16E-02	5.16E-02	0.00E+00	9.80E-03	0.00E+00	NA	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-01	8	4.70E+01	5.88E+00	1.92E-02	6.20E+01	7.75E+00	1.45E-02
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	1.50E+02	mg/kg	NA	6.07E-01	3.06E-01	2.94E-02	6.60E-02	6.60E-02	0.00E+00	1.25E-01	0.00E+00	NA	1.52E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-01	8	3.85E+00	4.81E-01	5.75E-01	1.93E+01	2.41E+00	1.15E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	9.10E-02	mg/kg	NA	NA	3.30E+01	1.11E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	4.50E-01	5.63E-02	0.00E+00	9.00E-01	1.13E-01	0.00E+00
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	3.34E+01	mg/kg	NA	2.32E+00	7.80E+00	4.47E-02	1.20E-01	1.20E-01	0.00E+00	9.00E-03	0.00E+00	NA	4.18E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.08E-02	8	7.74E+01	9.68E+00	5.25E-03	1.07E+02	1.34E+01	3.80E-03
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	5.60E+00	mg/kg	NA	2.10E+00	5.86E-01	6.08E-01	2.25E-01	2.25E-01	0.00E+00	6.40E-03	0.00E+00	NA	2.69E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.33E-02	8	5.00E-01	6.25E-02	5.32E-01	1.00E+00	1.25E-01	2.66E-01
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	1.79E+00	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	1.78E+02	2.23E+01	0.00E+00	8.90E+02	1.11E+02	0.00E+00
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	1.06E+03	mg/kg	NA	7.53E+00	7.93E-01	2.16E-01	1.21E-01	1.21E-01	0.00E+00	5.04E-01	0.00E+00	NA	7.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.09E+00	8	1.45E+01	1.81E+00	4.46E+00	1.31E+02	1.64E+01	4.94E-01
																						Hazard Index (Total EEQ):			6.0E+00			1.0E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0.96	unitless
Aq. Invert diet fraction =	0.04	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0022	kg/d
Food ingestion rate =	0.11	kg/d
Body weight =	2.2	kg
Home range =	21	acres
Water intake rate =	0.11	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-15
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR GREAT BLUE HERONS AT AREA P

Hazard Estimate - Tier 2
Great Blue Heron

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	5.20E-06	mg/kg	0.00E+00	mg/kg	NA	3.82E+00	NA	NA	NA	NA	0.00E+00	7.99E-11	0.00E+00	NA	6.10E-10	NA	NA	NA	NA	6.90E-10	8	1.40E-05	1.75E-06	3.94E-04	1.40E-04	1.75E-05	3.94E-05
Aroclor 1254	0.00E+00	mg/L	4.20E-02	mg/kg	4.03E-01	mg/kg	NA	4.67E+00	4.60E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	6.46E-07	0.00E+00	NA	6.04E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.68E-06	8	1.80E-01	2.25E-02	2.97E-04	1.80E+00	2.25E-01	2.97E-05
Aroclor 1260	0.00E+00	mg/L	4.18E-02	mg/kg	0.00E+00	mg/kg	NA		NA	NA	NA	NA	0.00E+00	6.43E-07	0.00E+00	NA	0.00E+00	NA	NA	NA	NA	6.43E-07	8	1.80E-01	2.25E-02	2.86E-05	1.80E+00	2.25E-01	2.86E-06
Benzo(a)anthracene	0.00E+00	mg/L	1.62E-02	mg/kg	0.00E+00	mg/kg	NA	1.59E+00	NA	NA	NA	NA	0.00E+00	2.49E-07	0.00E+00	NA	7.93E-07	NA	NA	NA	NA	1.04E-06	8	5.53E+02	6.91E+01	1.51E-08	2.77E+03	3.46E+02	3.01E-09
Benzo(a)pyrene	0.00E+00	mg/L	1.80E-02	mg/kg	0.00E+00	mg/kg	NA	1.33E+00	NA	NA	NA	NA	0.00E+00	2.77E-07	0.00E+00	NA	7.37E-07	NA	NA	NA	NA	1.01E-06	8	5.53E+02	6.91E+01	1.47E-08	2.77E+03	3.46E+02	2.93E-09
Benzo(b)fluoranthene	0.00E+00	mg/L	2.47E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	3.80E-07	0.00E+00	NA	1.98E-06	NA	NA	NA	NA	2.36E-06	8	5.53E+02	6.91E+01	3.41E-08	2.77E+03	3.46E+02	6.82E-09
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.94E+00	NA	NA	NA	NA	0.00E+00	2.32E-07	0.00E+00	NA	1.37E-06	NA	NA	NA	NA	1.60E-06	8	5.53E+02	6.91E+01	2.31E-08	2.77E+03	3.46E+02	4.62E-09
Benzo(k)fluoranthene	0.00E+00	mg/L	1.52E-02	mg/kg	0.00E+00	mg/kg	NA	2.60E+00	NA	NA	NA	NA	0.00E+00	2.34E-07	0.00E+00	NA	1.22E-06	NA	NA	NA	NA	1.45E-06	8	5.53E+02	6.91E+01	2.10E-08	2.77E+03	3.46E+02	4.19E-09
Chrysene	0.00E+00	mg/L	2.11E-02	mg/kg	0.00E+00	mg/kg	NA	2.29E+00	NA	NA	NA	NA	0.00E+00	3.25E-07	0.00E+00	NA	1.49E-06	NA	NA	NA	NA	1.81E-06	8	5.53E+02	6.91E+01	2.62E-08	2.77E+03	3.46E+02	5.24E-09
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	1.51E-02	mg/kg	0.00E+00	mg/kg	NA	2.86E+00	NA	NA	NA	NA	0.00E+00	2.32E-07	0.00E+00	NA	1.33E-06	NA	NA	NA	NA	1.56E-06	8	5.53E+02	6.91E+01	2.26E-08	2.77E+03	3.46E+02	4.52E-09
Arsenic	0.00E+00	mg/L	1.50E+00	mg/kg	2.70E+00	mg/kg	NA	1.43E-01	1.80E-01	3.75E-02	6.56E-03	6.56E-03	0.00E+00	2.31E-05	0.00E+00	NA	6.60E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-05	8	5.14E+00	6.43E-01	4.62E-05	1.28E+01	1.61E+00	1.85E-05
Cadmium	0.00E+00	mg/L	6.40E-02	mg/kg	3.56E-01	mg/kg	NA	6.00E-01	1.02E+01	9.94E-01	4.91E-01	4.91E-01	0.00E+00	9.85E-07	0.00E+00	NA	1.18E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-06	8	1.45E+00	1.81E-01	1.20E-05	2.00E+01	2.50E+00	8.66E-07
Chromium	0.00E+00	mg/L	1.34E+01	mg/kg	3.08E+01	mg/kg	NA	1.00E-01	3.06E-01	4.10E-02	9.33E-02	9.33E-02	0.00E+00	2.06E-04	0.00E+00	NA	4.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-04	8	2.66E+00	3.33E-01	7.44E-04	2.78E+00	3.48E-01	7.12E-04
Copper	0.00E+00	mg/L	9.80E+00	mg/kg	1.64E+02	mg/kg	NA	1.56E+00	5.15E-01	8.87E-02	9.79E-02	9.79E-02	0.00E+00	1.51E-04	0.00E+00	NA	4.69E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.20E-04	8	4.70E+01	5.88E+00	1.06E-04	6.20E+01	7.75E+00	8.00E-05
Lead	0.00E+00	mg/L	1.25E+02	mg/kg	9.02E+01	mg/kg	NA	7.10E-02	3.37E-01	3.67E-02	8.76E-02	8.76E-02	0.00E+00	1.92E-03	0.00E+00	NA	2.73E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-03	8	3.85E+00	4.81E-01	4.56E-03	1.93E+01	2.41E+00	9.13E-04
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	5.59E-02	mg/kg	NA	NA	7.47E+00	1.39E+00	1.92E-01	1.92E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	4.50E-01	5.63E-02	0.00E+00	9.00E-01	1.13E-01	0.00E+00
Nickel	0.00E+00	mg/L	9.00E+00	mg/kg	1.85E+01	mg/kg	NA	4.86E-01	6.83E-01	5.19E-02	1.64E-01	1.64E-01	0.00E+00	1.38E-04	0.00E+00	NA	1.35E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-04	8	7.74E+01	9.68E+00	2.82E-05	1.07E+02	1.34E+01	2.04E-05
Selenium	0.00E+00	mg/L	6.40E+00	mg/kg	3.69E+00	mg/kg	NA	4.20E-01	6.55E-01	5.82E-01	2.92E-01	2.92E-01	0.00E+00	9.85E-05	0.00E+00	NA	8.27E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04	8	5.00E-01	6.25E-02	2.90E-03	1.00E+00	1.25E-01	1.45E-03
Silver	0.00E+00	mg/L	0.00E+00	mg/kg	5.60E-01	mg/kg	NA	NA	2.05E+00	1.40E-02	4.00E-03	4.00E-03	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	1.78E+02	2.23E+01	0.00E+00	8.90E+02	1.11E+02	0.00E+00
Zinc	0.00E+00	mg/L	5.04E+02	mg/kg	6.25E+02	mg/kg	NA	1.94E+00	1.13E+00	2.74E-01	1.98E-01	1.98E-01	0.00E+00	7.75E-03	0.00E+00	NA	3.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.78E-02	8	1.45E+01	1.81E+00	2.08E-02	1.31E+02	1.64E+01	2.31E-03
																						Hazard Index (Total EEQ):				3.0E-02			5.6E-03

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0.96	unitless
Aq. Invert diet fraction =	0.04	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.002	kg/d
Food ingestion rate =	0.1	kg/d
Body weight =	2.34	kg
Home range =	21	acres
Water intake rate =	0.1	L/d
Site Area =	0.378	acres
Frac. home range (FHR) =	1.80E-02	unitless

Table F-16
Recommended Bioaccumulation/Bioconcentration Factors or Regression Equations Utilized for the Soil-to-Plant Pathway at Area P

