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NSWC CRANE
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Environmental Indicator Investigation for SWMU 18 (Load and Fill Area Buildings), SWMU 19 (Pyrotechnic Test Area), SWMU 20 (Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area), and the Old Gun Tub Storage Lot

Naval Surface Warfare Center Crane

Crane, Indiana

NAVFAC
Naval Facilities Engineering Command

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0331

June 2005

DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO
5090/S4.7
Ser RP3/5112

30 MAR 2005

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Corrective Action Section
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center submits for review the Draft Environmental Indicators Investigation Report for Load and Fill Area Buildings [Solid Waste Management Unit (SWMU 18)], Pyrotechnic Test Area (SWMU 19), Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area (SWMU 20), and the Old Gun Tub Storage Lot. The report is presented as enclosure (1). The permit required Certification Statement is provided as enclosure (2).

If you require any further information, my point of contact is Mr. Thomas J. Brent, Code RP3-TB, at 812-854-6160, email thomas.brent@navy.mil.

Sincerely,

Christine D. Reeman
for JAMES M. HUNSICKER
Manager, Environmental Protection
By direction of the Commanding Officer

Enclosures: 1. Draft Environmental Indicators Report for SWMUs 18, 19, 20, and the OGTSL
2. Certification Statement

Copy to:
ADMINISTRATIVE RECORD
SOUTHNAVFACENGCOM (Code ES31) (w/o encl)
IDEM (Doug Griffin)
TTNUS (Ralph Basinski) (w/o encl)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Christine D Freeman

SIGNATURE

for

Manager, Environmental Protection — 3/30/05

TITLE — DATE

030506/P

ENVIRONMENTAL INDICATOR INVESTIGATION FOR SWMUs 18 (LOAD AND FILL AREA BUILDINGS), 19 (PYROTECHNIC TEST AREA), AND 20 (CRANE ARMY AMMUNITION ACTIVITY QUALITY ASSURANCE/QUALITY CONTROL TEST AREA) AND THE OLD GUN TUB STORAGE LOT

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION, CRANE, INDIANA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive, Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0331

JUNE 2005

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ACRONYMS

AOC	Area of Concern
bgs	below ground surface
CAAA	Crane Army Ammunition Activity
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
DI	deionized
DPT	direct push technology
DQO	data quality objective
EI	Environmental Indicator
FOL	Field Operations Leader
HASP	Health and Safety Plan
IDEM	Indiana Department of Environmental Management
IDW	investigation-derived waste
NAD83	1983 North American Datum
NAVFAC EFD SOUTH	Naval Facilities Engineering Field Division South
NSWC	Naval Surface Warfare Center
OGTSL	Old Gun Tub Storage Lot
PPE	personal protective equipment
PTA	Pyrotechnic Test Area
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RBTL	risk-based target level
RCRA	Resource Conservation and Recovery Act
RCRIS	RCRA Conservation and Recovery Information System
RISC	Risc-Integrated System of Closure
SOP	standard operating procedure
SWMU 18	Loading and Fill Area Buildings
SWMU 19	Pyrotechnic Test Area
SWMU 20	CAAA QA/QC Test Area
SWMU	Solid Waste Management Unit
TOM	Task Order Manager
TtNUS	Tetra Tech NUS, Inc.

U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This report was prepared for the Naval Surface Warfare Center (NSWC) Crane facility, located in Crane, Indiana, through the Naval Facilities Engineering Field Division South (NAVFAC EFD SOUTH) under Contract Task Order (CTO) 0331 for the Comprehensive Long-Term Environmental Action Navy (CLEAN) III, Contract Number N62467-94-D-0888. This report contains field investigation activities for Solid Waste Management Unit (SWMU) 18 (Load and Fill Area Buildings), SWMU 19 [Pyrotechnic Test Area (PTA)], SWMU 20 [Crane Army Ammunition Activity (CAAA) Quality Assurance/Quality Control (QA/QC) Test Area], and the Old Gun Tub Storage Lot (OGTSL). Brief site histories for each location can be found in Section 1.1 of this report.

The United States Environmental Protection Agency (U.S. EPA) has developed environmental indicators (EIs) to summarize site environmental conditions. NSWC Crane is providing the U.S. EPA with surface soil data that will establish any possible contamination concentrations at SWMUs 18, 19, and 20 and the OGTSL. The U.S. EPA will utilize this data to complete the EI Resource Conservation and Recovery Act (RCRA) Information System (RCRIS) code (CA725) form and to evaluate whether, under the current industrial land use, human exposure (e.g., worker exposure) is under control at SWMUs 18, 19, and 20 and the OGTSL.

NSWC Crane is a United States Navy installation located within the State of Indiana. Tetra Tech NUS, Inc. (TtNUS) has conducted field investigations on behalf of the NAVFAC EFD SOUTH and NSWC Crane to comply with Indiana Department of Environmental Management (IDEM) Risk-Integrated System of Closure (RISC) requirements and guidance. Those requirements and guidance govern all aspects of RCRA environmental investigations. The investigations conducted as part of this field operation were considered non-default scenarios as defined in the RISC guidance. In accordance with RISC requirements and guidance, project planning followed the U.S. EPA data quality objectives (DQO) process (U.S. EPA 1999a). That process requires explicit statements of the problem to be solved, the spatial and temporal boundaries related to the problem, the measurements to be made in solving the problem and, when applicable, quantitative specifications of the tolerances for making decision errors. The process culminated with specific decision rules and in a sampling and analysis plan (SAP) designed to solve the stated problem which can be found in the approved Quality Assurance Project Plan (QAAP) (TtNUS, 2004).

Access to the sites is restricted such that the only current human receptors at SWMUs 18, 19, and 20 and the OGTSL would be the occupational worker and/or the trespassers. This Report includes only surface

soil conditions at select locations within SWMUs 18, 19, and 20 and at the OGTSL since surface soil would be the only pathway between worker exposure and any possible contamination at the sites. There is no exposure to groundwater under current land uses.

1.1 SITE HISTORY

SWMU 18, Load and Fill Area Buildings

SWMU 18 is located in the west-central area of NSWC Crane, northwest of Boggs Creek (Figure 1-1). SWMU 18 includes various buildings used in munitions load and fill operations. The area of concern (AOC) for SWMU 18 included the four buildings (Buildings 104, 105, 198, and 200) targeted for U.S. EPA Form CA725 human health assessments. No information is available as to whether contamination has been released as a result of operations at these buildings.

SWMU 19, Ordnance Test Area

SWMU 19 consists of three physically separate areas [Ordnance Test Area (OTA), PTA Annex, and Rocket Range]. In general, these areas consist of large, open fields and concrete buildings that were used for QA test burning of pyrotechnic devices, and QA of submarine batteries and rocket motors. Boggs Creek flows through the center of the SWMU (Figure 1-1). Most of SWMU 19 is within the Boggs Creek 100-year flood plain.

The OTA is an active site that comprises several different test locations where various types of devices are tested. Functional testing of flares, signals, and other marking devices has been performed at this location for about 40 years. The tested devices range from hand-held marine and aerial devices such as personnel distress signal flares to ground illumination signals, decoy flares, location marker flares, smoke pots, tear gas, riot and smoke grenades, and similar devices.

The PTA Annex is an active site where explosive testing is conducted. The PTA Annex also includes a control room, air launch building, two test chambers, two gun turrets, a metal platform, and a wooden wall.

The Rocket Range is an active site where smoke warhead and 5-inch rocket testing is conducted in operational ordnance test chambers (former gun turrets). The Rocket Range pyrotechnics are either fired down range from the launch site or are tested in one of the facilities. A sand pit is located at the impact area. A wave tank is used to test marine markers and signal flares.

Past operations at the Rocket Range involved the testing of live ordnance and rocket motors as well as the testing of rocket motors containing dummy loads. During the 1950s and 1960s, a dye test tank was located at the Rocket Range.

SWMU 20, CAAA QA/QC Test Area

SWMU 20 is located in the north-central area of NSWC Crane (Figure 1-1). Operations include QA/QC testing of explosives and pyrotechnics devices; however, information is not available as to whether contaminants have been released as a result of these operations.

Old Gun Tub Storage Lot

The OGTSL is located in the north-central portion of NSWC Crane (Figure 1-1) and consists of a relatively flat area covered by gravel at which gun tubs from ships were stored outdoors and exposed to the elements. There are no structures located at the OGTSL.

1.1.1 Previous Investigations

SWMUs 18, 19, and the OGTSL

No soil, surface water, groundwater, or sediment sampling has been performed at SWMUs 18 or 19. One round of soil sampling was previously conducted at the OGTSL. No surface water, groundwater, or sediment sampling has been performed at the OGTSL.

The one round of surface soil sampling completed during this field investigation is expected to provide adequate information for the OGTSL and SWMUs 18, 19, and 20.