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Alternate Regression Equation [b, c]	Alternate BAF/BCF	Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
2,3,7,8-TCDD-TE	--[d]	Log (PC)= -0.578(Log[Kow])+1.588	--	0.0039	Travis & Arms K_{ow} Regression Eq.	0.0039	Travis & Arms K_{ow} Regression Eq.
Aroclor 1254	--	Log (PC)= -0.578(Log[Kow])+1.588	--	0.0036	Travis & Arms K_{ow} Regression Eq.	0.0036	Travis & Arms K_{ow} Regression Eq.
Benzo(a)anthracene	ln (Pc)= 0.5944(ln[soil])-2.7078	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(a)pyrene	ln (Pc)= 0.9750(ln[soil])-2.0615	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(b)fluoranthene	Pc= 0.31(soil)	--	--	0.31	Recommended BAF from USEPA (2007)	0.31	Recommended BAF from USEPA (2007)
Benzo(g,h,i)perylene	ln (Pc)= 1.1829(ln[soil])-0.9313	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(k)fluoranthene	ln (Pc)= 0.8595(ln[soil])-2.1579	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chrysene	ln (Pc)= 0.5944(ln[soil])-2.7078	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Fluoranthene	Pc= 0.50(soil)	--	--	0.50	Recommended BAF from USEPA (2007)	0.50	Recommended BAF from USEPA (2007)
Indeno(1,2,3-cd)pyrene	Pc= 0.11(soil)	--	--	0.11	Recommended BAF from USEPA (2007)	0.11	Recommended BAF from USEPA (2007)
Pyrene	Pc= 0.72(soil)	--	--	0.72	Recommended BAF from USEPA (2007)	0.72	Recommended BAF from USEPA (2007)
Arsenic	Pc= 0.03752(soil)	--	--	0.038	Recommended BAF from USEPA (2007)	0.038	Recommended BAF from USEPA (2007)
Cadmium	ln (Pc)= 0.546(ln[soil])-0.475	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chromium	Pc= 0.041(soil)	--	--	0.041	Recommended BAF from USEPA (2007)	0.041	Recommended BAF from USEPA (2007)
Copper	ln (Pc)= 0.394(ln[soil])+0.668	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Lead	ln (Pc)= 0.561(ln[soil])-1.328	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Mercury	--	ln (Pc)=0.54(ln[soil])-1.00	--	Regression Eq.	Efroymson, et al. Regression Equation	Regression Eq.	Efroymson, et al. Regression Equation
Nickel	ln (Pc)= 0.748(ln[soil])-2.223	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Selenium	ln (Pc)= 1.104(ln[soil])-0.677	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Silver	Pc= 0.014(soil)	--	--	0.014	Recommended BAF from USEPA (2007)	0.014	Recommended BAF from USEPA (2007)
Zinc	ln (Pc)= 0.554(ln[soil])+1.575	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)

Notes: Pc (plant tissue concentration [mg/kg d.w.]); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor); log K_{ow} (octanol/water partition coefficient).

If a soil to plant BAF/BCF was not available from USEPA, 2007, Ecological Soil Screening Level Guidance, an alternate value was used (see below).

[a] USEPA, 2007, Ecological Soil Screening Level Guidance, Soil to Plant Uptake Equations, OSWER Directive 9285.7-55.

[b] for organic chemicals: BAF estimated using Travis and Arms (1988) K_{ow} regression equation, with the log K_{ow} from USEPA, 2007, Estimation Programs Interface (EPI) Suite, v3.20 (Tier 2).

Constituent	Tier 1 and Tier 2 Log K_{ow}	Reference
2,3,7,8-TCDD TE	6.92	USEPA EPI Suite, 2007
Aroclor 1254	6.98	USEPA EPI Suite, 2007

[c] for inorganic chemicals: Efroymson, R.A., et. al., 2001, Uptake of Inorganic Chemicals from Soil by Plant Leaves: Regressions of Field Data, Environ. Tox. Chem., 20:2561-2571.

[d] -- indicates that a BAF/BCF or regression equation is not available or not applicable.

$$\log PUF = -0.578 \log K_{ow} + 1.588$$

Organic Ufs

RME (Tier 1 and 2) - using EPI-Suite Kow

	Log Kow	log PUF	PUF
1,2,4-Trichlorobenzene	3.93	-0.68354	0.2072
2-amino-4,6-Dinitrotoluene	1.84	0.52448	3.3456
4-amino-2,6-Dinitrotoluene	1.84	0.52448	3.3456
alpha-Chlordane	6.26	-2.03028	0.0093
Heptachlor	5.86	-1.79908	0.0159
Heptachlor epoxide	4.56	-1.04768	0.0896
Nitroglycerin	1.51	0.71522	5.1906
1,2,3-Trichlorobenzene	3.93	-0.68354	0.2072
1,1,2,2-Tetrachloroethane	2.19	0.32218	2.0998
1,2-Dichlorobenzene	3.28	-0.30784	0.4922
1,3-Dichlorobenzene	3.28	-0.30784	0.4922
1,4-Dichlorobenzene	3.28	-0.30784	0.4922
1,3,5-Trinitrobenzene	1.45	0.7499	5.6221
2,4-Dinitrotoluene	2.18	0.32796	2.1279
4,4'-DDD	5.87	-1.80486	0.0157
4,4'-DDE	6.00	-1.88	0.0132
4,4'-DDT	6.79	-2.33662	0.0046
4-Chlorophenyl phenylether	#N/A	#N/A	#N/A
Endosulfan I	3.50	-0.435	0.3673
Endosulfan II	3.50	-0.435	0.3673
Endosulfan sulfate	3.64	-0.51592	0.3048
Endrin aldehyde	4.80	-1.1864	0.0651
Endrin ketone	4.99	-1.29622	0.0506
gamma-Chlordane	6.26	-2.03028	0.0093
Hexachlorobenzene	#N/A	#N/A	#N/A
Hexachlorobutadiene	#N/A	#N/A	#N/A
Hexachloroethane	#N/A	#N/A	#N/A
Methoxychlor	5.67	-1.68926	0.0205
2,3,7,8-TCDD TE	6.92	-2.41176	0.0039
2,4-D	#N/A	#N/A	#N/A
2,4-DNT	#N/A	#N/A	#N/A
2,6-DNT	#N/A	#N/A	#N/A
2-Methylnaphthalene	#N/A	#N/A	#N/A
Acenaphthene	#N/A	#N/A	#N/A
Aroclor 1254	6.98	-2.44644	0.0036
Aroclor 1260	#N/A	#N/A	#N/A
Carbazole	#N/A	#N/A	#N/A
Dalapon	#N/A	#N/A	#N/A
Dicamba	#N/A	#N/A	#N/A
Endosulfan sulfate	#N/A	#N/A	#N/A
Endrin	5.45	-1.5621	0.027
Endosulfan II	3.5	-0.435	0.367
Endosulfan sulfate	#N/A	#N/A	#N/A
Endrin aldehyde	4.8	-1.1864	0.065
Hexachlorobenzene	#N/A	#N/A	#N/A

Hexachloroethane	#N/A	#N/A	#N/A
MCPP	#N/A	#N/A	#N/A
Methoxychlor	5.67	-1.68926	0.020
n-Nitrosodiphenylamine	#N/A	#N/A	#N/A
p-Cymene	#N/A	#N/A	#N/A

vlookup Kow from table
#N/A
#N/A
#N/A
#N/A
#N/A
#N/A
#N/A
#N/A
#N/A
#N/A
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6.92
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#N/A
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Table F-17
Recommended Bioaccumulation/Bioconcentration Factors or Regression Equations Utilized for the Soil-to-Earthworm Pathway at Area P

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Sample, et al. 1998 [b]			Sample et al. 1999 [c]	Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
		Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF	Regression Equation				
2,3,7,8-TCDD-TE	-- [d]	11.011	22.229	42.068	ln (EW)=1.18(ln[soil])+3.53	42.068	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Aroclor 1254	--	6.67	15.909	65.227	ln (EW)=1.29(ln[soil])+1.79	65.227	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Benzo(a)anthracene	(EW)= 1.59(soil)	--	--	--	--	1.59	Recommended BAF (USEPA 2007)	1.59	Recommended BAF (USEPA 2007)
Benzo(a)pyrene	(EW)= 1.33(soil)	--	--	--	--	1.33	Recommended BAF (USEPA 2007)	1.33	Recommended BAF (USEPA 2007)
Benzo(b)fluoranthene	(EW)= 2.6(soil)	--	--	--	--	2.6	Recommended BAF (USEPA 2007)	2.6	Recommended BAF (USEPA 2007)
Benzo(g,h,i)perylene	(EW)= 2.94(soil)	--	--	--	--	2.94	Recommended BAF (USEPA 2007)	2.94	Recommended BAF (USEPA 2007)
Benzo(k)fluoranthene	(EW)= 2.6(soil)	--	--	--	--	2.6	Recommended BAF (USEPA 2007)	2.6	Recommended BAF (USEPA 2007)
Chrysene	(EW)= 2.29(soil)	--	--	--	--	2.29	Recommended BAF (USEPA 2007)	2.29	Recommended BAF (USEPA 2007)
Fluoranthene	(EW)= 3.04(soil)	--	--	--	--	3.04	Recommended BAF (USEPA 2007)	3.04	Recommended BAF (USEPA 2007)
Indeno(1,2,3-cd)pyrene	(EW)= 2.86(soil)	--	--	--	--	2.86	Recommended BAF (USEPA 2007)	2.86	Recommended BAF (USEPA 2007)
Pyrene	(EW)= 1.75(soil)	--	--	--	--	1.75	Recommended BAF (USEPA 2007)	1.75	Recommended BAF (USEPA 2007)
Arsenic	ln (EW)= 0.706(ln[soil])-1.421	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Cadmium	ln (EW)= 0.795(ln[soil])+2.114	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chromium	(EW)= 0.306(soil)	--	--	--	--	0.306	Recommended BAF (USEPA 2007)	0.306	Recommended BAF (USEPA 2007)
Copper	(EW)= 0.515(soil)	--	--	--	--	0.515	Recommended BAF (USEPA 2007)	0.515	Recommended BAF (USEPA 2007)
Lead	ln (EW)= 0.807(ln[soil])-0.218	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Mercury	--	1.693	20.625	33	ln (EW)=0.33(ln[soil])+0.078	33	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Nickel	--	1.059	4.73	7.8	ln (EW)= -1.54(ln[soil])+7.03	7.8	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Selenium	ln (EW)= 0.733(ln[soil])-0.075	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Silver	(EW)= 2.045(soil)	--	--	--	--	2.045	Recommended BAF (USEPA 2007)	2.045	Recommended BAF (USEPA 2007)
Zinc	ln (EW)= 0.328(ln[soil])+4.449	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)

Notes: EW (earthworm tissue concentration [mg/kg d.w.]); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor); log Kow (octanol/water partition coefficient); -- indicates that a BAF/BCF or regression equation is not available or not applicable.
Hierarchy for Selection of BAFs:

[a] USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), Soil to Earthworm Uptake Equations, OSWER Directive 9285.7-55.

[b] Sample, B. E, et. al., 1998. Development and Validation of Bioaccumulation Models for Earthworms, ES/ER/TM-220.

[c] Sample, B.E, et. al., 1999, Literature-Derived Bioaccumulation Models for Earthworms: Development and Validation, Environ. Toxicol. Chem., 18(9): 2110-2120 (models from Table 3 of publication).

$$BAF = \frac{((10^{(0.87*\log Kow-2)})/0.16)}{foc^{*}\ Koc}$$ (eq. from EcoSSL, 2007)

	use for Tier I foc (lower bound)	use for Tier II foc (arith mean)	Koc	log Kow
1,1,2,2-Tetrachloroethane	0.0169	0.0128	#REF!	#REF!
1,2,3-Trichlorobenzene	0.0169	0.0128	#REF!	#REF!
1,2,4-Trichlorobenzene	0.0169	0.0128	#REF!	#REF!
1,2-Dichlorobenzene	0.0169	0.0128	#REF!	#REF!
1,3-Dichlorobenzene	0.0169	0.0128	#REF!	#REF!
1,4-Dichlorobenzene	0.0169	0.0128	#REF!	#REF!
1,3,5-Trinitrobenzene	0.0169	0.0128	#REF!	#REF!
2,4-Dinitrotoluene	0.0169	0.0128	#REF!	#REF!
2,4,6-Trinitrotoluene	0.0169	0.0128	#REF!	#REF!
2-amino-4,6-DNT	0.0169	0.0128	#REF!	#REF!
4-amino-2,6-DNT	0.0169	0.0128	#REF!	#REF!
alpha-Chlordane	0.0169	0.0128	#REF!	#REF!
Aroclor 1254	0.0169	0.0128	#REF!	#REF!
Endosulfan I	0.0169	0.0128	#REF!	#REF!
Endosulfan II	0.0169	0.0128	#REF!	#REF!
Endosulfan sulfate	0.0169	0.0128	#REF!	#REF!
Endrin	0.0169	0.0128	#REF!	#REF!
Endrin aldehyde	0.0169	0.0128	#REF!	#REF!
Endrin ketone	0.0169	0.0128	#REF!	#REF!
gamma-Chlordane	0.0169	0.0128	#REF!	#REF!
Heptachlor	0.0169	0.0128	#REF!	#REF!
Heptachlor epoxide	0.0169	0.0128	#REF!	#REF!
Heptachlor	0.0169	0.0128	#REF!	#REF!
Heptachlor epoxide	0.0169	0.0128	#REF!	#REF!
Indeno(1,2,3-cd)pyrene	0.0169	0.0128	#REF!	#REF!
Methoxychlor	0.0169	0.0128	#REF!	#REF!
Nitroglycerin	0.0169	0.0128	#REF!	#REF!
BaP (test)	0.00374	0.00374	9.69E+05	6.11

(10^(0.87*log Kow - 2.0))/(0.16`	foc(min)*Koc	foc(arith mean)*Koc	**Tier I BAF lower bound**
#REF!	#REF!	#REF!	**#REF!**
#REF!	#REF!	#REF!	**#REF!**
#REF!	#REF!	#REF!	**#REF!**
#REF!	#REF!	#REF!	**#REF!**
#REF!	#REF!	#REF!	**#REF!**
#REF!	#REF!	#REF!	**#REF!**
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12929.449	3624.06	3624.06	**3.57**

Tier II BAF arith mean
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Table F-18
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Soil-to-Small Mammal and Bird Pathways at Area P

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Sample et al., 1998 [b]						Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
		Insectivore Median BAF/BCF	Herbivore Median BAF/BCF	Omnivore Median BAF/BCF	General [c] Median BAF/BCF	General [c] Maximum BAF/BCF	General [c] 90th percentile BAF/BCF				
2,3,7,8-TCDD-TE	--[d]	--	1.2857	0.7783	1.07	2.2	2.2	2.2	General maximum value	2.2	General 90th percentile value
Aroclor 1254	--	--	--	--	--	--	--	1 [f]	Conservative value for Tier 2 organics see footnote "f"	0.5 [f]	Conservative value for Tier 2 organics see footnote "f"
Benzo(a)anthracene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(a)pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(b)fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(g,h,i)perylene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(k)fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Chrysene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Indeno(1,2,3-cd)pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Arsenic	ln(mam)= 0.8188(ln[soil])-4.8471	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Cadmium	ln(mam)= 0.4723(ln[soil])-1.2571	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Chromium	ln(mam)= 0.7338(ln[soil])-1.4599	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Copper	ln(mam)= 0.144(ln[soil])+2.042	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Lead	ln(mam)= 0.4422(ln[soil])+0.0761	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Mercury	--	1.046 [g]	0.0239 [g]	0.0543	0.0543	1.046	0.192	1.046	General maximum value	0.192	General 90th percentile value
Nickel	ln(mam)= 0.4658(ln[soil])-0.2462	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Selenium	ln(mam)= 0.3764(ln[soil])-0.4158	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Silver	(mam)= 0.004(soil)	--	--	--	--	--	--	0.004	Recommended BAF (USEPA 2007)	0.004	Recommended BAF (USEPA 2007)
Zinc	ln(mam)= 0.0706(ln[soil])+4.3632	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)

Notes: mam (mammal or bird tissue concentration [mg/kg d.w.]); diet (concentration in diet [mg/kg d.w.] assuming 100% earthworm consumption); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor).

Bird BAF/BCF values were based on the recommended small mammal BAF/BCF values, as bird uptake values are not readily available.

[a] USEPA, 2007, Ecological Soil Screening Level Guidance, Soil to Small Mammal Uptake Equations, OSWER Directive 9285.7-55.

[b] Sample et al., 1998, Development and Validation of Bioaccumulation Models for Small Mammals, ES/ER/TM-219.

[c] General = combination dataset used for insectivore, herbivore, and omnivore receptors to estimate a "general" receptor BAF/BCF value.

[d] "--" indicates that a BAF/BCF is not available or not applicable.

[e] Uptake assumed to be negligible (USEPA 2005).

[f] Known bioaccumulative organics (TCDD and TCDF) have BAFs/BCFs of 1.1 and 0.13 (median) and 2.2 and 0.16 (maximum) from Sample et al. (1998).

Conservative BAF/BCF default values of 1 and 0.5 were selected for other organics at the site, as they are not expected to be as bioaccumulative as TCDD/TCDF.

[g] Only one BAF/BCF value available for exposure to mercury in soil (median is also 90th percentile value and maximum value).

Table F-19
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Sediment-to-Aquatic Invertebrate Pathway at Area P

Constituent	Bechtel Jacobs [a]			Recommended Tier 1 BAF/BCF [b, c]	Recommended Tier 2 BAF/BCF [b, c]	Rationale for Recommended Tier 2 BAF/BCF
	Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF			
2,3,7,8-TCDD-TE	--[d]	--	--	42.07	ln (EW)=1.18(ln[sed])+3.53	Soil Tier 2 BAF/BCF
Aroclor 1254	4.67	21.89	51.31	21.89	4.67	Median sediment BAF/BCF
Aroclor 1260	4.67	21.89	51.31	21.89	4.67	Median sediment BAF/BCF
Benzo(a)anthracene	--	--	--	1.59	1.59	Soil Tier 2 BAF/BCF
Benzo(a)pyrene	--	--	--	1.33	1.33	Soil Tier 2 BAF/BCF
Benzo(b)fluoranthene	--	--	--	2.60	2.60	Soil Tier 2 BAF/BCF
Benzo(g,h,i)perylene	--	--	--	2.94	2.94	Soil Tier 2 BAF/BCF
Benzo(k)fluoranthene	--	--	--	2.60	2.60	Soil Tier 2 BAF/BCF
Chrysene	--	--	--	2.29	2.29	Soil Tier 2 BAF/BCF
Indeno(1,2,3-cd)pyrene	--	--	--	2.86	2.86	Soil Tier 2 BAF/BCF
Arsenic	0.143	0.69	4.33	0.69	0.14	Median sediment BAF/BCF
Cadmium	0.6	7.99	41.55	7.99	0.6	Median sediment BAF/BCF
Chromium	0.1	0.468	1.101	0.47	0.1	Median sediment BAF/BCF
Copper	1.556	5.25	23.87	5.25	1.56	Median sediment BAF/BCF
Lead	0.071	0.607	7.08	0.61	0.071	Median sediment BAF/BCF
Nickel	0.486	2.32	5.746	2.32	0.49	Median sediment BAF/BCF
Selenium	--	--	--	2.1	0.42	Geo. mean of medians (Bechtel, 1998)
Zinc	1.936	7.527	14.512	7.53	1.94	Median sediment BAF/BCF

Notes:

[a] Bechtel Jacobs Company LLC, 1998. Biota Sediment Accumulation Factors for Invertebrates: Review and Recommendations for the Oak Ridge Reservation, BJC/OR-112. (Depurated and nondepurated results used). 90th percentile value for Tier 1, median value for Tier 2.

[b] If a sediment BAF/BCF was not available for an inorganic constituent, the geometric mean of the available sediment inorganic BAFs/BCFs were used. The 90th percentile (2.1) was used for Tier 1 and the median (0.42) was used for Tier 2.

[c] If a sediment BAF/BCF was not available for an organic constituent, soil-to-invertebrate BAFs/BCFs were used. See soil-to-earthworm BAF/BCF appendix table for derivation of alternate BAF/BCF values.

[d] -- indicates that a BAF/BCF is not available.

Notes:

Geometric means for 90th percentile and median inorganic BAF/BCFs were calculated using the data provided below from Bechtel (1998):

	90th Percentile	Median
Arsenic	0.69	0.143
Cadmium	7.99	0.6
Chromium	0.468	0.1
Copper	5.25	1.556
Lead	0.607	0.071
Mercury	2.868	1.136
Nickel	2.32	0.486
Zinc	7.527	1.936
Geom. Mean	**2.1**	**0.42**

Table F-19
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Sediment-to-Aquatic Invertebrate Pathway at Area P

Constituent	Bechtel Jacobs [a]			Recommended Tier 1 BAF/BCF [b, c]	Recommended Tier 2 BAF/BCF [b, c]	Rationale for Recommended Tier 2 BAF/BCF
	Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF			

Table F-20
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Water-to-Fish Pathway at Area P

Constituent	IAEA [a] (Recommended Value and Range)	Bintein and Devillers [b]	USEPA, 1999 [c]	USEPA, 1989 [d]	Recommended Tier 1 (Maximum) BAF/BCF	Recommended Tier 2 (RME) BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
Arsenic	-- [e]	--	570	1750	1750	570	Lowest value

[a] International Atomic Energy Agency (IAEA), 1994, *Handbook of Parameter Values for the Protection of Radionuclide Transfer in Temperate Environments* , Technical Reports Series No. 364.