SWMU 20

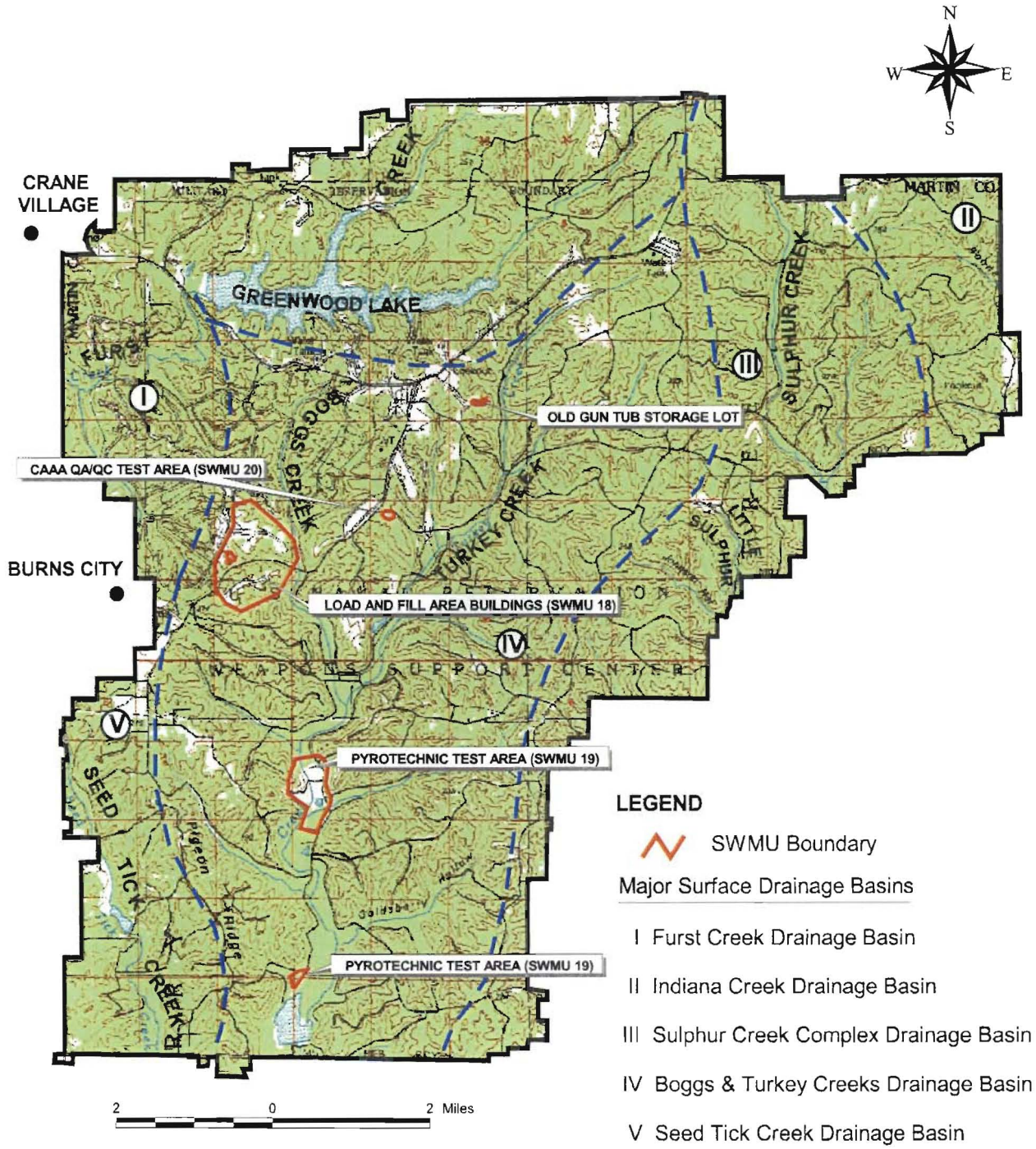
Three soil samples were collected from disturbed soils during the installation of a concrete pad in March, 1995. The laboratory subsequently divided the three samples into nine samples. Two of which came back with positive hits for explosives (HMX: 2.5 and 16.6 mg/kg and RDX: 44.7 and 213.9 mg/kg).

1.2 SITE/FACILITY DESCRIPTION

Reference should be made to Section 1.2 and 1.3 of the approved QAPP (TtNUS, 2004) for specific details on each of the three SWMUs and the OGTSL that were the focus of this investigation, as well as the facility history and background of NSWC Crane.

1.3 REPORT ORGANIZATION

This report was prepared in the following format. Section 1.0 of the report is the introduction, including the purpose, site description, site history, previous investigations, and report organization. Section 2.0 describes the study areas field sampling activities and procedures associated with the data collection. Section 3.0 presents analytical data. Supporting documentation for this report is attached as Appendices A through C.



SOURCE: "Initial Assessment of Study of Naval Weapons Support Center Crane, Indiana." Naval Energy and Environmental Support Activity, May 1983.

DRAWN BY K. PEILA — DATE 3/24/05	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0331	
CHECKED BY J. GOERDT — DATE 3/24/05	SWMUS 18, 19, 20 AND OLD GUN TUB STORAGE LOT (OGSTL) LOCATIONS AND DRAINAGE BASINS NSWC CRANE CRANE, INDIANA	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 1 - 1	REV 0

P:\GIS\NSWC_CRANE\RFI.APR 18,19,20, & OGTSL DRAINAGE BASIN 3/24/05 KMP

2.0 FIELD INVESTIGATION

This section presents sampling activities, procedures, and documentation utilized during field operations performed in January 2005 for NSWC Crane at SWMU 18 (Load and Fill Area Buildings), SWMU 19 (PTA), SWMU 20 (CAAA QA/QC Test Area), and the OGTSL. These operations collected data to complete the U.S. EPA Region 5 RCRA Conservation and Recovery Information System (RCRIS) code EIs Form CA725.

2.1 OVERVIEW

Field activities were conducted in January 2005. All work was conducted in accordance with the procedures and methodologies described in the U.S. EPA-approved QAPP (TtNUS, 2004). Standard operating procedures (SOPs) that governed the field work are included in Appendix E of the approved QAPP (TtNUS, 2004). Copies of all field forms, records, field logbooks, and health and safety documentation associated with the field investigation are provided in Appendices A through C of this document as follows:

- Appendix A - Sample Log Sheets and Other Field Forms
  - A.1 Soil Sample Log Sheets
  - A.2 Chain-of-Custody Records

- Appendix B - Miscellaneous Field Documentation
  - B.1 Site Logbook
  - B.2 Land Survey Data
  - B.3 Health and Safety Documentation

- Appendix C - Analytical Data

2.2 MOBILIZATION / DEMOBILIZATION

Following approval of the QAPP (TtNUS, 2004), TtNUS began mobilization activities. All field team members reviewed the approved QAPP, associated appendices, and the Health and Safety Plan (HASP) prior to the start of project activities. In addition, the Field Operations Leader (FOL) held field team orientation meetings to ensure that personnel were familiar with the scope of the field activities. Health and Safety documentation is contained in Appendix B.

Prior to the initiation of fieldwork, the FOL arrived at the site and began on-site mobilization activities. The equipment required for the field activities was shipped to the site. Field sampling activities and site characterization work were performed in January 2005. At the conclusion of the field activities, the FOL completed the decontamination and demobilization of all equipment.

2.3 SAMPLING OPERATIONS

This section discusses the methodology for all soil sampling activities. Table 2-1 lists each soil sample location along with collection method, sample depth, and the date each sample was collected. All soil samples were collected by hand auger or disposable trowel. Table 2-2 provides all of the associated survey information for each location. Table 2-3 provides a summary of all proposed surface soil samples vs. actual samples collected, as well as a list of the analyses. Figures 2-1 through 2-4 presents soil boring locations for SWMUs 18, 19, and 20, and the OGTSL, respectively.

2.3.1 Surface Soil Sampling

All surface soil samples were collected in accordance with SOP CTO331-08 of the approved QAPP (TtNUS, 2004). Soil sample log sheets are included in Appendix A.1 of this document. All proposed surface soil samples were collected at SWMUs 18, 19, and 20, and the OGTSL (See Table 2-3). The surface soil samples were collected from the ground surface to a maximum depth of 18 inches. If a soil sample location included a volatile organic compound (VOC) analysis this sample was collected first using 5-gram EnCore™ samplers and sample aliquots for the other analyses were collected from the remaining soil core and placed in the appropriate containers following homogenization. Surface soil sample locations can be found on Figure 2-1 (SWMU 18), Figure 2-2a (SWMU 19 North), Figure 2-2b (SWMU 19 PTA), Figure 2-3 (SWMU 20), and Figure 2-4 (OGTSL).

2.4 FIELD SAMPLE DOCUMENTATION

Sample documentation consisted of the completion of sample log sheets, sample bottle tags, chain-of-custody records, field logbooks, and health and safety documentation. Field documentation was completed as per SOP CTO331-03 of the approved QAPP (TtNUS, 2004). The sample log sheets contain information such as sample location and sample ID, container requirements and analyses to be performed, sample type, time, date, and method of sample collection. Any unusual circumstances encountered during sample collection were noted on the form. Sample log sheets can be found in Appendix A.1 of this document. Chain-of-custody records (see Appendix A.2) were used to track each sample from collection to receipt and analysis at the laboratory.