[b] Bintein, S. and J. Devillers, 1993, *Nonlinear Dependence of Fish Bioconcentration on n-Octanol/'Water Partition Coefficient,* in SAR and QSAR in Environmental Research, Vol. 1, pp. 29-39, Gordon and Branch Science Publishers. See details below.

[c] USEPA, 1999, *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities, EPA530-D-99-001A (Peer Review Draft),* Appendix C - Media-to-Receptor BCFs (water to fish). Wet weight BCFs converted to dry weight BCFs by multiplying by 5 (fish moisture content = 80%).

[d] USEPA, 1989, *Assessing Human Health Risks from Contaminated Fish and Shellfish: A Guidance Manual* , EPA-503/8-89-002. Wet weight BCFs converted to dry weight BCFs by multiplying by 5 (fish moisture content = 80%).

[e] -- indicates that a BAF/BCF is not available.

Table F-21
NOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at Area P

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference
Organics								
2,3,7,8-TCDD-TE	--	1.00E-06	rat	Sample, et. al. (1996)	--	1.40E-05	ring-necked pheasant	Sample, et al. (1996)
Aroclor 1254	--	1.40E-01	mink	Sample, et. al. (1996)	--	1.80E-01	ring-necked pheasant	Sample, et. al. (1996)
Aroclor 1260	--	1.40E-01	mink	Based on Aroclor 1254, Sample, et. al. (1996)	--	1.80E-01	ring-necked pheasant	Based on Aroclor 1254, Sample, et. al. (1996)
Benzo(a)anthracene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(a)pyrene	--	1.00E+00	mouse	Sample, et. al. (1996)	--	5.53E+02	mallard duck	Eisler (1987)
Benzo(b)fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(g,h,i)perylene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(k)fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Chrysene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Indeno(1,2,3-cd)pyrene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Pyrene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Inorganics								
Arsenic	--	1.26E-01	mouse	Sample, et. al. (1996)	--	5.14E+00	mallard duck	Sample, et al. (1996)
Cadmium	--	1.00E+00	rat	Sample, et. al. (1996)	--	1.45E+00	mallard duck	Sample, et. al. (1996)
Chromium	--	2.74E+03	rat	Sample, et al. (1996)	--	2.66E+00	chicken, black duck, turkey	EcoSSL (EPA, 2007)
Copper	--	1.17E+01	mink	Sample, et. al. (1996)	--	4.70E+01	chicks	Sample, et al. (1996)
Lead	--	8.00E+00	rat	Sample, et. al. (1996)	--	3.85E+00	American kestrel	Sample, et al. (1996)
Mercury	--	1.00E+00	mink	Sample, et. al. (1996)	--	4.50E-01	Japanese quail	Sample, et al. (1996)
Nickel	--	4.00E+01	rat	Sample, et. al. (1996)	--	7.74E+01	mallard duck	Sample, et al. (1996)
Selenium	--	2.00E-01	rat	Sample, et. al. (1996)	--	5.00E-01	mallard duck	Sample, et al. (1996)
Silver	222 (LOAEL)	2.22E+01	rat	ATSDR (1990)	--	1.78E+02	mallard duck	Terr. Tox. Database (USACHPPM, 2002)
Zinc	--	1.60E+02	rat	Sample, et. al. (1996)	--	1.45E+01	hens	Sample, et al. (1996)

N/A indicates that the information is not available.

As recommended by Wentsel, et. al. (1996), Tri-Service Procedural Guidelines for Ecological Risk Assessments, the following adjustments were made to toxicity data when NOAEL or LOAEL data were not available:

- Subchronic LOAELs were converted to chronic NOAELs by dividing by a factor of 20.
- Chronic NOAELs were converted to chronic LOAELs by multiplying by a factor of 5.0.
- Subchronic NOAELs/LOAELs were converted to chronic NOAELs/LOAELs by dividing by a factor of 10.
- Chronic LOAELs were converted to chronic NOAELs by dividing by a factor of 10.
- LD_{50} concentrations were converted to chronic NOAELs by dividing by a factor of 100.
- LD_{50} concentrations were converted to chronic LOAELs by dividing by a factor of 20.

Methodology for Selection of TRVs:
(1) Sample, et al., 1996, Toxicological Benchmarks for Wildlife.
(2) USEPA, 2007, Ecological Screening Levels (Eco-SSL). Low molecular weight (LMW) PAH NOAELs based on Verschuuren et al., 1976; high molecular weight (HMW) PAH NOAELs based on Culp, et al., 1998;

Table F-21
NOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at Area P

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference

LMW LOAELs based on Murata et al., 1997; HMW PAH LOAELs based on Culp, et al., 1998.

(3) LANL (2005). Ecorisk Database, Release 2.2, September 2005, Los Alamos National Laboratory.

(4) Others as listed below:

ATSDR, 1990, Toxicological Profile for Silver, U.S. Public Health Service.

Eisler, 1987, PAH Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review.

USACHPPM, 2002, Terrestrial Toxicity Database.

USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), OSWER Directive 9285.7-55.

Table F-22
LOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at Area P

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference
Organics								
2,3,7,8-TCDD-TE	--	1.00E-05	rat	Sample, et al. (1996)	--	1.40E-04	ring-necked pheasant	Sample, et al. (1996)
Aroclor 1254	--	6.80E-01	mouse	Sample, et. al. (1996)	--	1.80E+00	ring-necked pheasant	Sample, et. al. (1996)
Aroclor 1260	--	6.80E-01	mouse	Based on Aroclor 1254, Sample, et. al. (1996)	--	1.80E+00	ring-necked pheasant	Based on Aroclor 1254, Sample, et. al. (1996)
Benzo(a)anthracene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(a)pyrene	--	1.00E+01	mouse	Sample, et. al. (1996)	553 (NOAEL)	2.77E+03	mallard duck	Eisler (1987)
Benzo(b)fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(g,h,i)perylene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(k)fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Chrysene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Indeno(1,2,3-cd)pyrene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Pyrene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Inorganics								
Arsenic	--	1.26E+00	mouse	Sample, et al. (1996)	--	1.28E+01	mallard duck	Sample, et al. (1996)
Cadmium	--	1.00E+01	rat	Sample, et. al. (1996)	--	2.00E+01	mallard duck	Sample, et. al. (1996)
Chromium	2,737 (NOAEL)	1.37E+04	rat	Sample, et al. (1996)	--	2.78E+00	chicken, black duck, turkey	EcoSSL (EPA, 2007)
Copper	--	1.51E+01	mink	Sample, et al. (1996)	--	6.20E+01	chicks	Sample, et al. (1996)
Lead	--	8.00E+01	rat	Sample, et al. (1996)	3.85 (NOAEL)	1.93E+01	American kestrel	Sample, et al. (1996)
Mercury	1.0 (NOAEL)	5.00E+00	mink	Sample, et al. (1996)	--	9.00E-01	Japanese quail	Sample, et al. (1996)
Nickel	--	8.00E+01	rat	Sample, et al. (1996)	--	1.07E+02	mallard duck	Sample, et al. (1996)
Selenium	--	3.30E-01	rat	Sample, et. al. (1996)	--	1.00E+00	mallard duck	Sample, et. al. (1996)
Silver	--	2.22E+02	rat	ATSDR (1990)	178 (NOAEL)	8.90E+02	mallard duck	Terr. Tox. Database (USACHPPM, 2002)
Zinc	--	3.20E+02	rat	Sample, et al. (1996)	--	1.31E+02	hens	Sample et al. (1996)

N/A indicates that the information is not available.

As recommended by Wentsel, et. al. (1996), Tri-Service Procedural Guidelines for Ecological Risk Assessments, the following adjustments were made to toxicity data when NOAEL or LOAEL data were not available:

- Subchronic LOAELs were converted to chronic NOAELs by dividing by a factor of 20.
- Chronic NOAELs were converted to chronic LOAELs by multiplying by a factor of 5.0.
- Subchronic NOAELs/LOAELs were converted to chronic NOAELs/LOAELs by dividing by a factor of 10.
- Chronic LOAELs were converted to chronic NOAELs by dividing by a factor of 10.
- LD_{50} concentrations were converted to chronic NOAELs by dividing by a factor of 100.
- LD_{50} concentrations were converted to chronic LOAELs by dividing by a factor of 20.

Methodology for Selection of TRVs:
(1) Sample, et al., 1996, Toxicological Benchmarks for Wildlife.
(2) USEPA, 2007, Ecological Screening Levels (Eco-SSL). Low molecular weight (LMW) PAH NOAELs based on Verschuuren et al., 1976; high molecular weight (HMW) PAH NOAELs based on Culp, et al., 1998;

Table F-22
LOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at Area P

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference

LMW LOAELs based on Murata et al., 1997; HMW PAH LOAELs based on Culp, et al., 1998.

(3) LANL (2005). Ecorisk Database, Release 2.2, September 2005, Los Alamos National Laboratory.

(4) Others as listed below:

ATSDR, 1990, Toxicological Profile for Silver, U.S. Public Health Service.

Eisler, 1987, PAH Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review.

USACHPPM, 2002, Terrestrial Toxicity Database.

USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), OSWER Directive 9285.7-55.

Table F-23
Uncertainty Factors[a] for Ecological TRV[b] Extrapolations[c] at Area P
(Page 1 of 2)

Laboratory Animals (toxicity data base)		Selected Site Receptor Species	
Rat	G: *Rattus* F: Muridae O: Rodentia	Meadow vole	G: *Microtus* F: Muridae O: Rodentia
Mouse	G: *Mus* F: Muridae O: Rodentia	Short-tailed shrew	G: *Blarina* F: Soricidae O: Insectivora
Mink	G: *Mustela* F: Mustelidae O: Carnivora	American robin	G: *Turdus* F: Muscicapidae O: Passeriformes
Pheasant	G: *Phasianus* F: Phasianidae O: Galliformes	Red-tailed hawk	G: *Buteo* F: Accipitridae O: Ciconiiformes
American kestrel	G: *Falco* F: Falconidae O: Ciconiiformes	Red fox	G: *Vulpes* F: Canidae O: Carnivora
Chick, Hens Poultry	G: *Gallus* F: Phasianidae O: Galliformes	Great blue heron	G: *Ardea* F: Ardeidae O: Ciconiiformes
Black duck, Mallard	G: *Anas* F: Anatidae O: Anseriformes	Mink	G: *Mustela* F: Mustelidae O: Carnivora
Japanese quail	G: *Coturnix* F: Phasianidae O: Galliformes		
Turkey	G: *Meleagris* F: Meleagrididae O: Galliformes		

[a] From ***Tri-Service Procedural Guidelines for Ecological Risk Assessment*** (Wentsel et al. 1996)
[b] TRV = Toxicity Reference Value
[c] Interclass extrapolations not performed; only within bird class or within mammal class.

The Uncertainty Factors Used for TRV Extrapolations are Summarized Below:

- Extrapolation between two different species = uncertainty factor of 2
- Extrapolation between two different genera (G) = uncertainty factor of 4

Table F-23
Uncertainty Factors[a] for Ecological TRV[b] Extrapolations[c] at Area P
(Page 2 of 2)

- Extrapolation between two different families (F) or orders (O) = uncertainty factor of 8
- Thus, for all extrapolations used in the SLERA food chain model an uncertainty factor of 8 was used, except for:
    - rat or mouse toxicity values extrapolated to the meadow vole where an uncertainty factor of 4 was used; and

Table F-24
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	71-55-6	1,1,1-Trichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.98E+01	3.00E-01	No
Surface Soil	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	1.27E-01	3.00E-01	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.86E+01	3.00E-01	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.01E+01	3.00E-01	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	8.28E+00	NVA	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	2.00E+01	1.00E-01	Yes
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	2.96E+00	1.00E-01	Yes
	107-06-2	1,2-Dichloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.12E+01	8.70E+02	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	3.27E+01	3.00E-01	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	3.76E-01	NVA	No
	541-73-1	1,3-Dichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	3.77E+01	NVA	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	6.55E-01	NVA	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	2.00E+01	1.00E-01	Yes
	90-12-0	1-Methylnaphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	3.24E+00	NVA	No
	93-76-5	2,4,5-T			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	5.96E-01	NVA	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/5	1.40E-02 - 1.60E-02	1.60E-02	1.09E-01	NVA	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	9.00E+00	1.00E-01	Yes
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	4.00E+00	1.00E-01	Yes
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	6.40E+00	NVA	No
	94-75-7	2,4-D			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	2.73E-02	NVA	Yes
	94-82-6	2,4-DB			mg/kg		0/5	7.10E-02 - 7.90E-02	7.90E-02	NVA	NVA	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	8.75E+01	1.00E-01	Yes
	105-67-9	2,4-Dimethylphenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.00E-02	1.00E-01	Yes
	51-28-5	2,4-Dinitrophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	2.00E+01	1.00E-01	Yes
	121-14-2	2,4-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	1.28E+00	NVA	No
	606-20-2	2,6-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	3.28E-02	NVA	Yes
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	2.10E+00	NVA	No
	78-93-3	2-Butanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	8.96E+01	NVA	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.22E-02	NVA	Yes
	95-57-8	2-Chlorophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	2.43E-01	1.00E-01	Yes
	591-78-6	2-Hexanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	1.26E+01	NVA	No
	91-57-6	2-Methylnaphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	3.24E+00	NVA	No
	88-74-4	2-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	7.41E+01	NVA	No

Table F-24
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	88-75-5	2-Nitrophenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.60E+00	1.00E-01	Yes
	88-72-2	2-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	2.00E+00	NVA	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	2.18E-02	NVA	No
	N/A	3&4-Methylphenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	4.04E+01	1.00E-01	Yes
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	6.46E-01	NVA	No
	99-09-2	3-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	3.16E+00	NVA	No
	99-08-1	3-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	2.40E+00	NVA	No
	72-54-8	4,4'-DDD			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	2.10E-02	1.00E-01	No
	72-55-9	4,4'-DDE			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	2.10E-02	1.00E-01	No
	50-29-3	4,4'-DDT			mg/kg		0/5	3.60E-03 - 7.60E-03	7.60E-03	2.10E-02	1.00E-01	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	1.44E-01	NVA	Yes
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	7.30E-01	NVA	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	NVA	NVA	No
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	NVA	NVA	No
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/5	2.40E-02 - 2.70E-02	2.70E-02	4.43E+02	1.00E+02	No
	100-01-6	4-Nitroaniline			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	2.19E+01	NVA	No
	100-02-7	4-Nitrophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	7.00E+00	1.00E-01	Yes
	99-99-0	4-Nitrotoluene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	4.40E+00	NVA	No
	83-32-9	Acenaphthene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.00E+01	1.00E-01	Yes
	208-96-8	Acenaphthylene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	67-64-1	Acetone			mg/kg		0/5	4.70E-02 - 5.30E-02	5.30E-02	2.50E+00	NVA	No
	309-00-2	Aldrin			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	3.32E-03	1.00E-01	No
	319-84-6	alpha-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	9.94E-02	NVA	No
	5103-71-9	alpha-Chlordane			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	2.24E-01	1.00E-01	No
	120-12-7	Anthracene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	12674-11-2	Aroclor 1016			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	11104-28-2	Aroclor 1221			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	11141-16-5	Aroclor 1232			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	53469-21-9	Aroclor 1242			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	12672-29-6	Aroclor 1248			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	11096-82-5	Aroclor 1260			mg/kg		0/5	1.80E-02 - 9.40E-02	9.40E-02	3.71E-01	1.00E-01	No
	71-43-2	Benzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.55E-01	1.00E-01	No
	56-55-3	Benzo(a)anthracene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No

Table F-24
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	50-32-8	Benzo(a)pyrene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	205-99-2	Benzo(b)fluoranthene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	191-24-2	Benzo(g,h,i)perylene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	207-08-9	Benzo(k)fluoranthene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	65-85-0	Benzoic Acid			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	1.00E+00	NVA	No
	100-51-6	Benzyl alcohol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	6.58E+01	NVA	No
	319-85-7	beta-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	3.98E-03	NVA	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	3.02E-01	NVA	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	2.37E+01	NVA	No
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.99E+01	NVA	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	9.26E-01	NVA	No
	75-27-4	Bromodichloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	5.40E-01	4.50E+02	No
	74-83-9	Bromomethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.35E-01	NVA	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	2.39E-01	NVA	Yes
	86-74-8	Carbazole			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	NVA	NVA	No
	75-15-0	Carbon disulfide			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	9.41E-02	NVA	No
	56-23-5	Carbon tetrachloride			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.98E+00	3.00E-01	No
	108-90-7	Chlorobenzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	4.00E+01	1.00E-01	No
	75-00-3	Chloroethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	NVA	NVA	No
	67-66-3	Chloroform			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	1.19E+00	3.00E-01	No
	74-87-3	Chloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	1.04E+01	NVA	No
	218-01-9	Chrysene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	7.84E-01	3.00E-01	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	3.98E-01	3.00E-01	No
	121-82-4	Cyclonite			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	7.50E+00	NVA	No
	75-99-0	Dalapon			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	NVA	NVA	No
	319-86-8	delta-BHC			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	9.94E+00	NVA	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	132-64-9	Dibenzofuran			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	6.10E+00	NVA	No
	124-48-1	Dibromochloromethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.05E+00	NVA	No
	1918-00-9	Dicamba			mg/kg		0/5	7.10E-03 - 7.90E-03	7.90E-03	NVA	NVA	No
	120-36-5	Dichloroprop			mg/kg		0/5	3.60E-02 - 3.90E-02	3.90E-02	NVA	NVA	No
	60-57-1	Dieldrin			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	4.90E-03	1.00E-01	No

Table F-24
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	84-66-2	Diethyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	1.00E+02	NVA	No
	131-11-3	Dimethylphthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	7.34E+02	NVA	No
	84-74-2	Di-n-butyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	2.00E+02	NVA	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/5	3.50E-01 - 3.90E-01	3.90E-01	7.09E+02	NVA	No
	959-98-8	Endosulfan I			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	1.19E-01	NVA	No
	33213-65-9	Endosulfan II			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	1.19E-01	NVA	No
	1031-07-8	Endosulfan sulfate			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	3.58E-02	NVA	No
	72-20-8	Endrin			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	1.01E-02	1.00E-01	No
	7421-93-4	Endrin aldehyde			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	1.05E-02	NVA	No
	53494-70-5	Endrin ketone			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	NVA	NVA	No
	100-41-4	Ethylbenzene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	5.16E+00	1.00E-01	No
	206-44-0	Fluoranthene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	86-73-7	Fluorene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	5.00E-03	1.00E-01	No
	5103-74-2	gamma-Chlordane			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	2.24E-01	1.00E-01	No
	76-44-8	Heptachlor			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	5.98E-03	NVA	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/5	1.80E-03 - 1.90E-03	1.90E-03	1.52E-01	1.00E-01	No
	118-74-1	Hexachlorobenzene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.99E-01	NVA	Yes
	87-68-3	Hexachlorobutadiene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	3.98E-02	NVA	Yes
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.00E+01	NVA	No
	67-72-1	Hexachloroethane			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	5.96E-01	NVA	No
	2691-41-0	HMX			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	2.70E+01	NVA	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/kg		0/5	5.60E-02 - 6.30E-02	6.30E-02	1.10E+00	1.00E-01	No
	78-59-1	Isophorone			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.39E+02	NVA	No
	N/A	m+p-Xylenes			mg/kg		0/5	9.50E-03 - 1.10E-02	1.10E-02	1.00E+01	1.00E-01	No
	94-74-6	MCPA			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	NVA	NVA	No
	93-65-2	MCPP			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	NVA	NVA	No
	72-43-5	Methoxychlor			mg/kg		0/5	3.60E-03 - 3.90E-03	3.90E-03	1.99E-02	1.00E-01	No
	75-09-2	Methylene chloride			mg/kg		0/5	9.50E-03 - 1.10E-02	1.10E-02	4.05E+00	3.00E-01	No
	91-20-3	Naphthalene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	98-95-3	Nitrobenzene			mg/kg		0/5	2.20E-01 - 2.20E-01	2.20E-01	1.31E+00	NVA	No
	55-63-0	Nitroglycerin			mg/kg		0/5	1.70E+00 - 1.80E+00	1.80E+00	7.10E+01	NVA	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	5.44E-01	NVA	No

Table F-24
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at Area P

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	5.45E-01	NVA	No
	95-48-7	o-Cresol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	4.04E+01	1.00E-01	Yes
	95-47-6	o-Xylene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	1.00E+01	1.00E-01	No
	106-47-8	p-Chloroaniline			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	1.10E+00	NVA	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	7.95E+00	NVA	No
	87-86-5	Pentachlorophenol			mg/kg		0/5	8.80E-01 - 9.90E-01	9.90E-01	2.10E+00	1.00E-01	Yes
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/5	1.70E+00 - 1.80E+00	1.80E+00	8.60E+03	NVA	No
	85-01-8	Phenanthrene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	2.90E+01	1.00E-01	Yes
	108-95-2	Phenol			mg/kg		0/5	1.80E-01 - 2.00E-01	2.00E-01	3.00E+01	1.00E-01	Yes
	129-00-0	Pyrene			mg/kg		0/5	2.80E-01 - 3.20E-01	3.20E-01	1.10E+00	1.00E-01	Yes
	100-42-5	Styrene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	3.00E+02	1.00E-01	No
	479-45-8	Tetryl			mg/kg		0/5	4.30E-01 - 4.50E-01	4.50E-01	9.90E-01	NVA	No
	7440-28-0	Thallium			mg/kg		0/10	6.20E+00 - 1.20E+01	1.20E+01	1.00E+00	1.00E-03	Yes
	108-88-3	Toluene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	2.00E+02	1.00E-01	No
	8001-35-2	Toxaphene			mg/kg		0/5	9.00E-02 - 9.70E-02	9.70E-02	1.19E-01	NVA	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	7.84E-01	3.00E-01	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	3.98E-01	3.00E-01	No
	75-25-2	Tribromomethane			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	1.59E+01	1.15E+03	No
	75-01-4	Vinyl Chloride			mg/kg		0/5	4.70E-03 - 5.30E-03	5.30E-03	6.46E-01	3.00E-01	No

(1) Maximum non-detect limit value used for screening.