2.5 SAMPLE HANDLING, PACKAGING, AND SHIPPING

Sample handling activities included the field-related considerations concerning the selection of sample containers, preservatives, allowable holding times, sample custody, and maintaining samples at the appropriate storage temperature. Sampling containers were sealed in Ziploc® plastic bags, and glass containers were wrapped in plastic bubble wrap to minimize the possibility of breakage during transport. The sample containers were then placed in a cooler lined with a large plastic garbage bag. The cooler was packed with a cushioning material (bubble wrap) to prevent container breakage. Samples were cooled immediately after collection with ice placed over the sample containers. A temperature blank was placed in each cooler prior to shipment. The plastic garbage bag was sealed with a knot, and the chain-of-custody form was sealed in a Ziploc® bag and taped to the inside of the cooler lid. A signed and dated custody seal was applied to each end of the cooler and then covered with strapping tape to provide a tamper-evident seal. A Federal Express® airbill was applied to the shipping cooler. TtNUS maintained custody of the samples until they were relinquished to Federal Express®. The Federal Express® tracking number (airbill number) was recorded on the chain-of-custody form, and the sender's copy of the airbill was maintained for shipment tracking, if needed. All samples were shipped to the laboratory for overnight delivery and were received within sample holding times. Upon completion of sample analyses, sample bottle tags will be removed from each sample bottle by laboratory personnel and forwarded to the NSWC Environmental Protection Department.

2.6 QUALITY CONTROL SAMPLES

QA/QC samples were collected and generated during sampling activities to monitor both field and laboratory procedures. These procedures are detailed in the approved QAPP (TtNUS, 2004). QA/QC samples included field duplicates, equipment rinsate blanks, trip blanks, source water blanks, and temperature blanks. Field duplicate results are tabulated in Appendix C (Analytical Data) of this document. These types of QA/QC samples are briefly described below:

- Field Duplicates - Field duplicates consisted of two samples collected independently at a sampling location at approximately the same time in the case of soil samples. Field duplicates were collected at the rate of 1 in 20 per medium and were used to assess the overall precision of the sampling and analysis program.

- Equipment Rinsate Blanks - Equipment rinsate blanks were obtained under representative field conditions by collecting the rinse water generated by running analyte-free water through or over sample collection equipment after decontamination and before use. As a rule, 1 equipment rinsate

blank per 20 samples per solid matrix was collected for each type of sampling equipment used (i.e., hand auger). However, when pre-cleaned, dedicated, or disposable sampling equipment was used (no decontamination was required), one equipment rinsate blank was collected as a batch blank. Equipment rinsate blanks were analyzed for the same chemical constituents as the associated environmental samples.

- Trip blanks - Trip blanks were used to determine whether contamination of the VOC samples had occurred during transit or storage. Trip blanks consisted of analyte-free water taken from the laboratory to the site and returned to the laboratory. One trip blank was submitted to the laboratory in each cooler that contained samples for VOC analyses and was analyzed for VOCs only.

- Source water blanks - Source water blanks were obtained by sampling the analyte-free water and potable water source(s) used for decontamination of sampling equipment. Source water blanks were used to determine whether analyte-free water or potable water (used for steam cleaning, etc.) contributed to sample contamination.

- Temperature blanks - Temperature blanks were used to determine if samples were adequately cooled during shipment. Temperature blanks consisted of analyte-free water poured into a clean sample container at the site or supplied by the fixed-based laboratory. One temperature blank was submitted to the laboratory in each cooler, and the temperature was checked upon receipt at the laboratory.

2.7 SURVEYING

All soil sampling locations were marked with a wooden stake driven into or next to the sample location and highly visible flagging was attached to the stake. All soil sample locations were surveyed, and this information is presented in Table 2-2. Existing survey monuments at NSWC Crane were used as reference points. Horizontal locations of samples were surveyed to Indiana State Plane coordinates to the nearest 0.10 foot and are referenced to the 1983 North American Datum (NAD83). All surveying was performed by a surveyor professionally licensed in the State of Indiana. Copies of the survey data can be found in Appendix B.2.

2.8 DECONTAMINATION OF SAMPLING EQUIPMENT

This equipment included hand augers and metal trowels.

All nondedicated (reusable) equipment used for collecting samples was decontaminated both before field sampling, between sample collections, and at the end of each sampling event in accordance with SOP CTO331-16 of the approved QAPP (TtNUS, 2004). This equipment included stainless steel trowels, stainless steel mixing bowls, and hand auger equipment. The following decontamination steps were taken:

- Potable water and phosphate-free detergent wash (scrub if necessary)
- Potable water rinse
- Deionized (DI) water rinse
- Air dry (if possible)
- Wrap in aluminum foil (if not to be used immediately)

An isopropanol rinse was not necessary because no oily residue was evident on the sampling equipment.

2.9 INVESTIGATION-DERIVED WASTE HANDLING

The field investigations generated limited potentially contaminated wastes including personal protective equipment (PPE), sampling equipment decontamination fluids, and soil cuttings.

All wastes were handled in accordance with the requirements for investigation-derived waste (IDW) found in the specific IDW SOP contained in Appendix E of the approved QAPP (TtNUS, 2004).

2.10 SITE MANAGEMENT AND FACILITY SUPPORT

The FOL was designated as the lead in coordinating all day-to-day activities during these investigations. The FOL was responsible for ensuring that all field team members were familiar with the approved QAPP and the HASP. Additionally, the FOL was responsible for all sampling operations, QA/QC, field documentation requirements, and field change orders. The FOL reported to the Task Order Manager (TOM) on a daily basis regarding the status of fieldwork.

All site preparation, mobilization/demobilization, and sampling activities were coordinated through NSWC Crane personnel.

2.11 RECORDKEEPING

Various hardcover, bound record books were maintained for each field activity in accordance with SOP CTO331-03 of the approved QAPP (TtNUS, 2004). The Master Site Logbook (Book No. 1380) served as the overall record of field activities. Information recorded daily in the Master Site Logbook included daily field activities, weather conditions, identity of and arrival and departure times of personnel, management issues, etc. Copies of field log books are included in Appendix B.1.

The FOL was responsible for the maintenance and security of all field records. Eventually, all field records, chain-of-custody forms, sample log sheets, field forms, logbooks, and notebooks were docketed and incorporated in the central project file for CTO 0331.

2.12 RESTORATION AND REVEGETATION

Due to the minimal sampling operations during these field investigations, site restoration and revegetation was not required.

TABLE 2-1

SAMPLE COLLECTION DATE, DEPTH, AND METHOD
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample Depth (inches)	Collection Method[1]	Date Collected
SWMU 18			
18SB001	0-6	DT	24-Jan-05
18SB002	0-18	HA	24-Jan-05
18SB003	0-12	HA	24-Jan-05
18SB004	0-18	DT	24-Jan-05
18SB005	0-6	DT	24-Jan-05
18SB006	0-18	HA	24-Jan-05
18SB007	0-18	HA/DT	24-Jan-05
18SB008	0-6	DT	21-Jan-05
18SB009	0-6	DT	21-Jan-05
18SB010	0-18	HA	21-Jan-05
18SB011	0-18	HA	21-Jan-05
18SB012	0-18	HA	21-Jan-05
18SB013	0-18	HA	21-Jan-05
18SB014	0-18	HA	21-Jan-05
18SB015	0-18	HA	21-Jan-05
18SB016	0-18	HA	21-Jan-05
18SB017	0-6	DT	21-Jan-05
18SB018	0-6	DT	21-Jan-05
18SB019	0-18	DT	21-Jan-05
18SB020	0-18	DT	21-Jan-05
18SB021	0-18	DT	21-Jan-05
SWMU 19			
19SB003	0-18	HA	20-Jan-05
19SB007	0-18	HA	20-Jan-05
19SB013	0-18	HA	20-Jan-05
19SB026	0-18	HA	20-Jan-05
19SB041	0-18	HA	20-Jan-05
19SB047	0-18	HA	20-Jan-05
19SB049	0-18	HA	20-Jan-05
19SB061	0-18	HA	20-Jan-05
19SB064	0-18	HA	20-Jan-05
19SB070	0-18	HA	20-Jan-05
SWMU 20			
20SB001	0-18	HA	21-Jan-05
20SB002	0-18	HA	21-Jan-05
20SB003	0-18	HA	21-Jan-05
20SB004	0-18	HA	21-Jan-05
20SB005	0-18	HA	21-Jan-05

TABLE 2-1

SAMPLE COLLECTION DATE, DEPTH, AND METHOD
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample Depth (inches)	Collection Method[1]	Date Collected
OGTSL			
OGTSLSB001	0-18	HA	24-Jan-05
OGTSLSB002	0-18	HA	24-Jan-05
OGTSLSB003	0-18	HA	24-Jan-05
OGTSLSB004	0-18	HA	24-Jan-05
OGTSLSB005	0-18	HA	24-Jan-05

1 HA = Hand Auger, DT = Disposable Trowel
OGTSL = Old Gun Tub Storage Lot

TABLE 2-2

SURVEY DATA
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA
PAGE 1 OF 2

Sample Location	Sample Date	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)
SWMU 18				
18SB001	24-Jan-05	1307399.95	3018573.32	656.43
18SB002	24-Jan-05	1307265.00	3018887.60	653.08
18SB003	24-Jan-05	1307137.18	3018816.72	652.27
18SB004	24-Jan-05	1307147.49	3018633.05	668.85
18SB005	24-Jan-05	1307046.25	3018627.06	648.60
18SB006	24-Jan-05	1307028.50	3018582.67	646.88
18SB007	24-Jan-05	1307140.59	3018604.86	656.51
18SB008	21-Jan-05	1309562.60	3015646.13	677.51
18SB009	21-Jan-05	1309688.81	3015583.68	677.16
18SB010	21-Jan-05	1309832.40	3015907.40	676.67
18SB011	21-Jan-05	1309712.12	3015871.73	693.76
18SB012	21-Jan-05	1309552.68	3015686.39	677.69
18SB013	21-Jan-05	1305684.06	3017516.00	645.77
18SB014	21-Jan-05	1305640.19	3017614.06	649.97
18SB015	21-Jan-05	1305408.97	3017731.98	649.91
18SB016	21-Jan-05	1305298.07	3017651.90	648.71
18SB017	21-Jan-05	1304173.98	3015255.22	682.11
18SB018	21-Jan-05	1303902.18	3015224.68	684.69
18SB019	21-Jan-05	1303941.21	3015058.22	685.09
18SB020	21-Jan-05	1303893.15	3014906.38	683.32
18SB021	21-Jan-05	1303972.19	3014898.03	683.97
SWMU 19				
19SB003	20-Jan-05	1293284.25	3020196.34	484.16
19SB007	20-Jan-05	1292395.02	3020279.77	484.10
19SB013	20-Jan-05	1291817.50	3020646.02	484.04
19SB026	20-Jan-05	1291412.35	3019307.96	524.18
19SB041	20-Jan-05	1290702.14	3020097.59	482.26
19SB047	20-Jan-05	1289132.17	3020305.55	481.14
19SB049	20-Jan-05	1289020.58	3020258.88	482.20
19SB061	20-Jan-05	1279271.89	3019446.16	477.75
19SB064	20-Jan-05	1279088.28	3019436.28	475.91
19SB070	20-Jan-05	1291057.71	3020348.42	483.31
SWMU 20				
20SB001	21-Jan-05	1309519.65	3025717.75	696.13
20SB002	21-Jan-05	1309534.41	3025697.87	696.53
20SB003	21-Jan-05	1309504.90	3025779.58	696.09
20SB004	21-Jan-05	1309414.77	3025657.31	692.26
20SB005	21-Jan-05	1309389.43	3025753.12	692.34

TABLE 2-2

SURVEY DATA
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample Date	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)
OGTSL				
OGTSLSB001	24-Jan-05	1316996.65	3031549.02	795.95
OGTSLSB002	24-Jan-05	1316958.01	3031884.01	792.83
OGTSLSB003	24-Jan-05	1317021.00	3032184.12	779.38
OGTSLSB004	24-Jan-05	1316848.07	3031859.86	792.94
OGTSLSB005	24-Jan-05	1316896.49	3031525.88	796.04

SB= Soil Boring
OGTSL = Old Gun Tub Storage Lot

TABLE 2-3

SUMMARY OF ENVIRONMENTAL SAMPLES AND LABORATORY ANALYSES
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA

Sample Number	ANALYSIS							
	Nitroaromatics/ Nitramines	Perchlorate	TAL Metals Plus Tin	TAL Metals Plus Li and Sr	VOCs	SVOCs (except PAHs)	PAHs	PCBs
SWMU 18 Surface Soil								
18SS0010002	X		X					
18SS0020002	X		X					
18SS0030002	X		X					
18SS0040002	X		X					
18SS0050002	X		X					
18SS0060002	X		X					
18SS0070002	X		X					
18SS0080002	X		X					
18SS0090002	X		X					
18SS0100002	X		X					
18SS0110002	X		X					
18SS0120002	X		X					
18SS0130002	X		X					
18SS0140002	X		X					
18SS0150002	X		X					
18SS0160002	X		X					
18SS0170002	X		X					
18SS0180002	X		X					
18SS0190002	X		X					
18SS0200002	X		X					
18SS0210002	X		X					
SS TOTALS	**21**	**0**	**21**	**0**	**0**	**0**	**0**	**0**
SWMU 19 Surface Soil								
19SS0030002	X	X		X				
19SS0070002	X	X		X	X	X	X	
19SS0130002	X	X		X				
19SS0260002	X	X		X				
19SS0410002	X	X		X				
19SS0470002	X	X		X				
19SS0490002	X	X		X				
19SS0610002	X	X		X				
19SS0640002	X	X		X				
19SS0700002	X	X		X				
SS TOTALS	**10**	**10**	**0**	**10**	**1**	**1**	**1**	**0**

TABLE 2-3

SUMMARY OF ENVIRONMENTAL SAMPLES AND LABORATORY ANALYSES
SWMUs 18, 19, AND 20, AND OGTSL
NSWC CRANE
CRANE, INDIANA

Sample Number	ANALYSIS							
	Nitroaromatics/ Nitramines	Perchlorate	TAL Metals Plus Tin	TAL Metals Plus Li and Sr	VOCs	SVOCs (except PAHs)	PAHs	PCBs
SWMU 20 Surface Soil								
20SS0010002	X	X	X					
20SS0020002	X	X	X					
20SS0030002	X	X	X					
20SS0040002	X	X	X					
20SS0050002	X	X	X					
SS TOTALS	**5**	**5**	**5**	**0**	**0**	**0**	**0**	**0**
OGTSL Surface Soil								
OGTSLSS0010002			X			X	X	X
OGTSLSS0020002			X			X	X	X
OGTSLSS0030002			X			X	X	X
OGTSLSS0040002			X			X	X	X
OGTSLSS0050002			X			X	X	X
SS TOTALS	**0**	**0**	**5**	**0**	**0**	**5**	**5**	**5**

X = Analyzed as proposed.
SS = Surface Soil
OGTSL = Old Gun Tub Storage Lot

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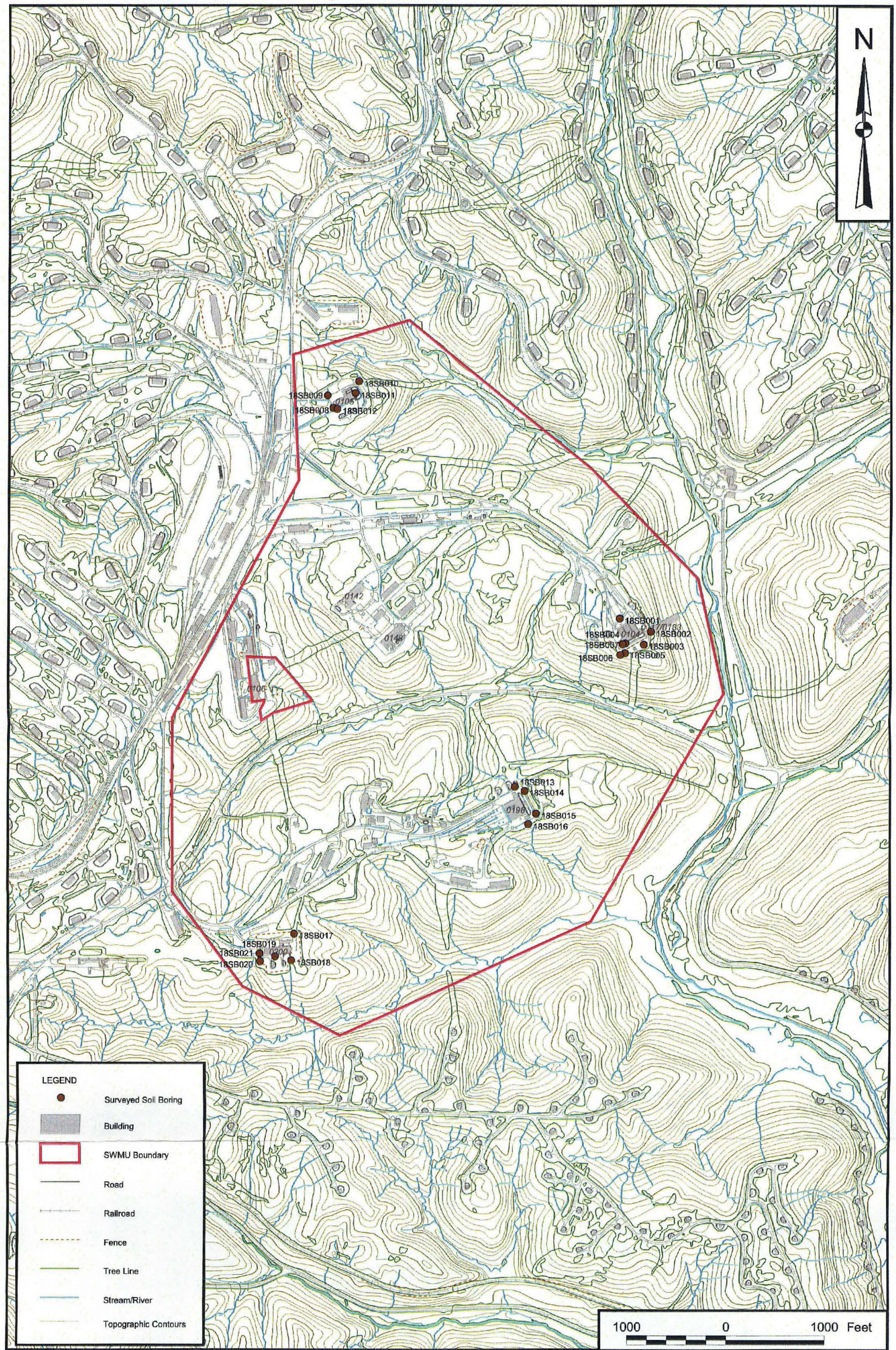