(2) Screening toxicity values from USEPA Eco SSLs (2009); Efroymson et al., PRGs (1997); and USEPA Region 5 EDQLs (1999); and other sources. See text for derivation.

(3) Screening toxicity values from USEPA Region III BTAG Screening Table (September 1995).

Definitions: N/A = Not Applicable or Not Available
NVA = No Value Available

Table F-25
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future

Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran			mg/kg		0/1	5.61E-07 - 5.61E-07	5.61E-07	NVA	No
Sediment	NA	Total Tetrachlorodibenzo-p-dioxin			mg/kg		0/1	1.30E-06 - 1.30E-06	1.30E-06	NVA	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	90-12-0	1-Methylnaphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	2.02E-02	Yes
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	9.20E-02	Yes
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	88-72-2	2-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.06E+00	No
	NA	3&4-Methylphenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	6.70E-01	No
	99-08-1	3-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.06E+00	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	99-99-0	4-Nitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.06E+00	No
	100-51-6	Benzyl alcohol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	1.05E+00	No
	121-82-4	Cyclonite			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	1.30E-02	Yes
	2691-41-0	HMX			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	NA	m+p-Xylenes			mg/kg		0/1	1.70E-02 - 1.70E-02	1.70E-02	2.52E-02	No
	55-63-0	Nitroglycerin			mg/kg		0/1	1.50E+00 - 1.50E+00	1.50E+00	NVA	No
	95-47-6	o-Xylene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	2.52E-02	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/1	1.50E+00 - 1.50E+00	1.50E+00	NVA	No
	479-45-8	Tetryl			mg/kg		0/1	3.70E-01 - 3.70E-01	3.70E-01	NVA	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	1.05E+00	No
	7440-36-0	Antimony			mg/kg		0/1	2.90E-01 - 2.90E-01	2.90E-01	2.00E+00	No
	7439-97-6	Mercury			mg/kg		0/1	7.00E-03 - 7.00E-03	7.00E-03	1.80E-01	No
	7440-22-4	Silver			mg/kg		0/1	5.00E-02 - 5.00E-02	5.00E-02	1.00E+00	No
	7440-23-5	Sodium			mg/kg		0/1	4.60E+01 - 4.60E+01	4.60E+01	NVA	No
	7440-28-0	Thallium			mg/kg		0/1	6.50E+00 - 6.50E+00	6.50E+00	NVA	No
	93-76-5	2,4,5-T			mg/kg		0/1	7.70E-03 - 7.70E-03	7.70E-03	1.23E+01	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/1	1.50E-02 - 1.50E-02	1.50E-02	6.75E-01	No
	94-75-7	2,4-D			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	NVA	No
	94-82-6	2,4-DB			mg/kg		0/1	7.70E-02 - 7.70E-02	7.70E-02	NVA	No
	72-54-8	4,4'-DDD			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	4.88E-03	Yes

Table F-25
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future

Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
	72-55-9	4,4'-DDE			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	3.16E-03	Yes
Sediment	50-29-3	4,4'-DDT			mg/kg		0/1	3.70E-02 - 3.70E-02	3.70E-02	4.16E-03	Yes
	309-00-2	Aldrin			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	2.00E-03	Yes
	319-84-6	alpha-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	6.00E-03	Yes
	5103-71-9	alpha-Chlordane			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	3.24E-03	Yes
	319-85-7	beta-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	5.00E-03	Yes
	75-99-0	Dalapon			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	NVA	No
	319-86-8	delta-BHC			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	6.40E+00	No
	120-36-5	Dichloroprop			mg/kg		0/1	3.80E-02 - 3.80E-02	3.80E-02	NVA	No
	60-57-1	Dieldrin			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	1.90E-03	Yes
	959-98-8	Endosulfan I			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	2.90E-03	Yes
	33213-65-9	Endosulfan II			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	1.40E-02	Yes
	1031-07-8	Endosulfan sulfate			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.40E-03	Yes
	72-20-8	Endrin			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	2.22E-03	Yes
	7421-93-4	Endrin aldehyde			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	2.22E-03	Yes
	53494-70-5	Endrin ketone			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	2.22E-03	Yes
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	2.37E-03	Yes
	5103-74-2	gamma-Chlordane			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	3.24E-03	Yes
	76-44-8	Heptachlor			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	6.80E-02	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/1	9.40E-03 - 9.40E-03	9.40E-03	2.47E-03	Yes
	94-74-6	MCPA			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	93-65-2	MCPP			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	72-43-5	Methoxychlor			mg/kg		0/1	3.70E-02 - 3.70E-02	3.70E-02	1.87E-02	Yes
	8001-35-2	Toxaphene			mg/kg		0/1	4.70E-01 - 4.70E-01	4.70E-01	1.00E-04	Yes
	12674-11-2	Aroclor 1016			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.98E-02	No
	11104-28-2	Aroclor 1221			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.98E-02	No
	11141-16-5	Aroclor 1232			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.98E-02	No
	53469-21-9	Aroclor 1242			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.98E-02	No
	12672-29-6	Aroclor 1248			mg/kg		0/1	1.90E-02 - 1.90E-02	1.90E-02	5.98E-02	No
	131-11-3	Dimethylphthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.10E+00	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	1.65E-02	Yes

Table F-25
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future

Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
	541-73-1	1,3-Dichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.43E+00	No
Sediment	106-46-7	1,4-Dichlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	5.99E-01	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.13E-01	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.13E-01	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	1.17E-01	Yes
	105-67-9	2,4-Dimethylphenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.90E-02	Yes
	51-28-5	2,4-Dinitrophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	NVA	No
	121-14-2	2,4-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.16E-02	Yes
	606-20-2	2,6-Dinitrotoluene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.16E-02	Yes
	91-58-7	2-Chloronaphthalene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	95-57-8	2-Chlorophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	3.12E-02	Yes
	91-57-6	2-Methylnaphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	2.02E-02	Yes
	88-74-4	2-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	88-75-5	2-Nitrophenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/1	7.70E-03 - 7.70E-03	7.70E-03	6.11E-04	Yes
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	1.27E-01	Yes
	99-09-2	3-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	100-01-6	4-Nitroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	100-02-7	4-Nitrophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	NVA	No
	83-32-9	Acenaphthene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	6.70E-03	Yes
	208-96-8	Acenaphthylene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	5.90E-03	Yes
	120-12-7	Anthracene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	5.72E-02	Yes
	65-85-0	Benzoic Acid			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	6.50E-01	Yes
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	1.80E-01	Yes
	85-68-7	Butyl benzyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	1.09E+01	No
	86-74-8	Carbazole			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/1	6.00E-02 - 6.00E-02	6.00E-02	3.30E-02	Yes
	132-64-9	Dibenzofuran			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.15E-01	No

Table F-25
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future

Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
	84-66-2	Diethyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	6.03E-01	No
Sediment	84-74-2	Di-n-butyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	6.47E+00	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	206-44-0	Fluoranthene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	4.23E-01	No
	86-73-7	Fluorene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	7.74E-02	Yes
	118-74-1	Hexachlorobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.00E-02	Yes
	87-68-3	Hexachlorobutadiene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	67-72-1	Hexachloroethane			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	1.03E+00	No
	78-59-1	Isophorone			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	91-20-3	Naphthalene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	1.76E-01	Yes
	98-95-3	Nitrobenzene			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	2.68E+00	No
	95-48-7	o-Cresol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	6.70E-01	No
	106-47-8	p-Chloroaniline			mg/kg		0/1	3.80E-01 - 3.80E-01	3.80E-01	NVA	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No
	87-86-5	Pentachlorophenol			mg/kg		0/1	9.40E-01 - 9.40E-01	9.40E-01	5.04E-01	Yes
	85-01-8	Phenanthrene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	2.04E-01	Yes
	108-95-2	Phenol			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	4.20E-01	No
	129-00-0	Pyrene			mg/kg		0/1	3.00E-01 - 3.00E-01	3.00E-01	1.95E-01	Yes
	71-55-6	1,1,1-Trichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	3.02E-02	No
	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	1.36E+00	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	1.24E+00	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	3.10E-02	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	78-93-3	2-Butanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	NVA	No
	591-78-6	2-Hexanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	NVA	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	1.23E+00	No
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/1	1.90E-01 - 1.90E-01	1.90E-01	NVA	No

Table F-25
Summary of Screening for Non-Detected Chemicals
Current/Future - Sediment at Area P

Scenario Timeframe: Current/Future

Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Sediment	108-10-1	4-Methyl-2-pentanone			mg/kg		0/1	4.20E-02 - 4.20E-02	4.20E-02	NVA	No
	67-64-1	Acetone			mg/kg		0/1	8.30E-02 - 8.30E-02	8.30E-02	NVA	No
	71-43-2	Benzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	75-27-4	Bromodichloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	74-83-9	Bromomethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	75-15-0	Carbon disulfide			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	8.51E-04	Yes
	56-23-5	Carbon tetrachloride			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	6.42E-02	No
	108-90-7	Chlorobenzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	8.42E-03	No
	75-00-3	Chloroethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	67-66-3	Chloroform			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	74-87-3	Chloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	5.09E-05	Yes
	124-48-1	Dibromochloromethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	100-41-4	Ethylbenzene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	1.10E+00	No
	75-09-2	Methylene chloride			mg/kg		0/1	1.70E-02 - 1.70E-02	1.70E-02	NVA	No
	100-42-5	Styrene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	5.59E-01	No
	127-18-4	Tetrachloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	4.68E-01	No
	108-88-3	Toluene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	5.09E-05	Yes
	75-25-2	Tribromomethane			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	6.54E-01	No
	79-01-6	Trichloroethene			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	9.69E-02	No
	75-01-4	Vinyl Chloride			mg/kg		0/1	8.30E-03 - 8.30E-03	8.30E-03	NVA	No

(1) Maximum non-detect limit value used for screening.