DRAWN BY K. PEILA	DATE 3/23/05	SURVEYED SOIL BORING LOCATIONS SWMU 18 - LOAD AND FILL AREA BUILDINGS NSWC CRANE CRANE, INDIANA	CONTRACT NUMBER CTO 0331
CHECKED BY J. GOERDT	DATE 3/23/05		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. 2-1 REV 0

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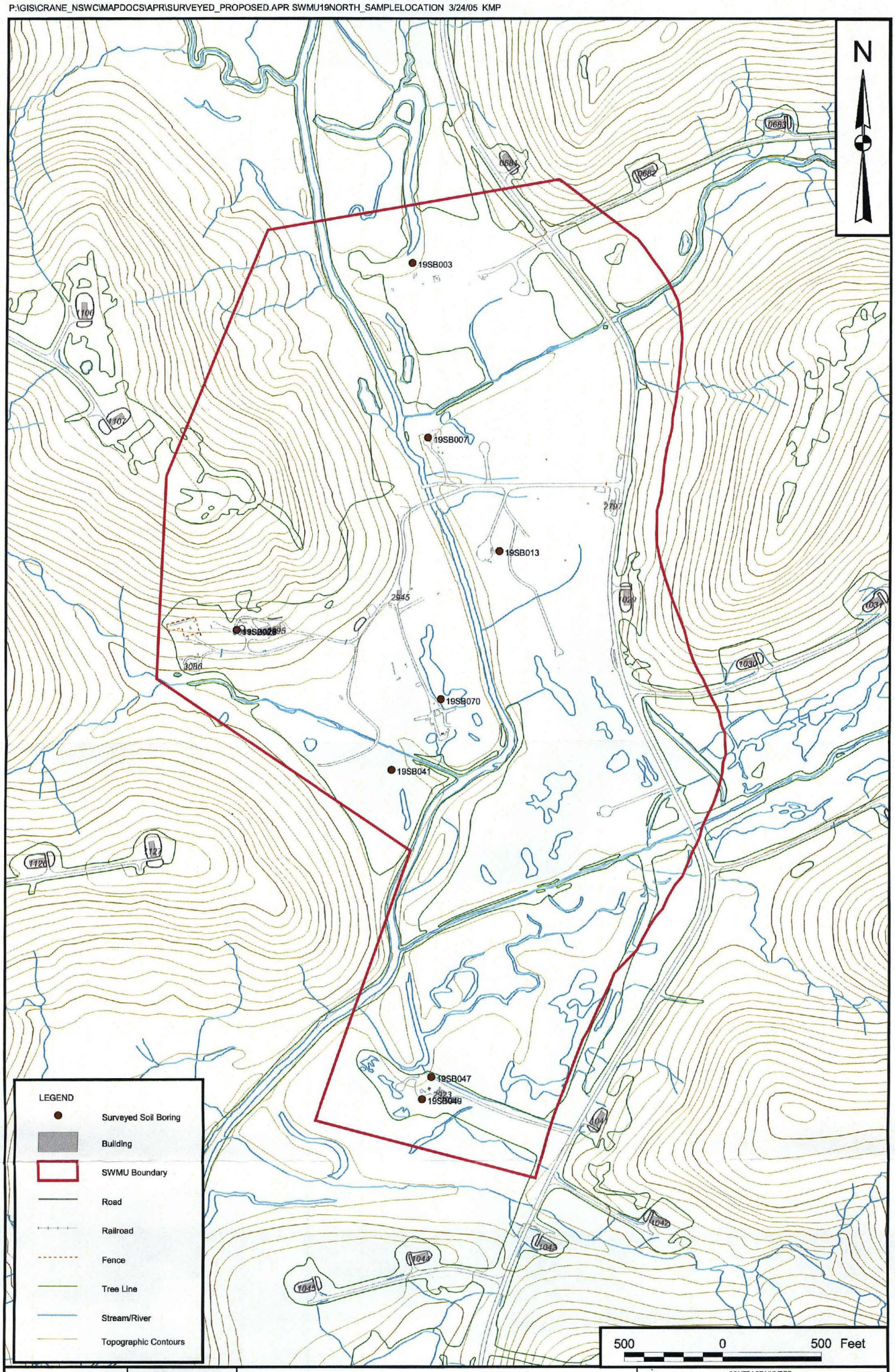

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CHECKED BY J. GOERDT	DATE 3/23/05		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. 2-2a REV 0

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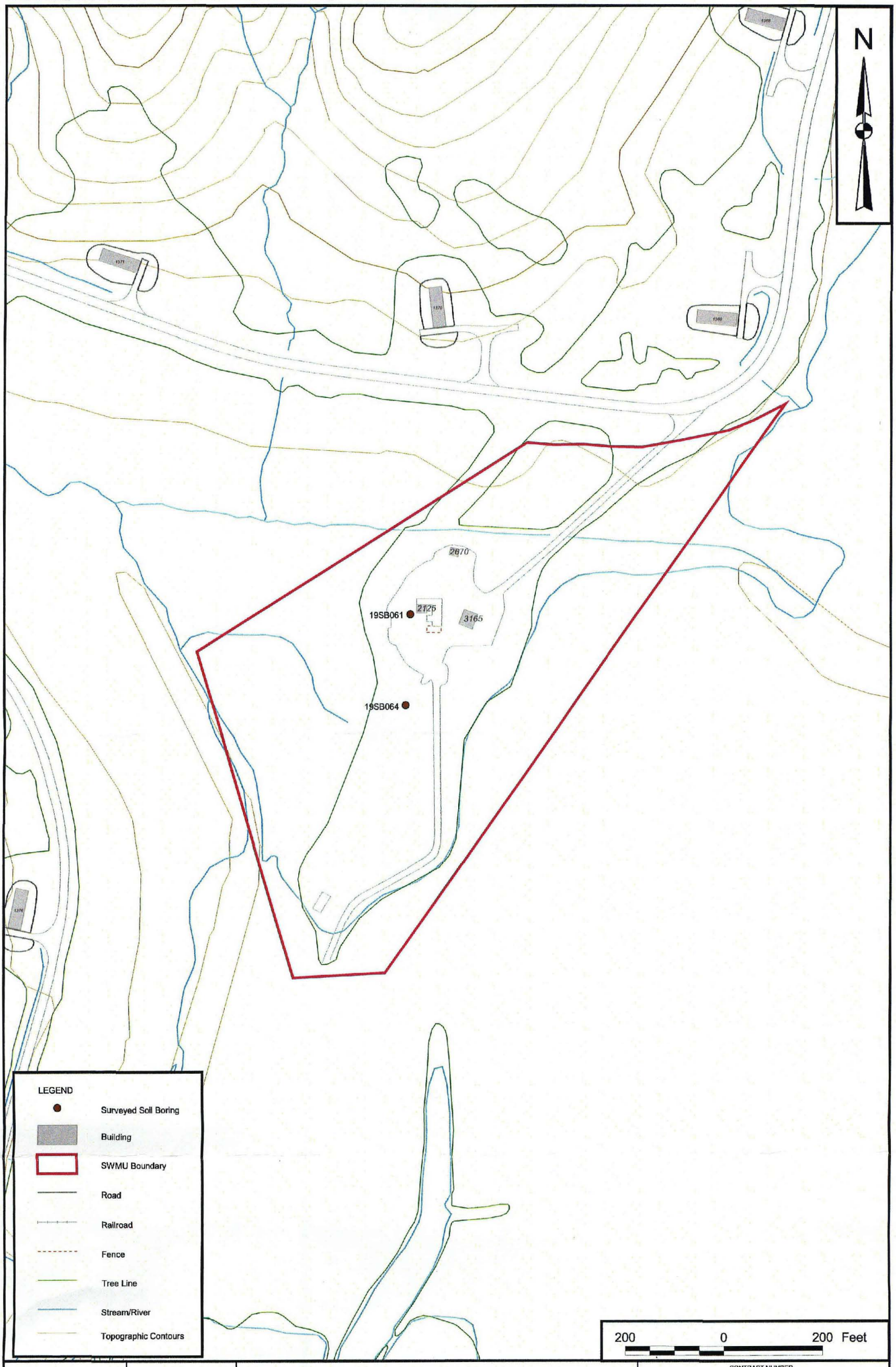

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CHECKED BY J. GOERDT	DATE 3/23/05		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. 2-2b REV 0

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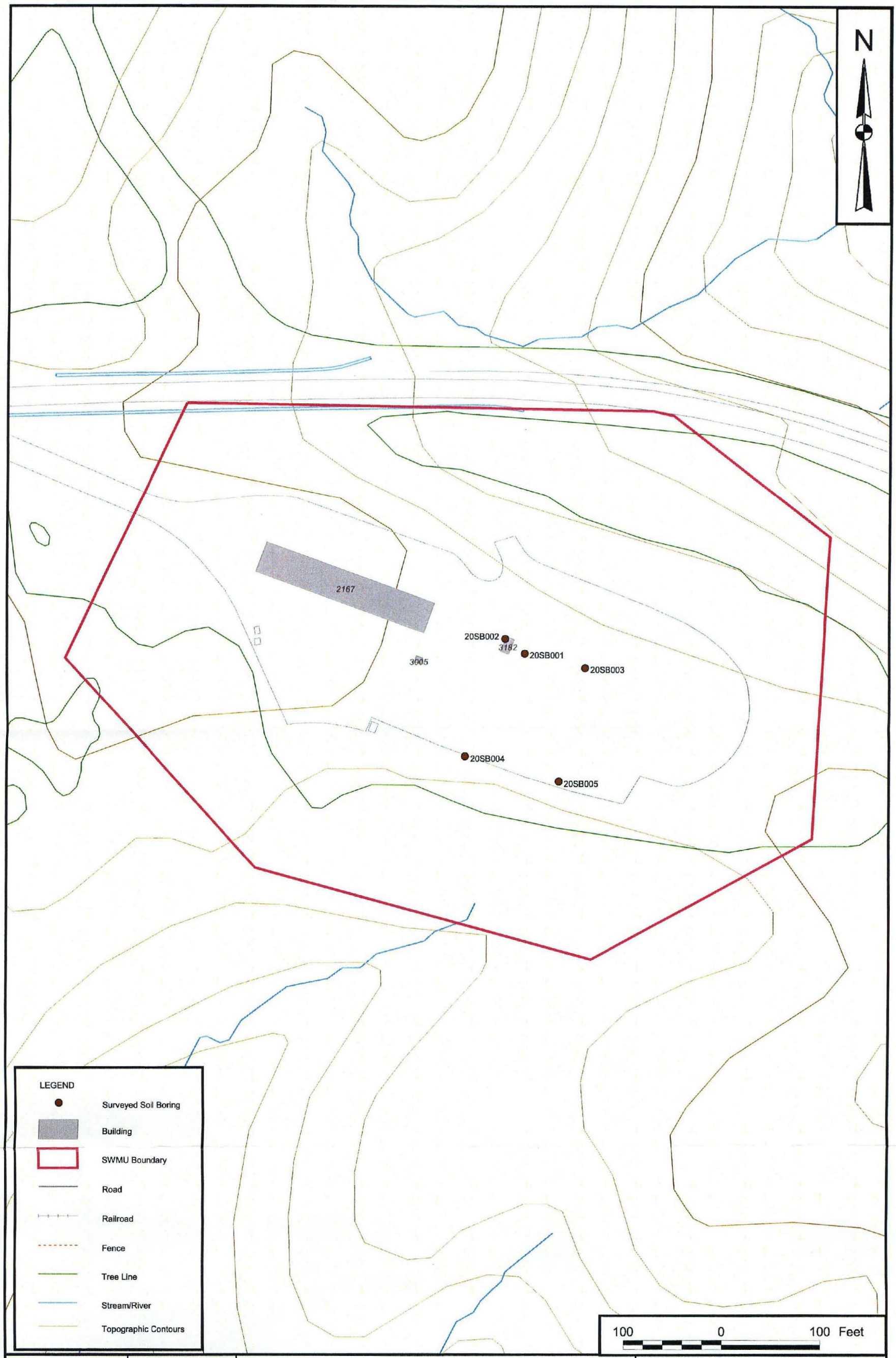
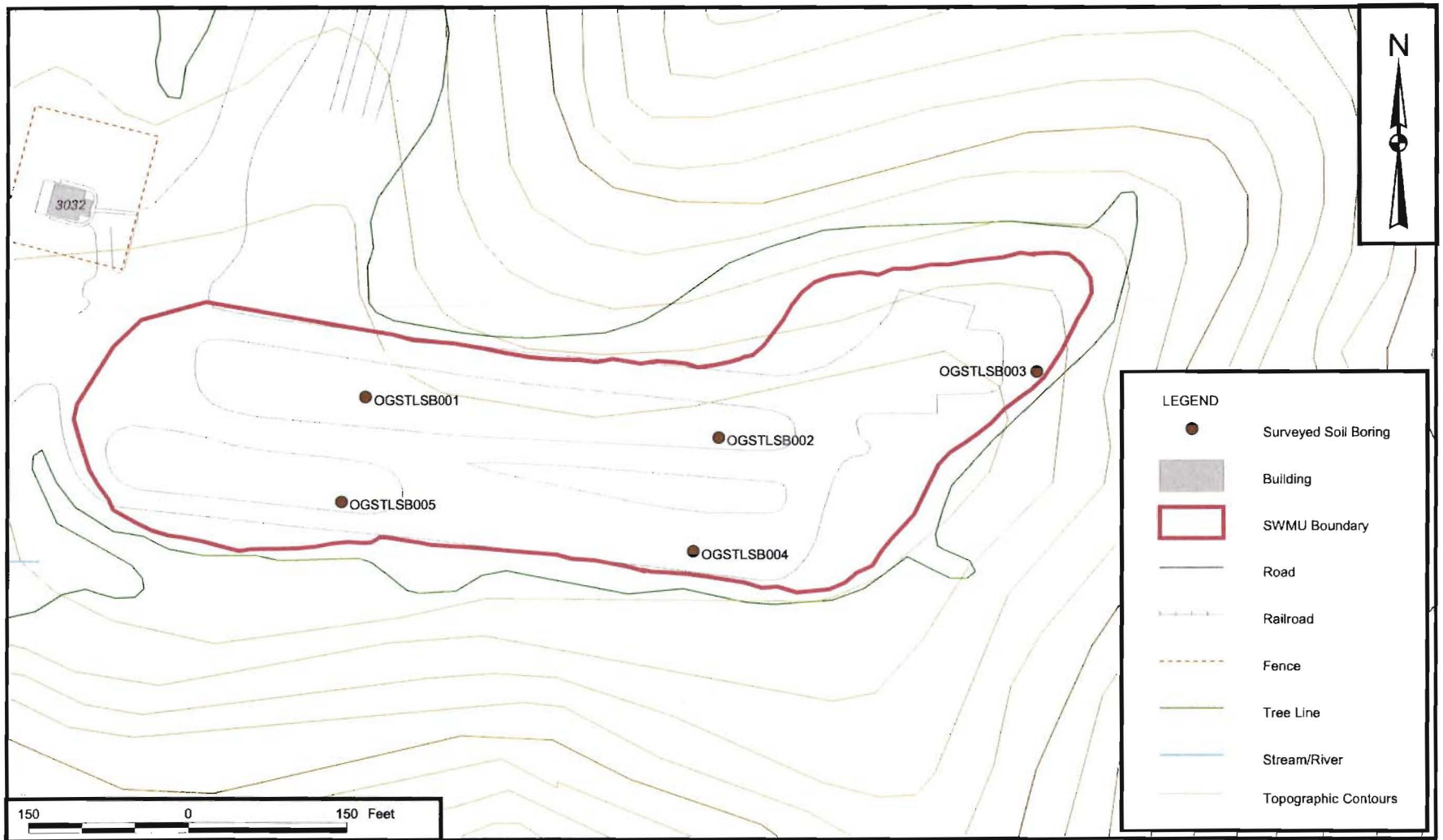


DRAWN BY K. PEILA	DATE 3/23/05	SURVEYED SOIL BORING LOCATIONS SWMU 20 - CRANE ARMY AMMUNITION ACTIVITY QUALITY ASSURANCE/QUALITY CONTROL TEST AREA NSWC CRANE CRANE, INDIANA	CONTRACT NUMBER CTO 0331
CHECKED BY J. GOERDT	DATE 3/23/05		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. 2-3 REV 0



DRAWN BY	DATE
K. PEILA	3/23/05
CHECKED BY	DATE
J. GOERDT	3/23/05
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

SURVEYED SOIL BORING LOCATIONS
OLD GUN TUB STORAGE LOT
NSWC CRANE
CRANE, INDIANA

CONTRACT NUMBER CTO 0331	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. 2-4	REV 0

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3.0 DATA PRESENTATION

This section presents the surface soil positive hits data for SWMU 18 (Tables 3-1 through 3-4), SWMU 19 (Tables 3-5 through 3-7), SWMU 20 (Table 3-8), and the OGTSL (Table 3-9). The data was compared to the Region 9 and IDEM residential and industrial lower soil risk-based target levels (RBTLs). If a concentration was found to exceed the lower industrial RBTL, then it is assumed that value would also exceed the lower residential RBTL.

The EI data were collected as described in Section 2.0 and validated by TtNUS. Laucks Testing Laboratory conducted the analyses as presented in Table 2-3.