(2) Screening toxicity values from USEPA Region III BTAG Screening Table (January 2009).

Definitions: N/A = Not Applicable or Not Available

NVA = No Value Available

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Inorganic Compounds					
Aluminum	NVA	NVA	NVA	pH Dependant	pH Dependant
Antimony	$0.27_{(mammal)}$	$5_{(plant)}$	1.42E-01	--	2.70E-01
Arsenic	$18_{(plant)}$	$9.9_{(mammal, plant)}$	5.70E+00	--	9.90E+00
Barium	$330_{(earthworm)}$	2.83E+02	1.04E+00	--	2.83E+02
Beryllium	$21_{(mammal)}$	1.00E+01	1.06E+00	--	1.00E+01
Cadmium	$0.36_{(mammal)}$	$4_{(plant, bird)}$	2.22E-03	--	3.60E-01
Calcium	NVA	NVA	NVA	NVA	Nutrient
Chromium	$26_{(bird)}$	$0.4_{(earthworm)}$	4.00E-01	--	4.00E-01
Cobalt	$13_{(plant)}$	$20_{(plant)}$	1.40E-01	--	1.30E+01
Copper	$28_{(bird)}$	$60_{(earthworm)}$	3.13E-01	--	2.80E+01
Iron	NVA	NVA	NVA	NVA	NVA
Lead	$11_{(bird)}$	4.05E+01	5.37E-02	--	1.10E+01
Magnesium	NVA	NVA	NVA	NVA	Nutrient
Manganese	$220_{(plant)}$	NVA	NVA	50[f]	2.20E+02
Mercury	NVA	5.10E-04	1.00E-01	--	5.10E-04
Nickel	$38_{(plant)}$	3.00E+01	1.36E+01	--	3.00E+01
Potassium	NVA	NVA	NVA	NVA	Nutrient
Selenium	$0.52_{(plant)}$	2.10E-01	2.77E-02	--	2.10E-01
Silver	$4.2_{(bird)}$	$2_{(plant)}$	4.04E+00	--	2.00E+00
Sodium	NVA	NVA	NVA	NVA	Nutrient
Thallium	NVA	1.00E+00	5.69E-02	--	1.00E+00
Vanadium	$7.8_{(bird)}$	2.00E+00	1.59E+00	--	2.00E+00
Zinc	$46_{(bird)}$	$8.5_{(bird)}$	6.62E+00	--	8.50E+00
Total Organic Carbon	NVA	NVA	NVA	NVA	NVA
Organic Compounds					
1,1,1,2-Tetrachloroethane	NVA	NVA	2.25E+02	--	2.25E+02
1,1,1-Trichloroethane	NVA	NVA	2.98E+01	--	2.98E+01
1,1,2,2-Tetrachloroethane	NVA	NVA	1.27E-01	--	1.27E-01
1,1,2-Trichloroethane	NVA	NVA	2.86E+01	--	2.86E+01
1,1-Dichloroethane	NVA	NVA	2.01E+01	--	2.01E+01
1,1-Dichloroethene	NVA	NVA	8.28E+00	--	8.28E+00
1,1-Dichloropropene	NVA	NVA	NVA	NVA	NVA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,4,7,8-Hexachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,6,7,8-Hexachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3-Trichlorobenzene	NVA	NVA	NVA	NVA	NVA
1,2,3-Trichloropropane	NVA	NVA	3.36E+00	--	3.36E+00
1,2,4,5-Tetrachlorobenzene	NVA	NVA	2.02E+00	--	2.02E+00
1,2,4-Trichlorobenzene	NVA	$20_{(earthworm)}$	1.11E+01	--	2.00E+01
1,2,4-Trimethylbenzene	NVA	NVA	NVA	NVA	NVA
1,2-Dibromo-3-chloropropane	NVA	NVA	3.52E-02	--	3.52E-01
1,2-Dibromoethane	NVA	NVA	1.23E+00	--	1.23E+00
1,2-Dichlorobenzene	NVA	NVA	2.96E+00	--	2.96E+00
1,2-Dichloroethane	NVA	NVA	2.12E+01	--	2.12E+01

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
1,2-Dichloroethene (total)	NVA	NVA	7.84E-01	--	7.84E-01
1,2-Dichloropropane	NVA	NVA	3.27E+01	--	3.27E+01
1,2-Diphenylhydrazine	NVA	NVA	NVA	NVA	NVA
1,3,5-Trimethylbenzene	NVA	NVA	NVA	NVA	NVA
1,3,5-Trinitrobenzene	NVA	NVA	3.76E-01	--	3.76E-01
1,3,5-Trinitrobenzene	NVA	NVA	3.76E-01	--	3.76E-01
1,3-Dichlorobenzene	NVA	NVA	3.77E+01	--	3.77E+01
1,3-Dichloropropane	NVA	NVA	NVA	NVA	NVA
1,3-Dinitrobenzene	NVA	NVA	6.55E-01	--	6.55E-01
1,3-Dinitrobenzene	NVA	NVA	6.55E-01	--	6.55E-01
1,4-Dichlorobenzene	NVA	$20_{(earthworm)}$	5.46E-01	--	2.00E+01
1-Methylnaphthalene	NVA	NVA	3.24E+00	--	3.24E+00
2,2-Dichloropropane	NVA	NVA	NVA	NVA	NVA
2,3,7,8-Tetrachlorodibenzo-p-dioxin	NVA	3.15E-06	1.99E-07	--	3.15E-06
2,4,5-T	NVA	NVA	5.96E-01	--	5.96E-01
2,4,5-TP (Silvex)	NVA	NVA	1.09E-01	--	1.09E-01
2,4,5-Trichlorophenol	NVA	$9_{(earthworm)}$	1.41E+01	--	9.00E+00
2,4,6-Trichlorophenol	NVA	$4_{(plant)}$	9.94E+00	--	4.00E+00
2,4,6-Trinitrotoluene	NVA	NVA	NVA	6.40E+00	6.40E+00
2,4-D	NVA	NVA	2.73E-02	--	2.73E-02
2,4-DB	NVA	NVA	NVA	NVA	NVA
2,4-Dichlorophenol	NVA	NVA	8.75E+01	--	8.75E+01
2,4-Dimethylphenol	NVA	NVA	1.00E-02	--	1.00E-02
2,4-Dinitrophenol	NVA	$20_{(plant)}$	6.09E-02	--	2.00E+01
2,4-Dinitrotoluene	NVA	NVA	1.28E+00	--	1.28E+00
2,6-Dinitrotoluene	NVA	NVA	3.28E-02	--	3.28E-02
2-amino-4,6-Dinitrotoluene	NVA	NVA	NVA	2.10E+00	2.10E+00
2-Butanone	NVA	NVA	8.96E+01	--	8.96E+01
2-Chloroethyl vinyl ether	NVA	NVA	NVA	NVA	NVA
2-Chloronaphthalene	NVA	NVA	1.22E-02	--	1.22E-02
2-Chlorophenol	NVA	NVA	2.43E-01	--	2.43E-01
2-Chlorotoluene	NVA	NVA	NVA	NVA	NVA
2-Hexanone	NVA	NVA	1.26E+01	--	1.26E+01
2-Methylnaphthalene	NVA	NVA	3.24E+00	--	3.24E+00
2-Nitroaniline	NVA	NVA	7.41E+01	--	7.41E+01
2-Nitrophenol	NVA	NVA	1.60E+00	--	1.60E+00
2-Nitrotoluene	NVA	NVA	NVA	2.00E+00	2.00E+00
2-sec-butyl-4,6-dinitrophenol	NVA	NVA	2.18E-02	--	2.18E-02
3&4-Methylphenol	NVA	NVA	4.04E+01	--	4.04E+01
3,3'-Dichlorobenzidine	NVA	NVA	6.46E-01	--	6.46E-01
3-Nitroaniline	NVA	NVA	3.16E+00	--	3.16E+00
3-Nitrotoluene	NVA	NVA	NVA	2.40E+00	2.40E+00
4,4'-DDD	$0.021_{(mammal)}$	NVA	7.58E-01	--	2.10E-02
4,4'-DDE	$0.021_{(mammal)}$	NVA	5.96E-01	--	2.10E-02
4,4'-DDT	$0.021_{(mammal)}$	NVA	1.75E-02	--	2.10E-02
4,6-Dinitro-o-cresol	NVA	NVA	1.44E-01	--	1.44E-01
4-amino-2,6-Dinitrotoluene	NVA	NVA	NVA	7.30E-01	7.30E-01
4-Bromophenyl phenylether	NVA	NVA	NVA	NVA	NVA
4-Chlorophenyl phenylether	NVA	NVA	NVA	NVA	NVA
4-Methyl-2-pentanone	NVA	NVA	4.43E+02	--	4.43E+02
4-Nitroaniline	NVA	NVA	2.19E+01	--	2.19E+01