A complete summary of analytical results for each site investigated is presented in Appendix C of this document.

SWMU 18

Building 104 Area

Table 3-1 presents the data for the seven surface soil samples collected at the SWMU 18 Building 104 Area (18SS0010002 through 18SS0070002). The samples were analyzed for explosives and metals. No explosives RBTLs were exceeded in any of the samples. Arsenic was found to exceed the Region 9 industrial RBTL in all seven samples, and five of the seven samples exceeded the IDEM industrial RBTL. The barium and chromium Region 9 residential RBTLs were exceeded in sample 18SS0050002. The chromium RBTL for Region 9 industrial was exceeded by sample 18SS00070002. Sample 18SS0020002 exceeded the region 9 residential iron RBTL.

Building 105 Area

Table 3-2 presents the data for the five surface soil samples collected at the SWMU 18 Building 105 Area (18SS0080002 through 18SS0120002). The samples were analyzed for explosives and metals. No explosives RBTLs were exceeded in any of the samples. Arsenic was found to exceed the Region 9 industrial RBTL and the IDEM residential RBTL in all five samples. Sample 18SS0080002 exceeded the Region 9 residential RBTL for chromium, iron, and vanadium. Sample 18SS0110002 exceeded the Region 9 residential RBTL for iron.

Building 198 Area

Table 3-3 presents the data for the four surface soil samples collected at the SWMU 18 Building 198 Area (18SS0130002 through 18SS0160002). The samples were analyzed for explosives and metals. No explosives RBTLs were exceeded in any of the samples. Arsenic was found to exceed the Region 9 industrial RBTL and the IDEM residential RBTL in all four samples. Sample 18SS0160002 exceeded the Region 9 residential RBTL for chromium. Sample 18SS0130002 exceeded both the Region 9 and IDEM industrial RBTLs for lead.

Building 200 Area

Table 3-4 presents the data for the five surface soil samples collected at the SWMU 18 Building 200 Area (18SS0170002 through 18SS0210002). The samples were analyzed for explosives and metals. No explosives RBTLs were exceeded in any of the samples. Arsenic was found to exceed the Region 9 industrial RBTL and the IDEM residential RBTL in all five samples. The Region 9 residential RBTL for iron was exceeded in samples 18SS0170002 and 18SS0210002.

SWMU 19

Ordnance Test Area

Table 3-5 presents the data for the six surface soil samples collected at the SWMU 19 Ordnance Test Area (19SS0030002, 19SS0070002, 19SS0130002, 19SS0260002, 19SS0410002, and 19SS0700002). The samples were analyzed for VOCs, SVOCs, explosives, and metals. Arsenic was the only compound to exceed available RBTLs. All six samples exceeded the Region 9 industrial RBTL and the IDEM residential RBTL for arsenic.

Pyrotechnic Test Area

Table 3-6 presents the data for the two surface soil samples collected at the SWMU 19 Pyrotechnic Test Area (19SS0470002 and 19SS0490002). The samples were analyzed for VOCs, SVOCs, explosives, and metals. Both samples exceeded the Region 9 industrial RBTL and the IDEM residential RBTL for arsenic. Sample 19SS0490002 exceeded the Region 9 industrial RBTL for chromium.

Rocket Range

Table 3-7 presents the data for the two surface soil samples collected at the SWMU 19 Rocket Range (19SS0610002 and 19SS0640002). The samples were analyzed for VOCs, SVOCs, explosives, and metals. Both samples exceeded the Region 9 industrial RBTL and the IDEM residential RBTL for arsenic.

SWMU 20

Vicinity of Building 2167

Table 3-8 presents the data for the five surface soil samples collected at SWMU 20 in the Vicinity of Building 2167 (20SS0010002 through 20SS0050002). The samples were analyzed for metals, explosives, and perchlorates. No explosive or perchlorate RBTLs were exceeded in any of the samples. Arsenic was found to exceed the Region 9 industrial RBTL and the IDEM residential RBTL in all five samples. The Region 9 residential RBTL for iron was exceeded in sample 20SS0040002.

OLD GUN TUB STORAGE LOT

OGTSL Parking Area

Table 3-9 presents the data for the five surface soil samples collected at the OGTSL Parking Area (OGTSLSS0010002 through OGTSLSS0050002). The samples were analyzed for SVOCs, PCBs, and metals. The Region 9 residential RBTL for benzo(a)pyrene was exceeded in samples OGTSLSS0010002 and OGTSLSS0050002. Sample OGTSLSS0010002 exceeded the Region 9 residential RBTL for aroclor-1260. Arsenic was found to exceed the Region 9 industrial and the IDEM residential RBTLs in all five samples. The Region 9 and IDEM residential RBTLs were exceeded in sample OGTSLSS0010002 for cadmium. The Region 9 industrial RBTL for chromium was exceeded in sample OGTSLSS0010002. Samples OGTSLSS0020002 and OGTSLSS0050002 exceeded the Region 9 residential RBTL for chromium. The Region 9 residential RBTL for iron and lead were exceeded in samples OGTSLSS0010002 and OGTSLSS0020002.

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
SWMU 18 - BUILDING 104 AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	18SB001 18SS0010002 ORIG 0 - 2 1/24/2005	18SB002 18SS0020002 NORMAL 0 - 2 1/24/2005	18SB003 18SS0030002 NORMAL 0 - 2 1/24/2005	18SB004 18SS0040002 NORMAL 0 - 2 1/24/2005	18SB005 18SS0050002 NORMAL 0 - 2 1/24/2005	18SB006 18SS0060002 NORMAL 0 - 2 1/24/2005	18SB007 18SS0070002 NORMAL 0 - 2 1/24/2005
Energetics (mg/kg)											
HMX	3100	31000	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.26 J	0.25 U	0.25 U
RDX	4.4	16	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.3	0.25 U	0.25 U
Inorganics (mg/kg)											
ALUMINUM	78000	100000	---	---	4910	7420	4050	3700	4460	4420	3090
ANTIMONY	31	410	140	620	1.1 U	0.56 U	0.36 U	1.7 U	2 U	0.48 U	1.3 U
ARSENIC	0.39	1.6	3.9	20	21.9 J	11.4 J	9.1 J	8.4 J	8.3 J	5.9 J	34.7 J
BARIUM	5400	67000	23000	98000	82.1 J	100 J	56.1 J	201 J	9500 J	71.9 J	422 J
BERYLLIUM	150	1900	680	2900	0.59 J	0.95 J	0.63 J	0.69 J	0.59 J	0.46 J	0.42 J
CADMIUM	37	450	12	990	2.1 J	0.39 U	0.25 U	1.3 J	3.1 J	0.52 J	6.2 J
CALCIUM	---	---	---	---	61700 J	2630 U	74300 J	2420 U	22300 J	5180 J	188000 J
CHROMIUM	30	64	---	---	14.8 J	13.6 J	12 J	20.4 J	40.7 J	10.5 J	66.7 J
COBALT	900	1900	---	---	4.4 J	12.8 J	7.8 J	6.9 J	8.2 J	5.4 J	5.8 J
COPPER	3100	41000	13000	57000	17.1 J	12.8 J	10.8 J	34.7 J	34.8 J	18.7 J	56.6 J
IRON	23000	100000	---	---	17500 J	29400 J	19200 J	22000 J	16100 J	15000 J	9260 J
LEAD	400	800	400	1300	30.1 J	21.5 J	14.9 J	51.9 J	185 J	45.4 J	299 J
MAGNESIUM	---	---	---	---	6980 J	1180 J	10500 J	987 J	6570 J	1050 J	12400 J
MANGANESE	1800	19000	---	---	259 J	603 J	228 J	259 J	424 J	302 J	257 J
MERCURY	23	310	100	470	0.011 J	0.016 J	0.007 U	0.007 U	0.12 J	0.03 J	0.03 J
NICKEL	1600	20000	6900	31000	9.2 J	9.9 J	12.9 J	22.5 J	11.8 J	7.6 J	16.4 J
POTASSIUM	---	---	---	---	1250 J	1130 J	1000 J	1480 J	1500 J	1410 J	1260 J
SELENIUM	390	5100	1700	7800	0.3 J	0.41 J	0.29 J	0.41 J	0.57 J	0.33 J	0.32 J
SILVER	390	5100	1700	7800	0.08 U	0.047 U	0.05 U	0.12 U	0.69 J	0.054 U	0.13 U
TIN	47000	100000	---	---	0.56 U	0.33 U	0.23 U	2.8 J	1.4 J	0.41 U	2.5 J
VANADIUM	78	1000	---	---	20 J	23.2 J	16.8 J	15.3 J	16.4 J	15.4 J	11.4 J
ZINC	23000	100000	100000	470000	1190 U	74 J	48.8 J	67.8 J	714 J	66.4 J	567 J

Exceeds lower Industrial criteria
Exceeds lower Residential criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-2