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
4-Nitrophenol	NVA	$7_{(earthworm)}$	5.12E+00	--	7.00E+00
4-Nitrotoluene	NVA	NVA	NVA	4.40E+00	4.40E+00
Acenaphthene	$29_{(earthworm)}$	$20_{(plant)}$	6.82E+02	--	2.00E+01
Acenaphthylene	$29_{(earthworm)}$	NVA	6.82E+02	--	2.90E+01
Acetone	NVA	NVA	2.50E+00	--	2.50E+00
Acetonitrile	NVA	NVA	1.37E+00	--	1.37E+00
Acetophenone	NVA	NVA	3.00E+02	--	3.00E+02
Acraldehyde	NVA	NVA	5.27E+00	--	5.27E+00
Acrylonitrile	NVA	NVA	2.39E-02	--	2.39E-02
Aldrin	NVA	NVA	3.32E-03	--	3.32E-03
alpha-BHC	NVA	NVA	9.94E-02	--	9.94E-02
alpha-Chlordane	NVA	NVA	2.24E-01	--	2.24E-01
Anthracene	$29_{(earthworm)}$	NVA	1.48E+03	--	2.90E+01
Aroclor 1016	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1221	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1232	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1242	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1248	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1254	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1260	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Atrazine	NVA	NVA	NVA	NVA	NVA
Benzaldehyde	NVA	NVA	NVA	NVA	NVA
Benzene	NVA	NVA	2.55E-01	--	2.55E-01
Benzidine	NVA	NVA	NVA	NVA	NVA
Benzo(a)anthracene	$1.1_{(mammal)}$	NVA	5.21E+00	--	1.10E+00
Benzo(a)pyrene	$1.1_{(mammal)}$	NVA	1.52E+00	--	1.10E+00
Benzo(b)fluoranthene	$1.1_{(mammal)}$	NVA	5.98E+01	--	1.10E+00
Benzo(g,h,i)perylene	$1.1_{(mammal)}$	NVA	1.19E+02	--	1.10E+00
Benzo(k)fluoranthene	$1.1_{(mammal)}$	NVA	1.48E+02	--	1.10E+00
Benzoic acid	NVA	NVA	NVA	1.00E+00	1.00E+00
Benzyl alcohol	NVA	NVA	6.58E+01	--	6.58E+01
beta-BHC	NVA	NVA	3.98E-03	--	3.98E-03
Biphenyl	NVA	60(plant)	NVA	--	6.00E+01
bis(2-Chloroethoxy)methane	NVA	NVA	3.02E-01	--	3.02E-01
bis(2-Chloroethyl)ether	NVA	NVA	2.37E+01	--	2.37E+01
bis(2-Chloroisopropyl)ether	NVA	NVA	1.99E+01	--	1.99E+01
bis(2-Ethylhexyl) phthalate	NVA	NVA	9.26E-01	--	9.26E-01
Bromobenzene	NVA	NVA	NVA	NVA	NVA
Bromodichloromethane	NVA	NVA	5.40E-01	--	5.40E-01
Bromomethane	NVA	NVA	2.35E-01	--	2.35E-01
Butyl benzyl phthalate	NVA	NVA	2.39E-01	--	2.39E-01
Caprolactam	NVA	NVA	NVA	NVA	NVA
Carbazole	NVA	NVA	NVA	NVA	NVA
Carbon disulfide	NVA	NVA	9.41E-02	--	9.41E-02
Carbon tetrachloride	NVA	NVA	2.98E+00	--	2.98E+00
Chlorobenzene	NVA	$40_{(earthworm)}$	1.31E+01	--	4.00E+01
Chlorobromomethane	NVA	NVA	NVA	NVA	NVA
Chloroethane	NVA	NVA	NVA	NVA	NVA
Chloroform	NVA	NVA	1.19E+00	--	1.19E+00

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Chloromethane	NVA	NVA	1.04E+01	--	1.04E+01
Chrysene	$1.1_{(mammal)}$	NVA	4.73E+00	--	1.10E+00
cis-1,2-Dichloroethene	NVA	NVA	7.84E-01	--	7.84E-01
cis-1,3-Dichloro-1-propene	NVA	NVA	3.98E-01	--	3.98E-01
Cyclohexane	NVA	NVA	NVA	NVA	NVA
Cyclonite	NVA	NVA	NVA	7.50E+00	7.50E+00
Dalapon	NVA	NVA	NVA	NVA	NVA
delta-BHC	NVA	NVA	9.94E+00	--	9.94E+00
Dibenz(a,h)anthracene	$1.1_{(mammal)}$	NVA	1.84E+01	--	1.10E+00
Dibenzofuran	NVA	NVA	NVA	6.10E+00	6.10E+00
Dibromochloromethane	NVA	NVA	2.05E+00	--	2.05E+00
Dibromomethane	NVA	NVA	NVA	NVA	NVA
Dicamba	NVA	NVA	NVA	NVA	NVA
Dichlorodifluoromethane	NVA	NVA	NVA	NVA	NVA
Dichloroprop	NVA	NVA	NVA	NVA	NVA
Dieldrin	$0.0049_{(mammal)}$	NVA	2.38E-03	--	4.90E-03
Diethyl phthalate	NVA	$100_{(plant)}$	2.48E+01	--	1.00E+02
Dimethylphthalate	NVA	NVA	7.34E+02	--	7.34E+02
Di-n-butyl phthalate	NVA	$200_{(plant)}$	1.50E-01	--	2.00E+02
Di-n-octyl phthalate	NVA	NVA	7.09E+02	--	7.09E+02
Endosulfan I	NVA	NVA	1.19E-01	--	1.19E-01
Endosulfan II	NVA	NVA	1.19E-01	--	1.19E-01
Endosulfan sulfate	NVA	NVA	3.58E-02	--	3.58E-02
Endrin	NVA	NVA	1.01E-02	--	1.01E-02
Endrin Aldehyde	NVA	NVA	1.05E-02	--	1.05E-02
Endrin ketone	NVA	NVA	NVA	NVA	NVA
Ethanol	NVA	NVA	NVA	NVA	NVA
Ethylbenzene	NVA	NVA	5.16E+00	--	5.16E+00
Fluoranthene	$1.1_{(mammal)}$	NVA	1.22E+02	--	1.10E+00
Fluorene	$29_{(earthworm)}$	NVA	1.22E+02	--	2.90E+01
Freon 113	NVA	NVA	NVA	NVA	NVA
gamma-BHC (Lindane)	NVA	NVA	5.00E-03	--	5.00E-03
gamma-Chlordane	NVA	NVA	2.24E-01	--	2.24E-01
Heptachlor	NVA	NVA	5.98E-03	--	5.98E-03
Heptachlor epoxide	NVA	NVA	1.52E-01	--	1.52E-01
Hexachlorobenzene	NVA	NVA	1.99E-01	--	1.99E-01
Hexachlorobutadiene	NVA	NVA	3.98E-02	--	3.98E-02
Hexachlorocyclopentadiene	NVA	$10_{(plant)}$	7.55E-01	--	1.00E+01
Hexachloroethane	NVA	NVA	5.96E-01	--	5.96E-01
HMX	NVA	NVA	NVA	2.70E+01	2.70E+01
Indeno(1,2,3-cd)pyrene	$1.1_{(mammal)}$	NVA	1.09E+02	--	1.10E+00
Isophorone	NVA	NVA	1.39E+02	--	1.39E+02
Isopropylbenzene	NVA	NVA	NVA	NVA	NVA
m+p-Xylenes	NVA	NVA	1.00E+01	--	1.00E+01
MCPA	NVA	NVA	NVA	NVA	NVA
MCPP	NVA	NVA	NVA	NVA	NVA
Methoxychlor	NVA	NVA	1.99E-02	--	1.99E-02
Methyl Acetate	NVA	NVA	NVA	NVA	NVA
Methyl tert-butyl ether	NVA	NVA	NVA	NVA	NVA
Methylene chloride	NVA	NVA	4.05E+00	--	4.05E+00

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Naphthalene	$29_{(earthworm)}$	NVA	9.94E-02	--	2.90E+01
n-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Nitrobenzene	NVA	NVA	1.31E+00	--	1.31E+00
Nitroglycerin	NVA	NVA	NVA	7.10E+01	7.10E+01
n-Nitroso-di-n-propylamine	NVA	NVA	5.44E-01	--	5.44E-01
n-Nitrosodimethylamine	NVA	NVA	3.21E-05	--	3.21E-05
n-Nitrosodiphenylamine	NVA	NVA	5.45E-01	--	5.45E-01
n-Propylbenzene	NVA	NVA	NVA	NVA	NVA
o-Cresol	NVA	NVA	4.04E+01	--	4.04E+01
Octachlorodibenzodioxin	NVA	NVA	1.99E-07	--	1.99E-07
Octachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
o-Xylene	NVA	NVA	1.00E+01	--	1.00E+01
p-Chloroaniline	NVA	NVA	1.10E+00	--	1.10E+00
p-Chloro-m-cresol	NVA	NVA	7.95E+00	--	7.95E+00
p-Chlorotoluene	NVA	NVA	NVA	NVA	NVA
p-Cresol	NVA	NVA	1.63E+02	--	1.63E+02
p-Cymene	NVA	NVA	NVA	NVA	NVA
Pentachlorophenol	$2.1_{(bird)}$	$3_{(plant)}$	1.19E-01	--	2.10E+00
Pentaerythritol tetranitrate (PETN)	NVA	NVA	NVA	8.60E+03	8.60E+03
Phenanthrene	$29_{(earthworm)}$	NVA	4.57E+01	--	2.90E+01
Phenol	NVA	$30_{(earthworm)}$	1.20E+02	--	3.00E+01
Pyrene	$1.1_{(mammal)}$	NVA	7.85E+01	--	1.10E+00
Pyridine	NVA	NVA	1.03E+00	--	1.03E+00
sec-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Styrene	NVA	$300_{(plant)}$	4.69E+00	--	3.00E+02
TCDD TE	NVA	3.15E-06	1.99E-07	--	3.15E-06
tert-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Tetrachloroethene	NVA	NVA	9.92E+00	--	9.92E+00
Tetryl	NVA	NVA	NVA	9.90E-01	9.90E-01
Toluene	NVA	$200_{(plant)}$	5.45E+00	--	2.00E+02
Total HPCDD	NVA	NVA	1.99E-07		1.99E-07
Total HPCDF	NVA	NVA	3.86E-05		3.86E-05
Total HXCDD	NVA	NVA	1.99E-07		1.99E-07
Total HXCDF	NVA	NVA	3.86E-05		3.86E-05
Total PECDF	NVA	NVA	3.86E-05		3.86E-05
Total Petroleum Hydrocarbons	NVA	NVA	NVA	NVA	NVA
Toxaphene	NVA	NVA	1.19E-01	--	1.19E-01
trans-1,2-Dichloroethene	NVA	NVA	7.84E-01	--	7.84E-01
trans-1,3-Dichloropropene	NVA	NVA	3.98E-01	--	3.98E-01
Tribromomethane	NVA	NVA	1.59E+01	--	1.59E+01
Trichloroethene	NVA	NVA	1.24E+01	--	1.24E+01
Trichlorofluoromethane	NVA	NVA	1.64E+01	--	1.64E+01
Trichloromethane	NVA	NVA	1.19E+00	--	1.19E+00
Vinyl Acetate	NVA	NVA	1.27E+01	--	1.27E+01
Vinyl Chloride	NVA	NVA	6.46E-01	--	6.46E-01
Xylenes (total)	NVA	NVA	1.00E+01	--	1.00E+01

a USEPA (2009), Ecological Soil Screening Level Guidance. Available on-line: http://www.epa.gov/ecotox/ecossl/

b Preliminary Remediation Goals for Ecological Endpoints, R. A. Efroymson, et. al., August 1997.

c Ecological Data Quality Levels, U.S.EPA Region 5, October 1999.

Table F-26
Selection of Ecological Soil Screening Toxicity Values for Area P

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)

d LANL (2005). Ecorisk Database Release 2.2, Los Alamos National Laboratory, September.

e The following hierarchy was utilized to select the final Ecological Screening Toxicity Values for this assessment:

1. The lower value of either the Ecological Soil Screening Level Guidance or the Preliminary Remediation Goals for Ecological Endpoints.
2. Ecological Data Quality Levels, U.S.EPA Region 5
3. If no other value is available, the selected ESL is from LANL, 2005.

NVA = No Value Available