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
SWMU 18 - BUILDING 105 AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	18SB008 18SS0080002 NORMAL 0 - 2 1/21/2005	18SB009 18SS0090002 NORMAL 0 - 2 1/21/2005	18SB010 18SS0100002 NORMAL 0 - 2 1/21/2005	18SB011 18SS0110002 NORMAL 0 - 2 1/21/2005	18SB012 18SS0120002 NORMAL 0 - 2 1/21/2005
Energetics (mg/kg)									
HMX	3100	31000	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	4.4	16	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)									
ALUMINUM	76000	100000	---	---	21300 J	15600 J	20500 J	25300 J	17400 J
ANTIMONY	31	410	140	620	1.4 U	0.93 U	0.36 U	3.8 J	0.27 U
ARSENIC	0.39	1.6	3.9	20	110 J	18 J	8.5 J	10.1 J	7 J
BARIUM	5400	67000	23000	98000	109 J	75.9 J	73.8 J	89.3 J	112 J
BERYLLIUM	150	1900	680	2900	1.1 J	0.77 U	0.63 U	0.68 U	0.66 U
CADMIUM	37	450	12	990	1.8 J	1.1 U	0.23 U	0.42 U	0.67 U
CALCIUM	---	---	---	---	4080 J	58600 J	2450 J	1770 J	1720 J
CHROMIUM	30	64	---	---	[illegible]	25.2 J	22.8 J	26.8 J	21.3 J
COBALT	900	1900	---	---	11.4 J	9.4 J	5.6 J	5.5 J	10.8 J
COPPER	3100	41000	13000	57000	18.1 J	16 J	11.7 J	21 J	10.5 J
IRON	23000	100000	---	---	34800 J	21900 J	22400 J	26400 J	18800 J
LEAD	400	800	400	1300	49.9 J	35.2 J	11.9 J	44.6 J	20.4 J
MAGNESIUM	---	---	---	---	2210 J	5100 J	1940 J	3160 J	1590 J
MANGANESE	1800	19000	---	---	449 J	342 J	212 J	247 J	232 J
MERCURY	23	310	100	470	1.4 J	0.01 UJ	0.008 UJ	0.011 J	0.007 UJ
NICKEL	1600	20000	6900	31000	16.2 J	14.3 J	12.8 J	14.9 J	12.8 J
POTASSIUM	---	---	---	---	1300 J	1190 J	1450 J	2270 J	1020 J
SELENIUM	390	5100	1700	7800	0.64 U	0.51 U	0.37 U	0.47 U	0.24 U
SILVER	390	5100	1700	7800	0.056 UJ	0.07 UJ	0.048 UJ	0.053 UJ	0.047 UJ
TIN	47000	100000	---	---	1.4 J	0.73 U	0.29 U	0.47 U	0.39 U
VANADIUM	78	1000	---	---	[illegible]	33.6 J	33.3 J	43.7 J	26 J
ZINC	23000	100000	100000	470000	268 J	212 J	50 J	67.6 J	43.3 J

Exceeds lower Industrial criteria
Exceeds lower Residential criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-3

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
SWMU 18 - BUILDING 198 AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	18SB013 18SS0130002 NORMAL 0 - 2 1/21/2005	18SB014 18SS0140002 NORMAL 0 - 2 1/21/2005	18SB015 18SS0150002 NORMAL 0 - 2 1/21/2005	18SB016 18SS0160002 NORMAL 0 - 2 1/21/2005
Energetics (mg/kg)								
HMX	3100	31000	---	---	0.25 U	0.25 U	0.25 U	0.25 U
RDX	4.4	16	---	---	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)								
ALUMINUM	76000	100000	---	---	14600 J	19600 J	24500 J	16300 J
ANTIMONY	31	410	140	620	8.9 J	0.37 U	0.53 U	0.94 U
ARSENIC	0.39	1.6	3.9	20	8 J	5.9 J	6.3 J	7 J
BARIUM	5400	67000	23000	98000	72.9 J	119 J	147 J	84.5 J
BERYLLIUM	150	1900	680	2900	0.67 U	0.89 J	1.1 J	0.71 U
CADMIUM	37	450	12	990	0.91 U	0.55 U	0.65 U	0.73 U
CALCIUM	---	---	---	---	5780 J	2280 J	2630 J	1570 J
CHROMIUM	30	64	---	---	23.8 J	22.7 J	28.1 J	[illegible]
COBALT	900	1900	---	---	15 J	7.9 J	8.4 J	13.6 J
COPPER	3100	41000	13000	57000	24.4 J	16.5 J	17.6 J	18 J
IRON	23000	100000	---	---	18600 J	17200 J	21100 J	18900 J
LEAD	400	800	400	1300	4020 J	22.1 J	29.4 J	111 J
MAGNESIUM	---	---	---	---	2240 J	1760 J	2230 J	1720 J
MANGANESE	1800	19000	---	---	499 J	495 J	303 J	464 J
MERCURY	23	310	100	470	0.047 J	0.058 J	0.053 J	0.06 J
NICKEL	1600	20000	6900	31000	12.5 J	14.8 J	18.8 J	14.7 J
POTASSIUM	---	---	---	---	1460 J	2030 J	2140 J	1940 J
SELENIUM	390	5100	1700	7800	0.5 U	0.41 U	0.63 U	0.38 U
SILVER	390	5100	1700	7800	1.1 J	0.19 U	0.54 U	0.049 UJ
TIN	47000	100000	---	---	1.9 J	0.32 U	0.57 U	0.47 U
VANADIUM	78	1000	---	---	29 J	31.4 J	38.7 J	28.6 J
ZINC	23000	100000	100000	470000	178 J	70.1 J	89.1 J	147 J

Exceeds lower Industrial criteria
Exceeds lower Residential criteria

Field du[illegible]te samples are excluded from these summaries because they are considered to b[illegible]d QC samples.

TABLE 3-4

SUMMARY OF CHEMICLAS DETECTED - SURFACE SOIIL
SWMU 18 - BUILDING 200 AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	18SB017 18SS0170002 NORMAL 0 - 2 1/21/2005	18SB018 18SS0180002 NORMAL 0 - 2 1/21/2005	18SB019 18SS0190002 NORMAL 0 - 2 1/21/2005	18SB020 18SS0200002 NORMAL 0 - 2 1/21/2005	18SB021 18SS0210002 NORMAL 0 - 2 1/21/2005
Energetics (mg/kg)									
HMX	3100	31000	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	4.4	16	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)									
ALUMINUM	76000	100000	---	---	17100 J	29700 J	15500 J	24600 J	18700 J
ANTIMONY	31	410	140	620	0.41 U	0.69 U	0.94 U	0.41 U	0.24 U
ARSENIC	0.39	1.6	3.9	20	8.3 J	12.4 J	5 J	10 J	9.3 J
BARIUM	5400	67000	23000	98000	93 J	220 J	81.3 J	126 J	91.8 J
BERYLLIUM	150	1900	680	2900	0.99 J	1.1 J	0.8 U	1.1 J	1.2 J
CADMIUM	37	450	12	990	0.99 U	0.43 U	1.4 J	2 J	0.69 U
CALCIUM	---	---	---	---	21100 J	2830 J	11400 J	22100 J	3100 J
CHROMIUM	30	64	---	---	22.6 J	34.5 J	23.1 J	29.1 J	28.9 J
COBALT	900	1900	---	---	7.2 J	10.1 J	9.5 J	8.6 J	12.9 J
COPPER	3100	41000	13000	57000	19.3 J	66.6 J	27.2 J	13.5 J	16.3 J
IRON	23000	100000	---	---	24200 J	26800 J	16700 J	29200 J	38400 J
LEAD	400	800	400	1300	21.5 J	31.2 J	52.3 J	23.2 J	70.4 J
MAGNESIUM	---	---	---	---	2630 J	2170 J	4180 J	2420 J	1760 J
MANGANESE	1800	19000	---	---	254 J	196 J	242 J	242 J	695 J
MERCURY	23	310	100	470	0.025 J	0.013 J	0.028 J	0.008 UJ	0.008 UJ
NICKEL	1600	20000	6900	31000	18.4 J	21.3 J	17.5 J	18.6 J	20.7 J
POTASSIUM	---	---	---	---	1620 J	2280 J	1770 J	1640 J	1590 J
SELENIUM	390	5100	1700	7800	0.5 U	0.39 U	0.47 U	0.43 U	0.56 U
SILVER	390	5100	1700	7800	0.054 UJ	0.054 UJ	0.058 UJ	0.047 UJ	0.049 UJ
TIN	47000	100000	---	---	0.38 U	0.32 U	1.2 U	0.32 U	0.26 U
VANADIUM	78	1000	---	---	30.4 J	43.5 J	25.7 J	41.6 J	36.8 J
ZINC	23000	100000	100000	470000	232 J	112 J	165 J	74.3 J	93 J

Exceeds lower industrial criteria
Exceeds lower Residential criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-5

SUMMARY OF CHEMICALS DETECTED -SURFACE SOIL
SWMU 19 - ORDNANCE TEST AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	19SB003 19SS0030002 NORMAL 0 - 2 1/20/2005	19SB007 19SS0070002 ORIG 0 - 2 1/20/2005	19SB013 19SS0130002 NORMAL 0 - 2 1/20/2005	19SB026 19SS0260002 NORMAL 0 - 2 1/20/2005	19SB041 19SS0410002 NORMAL 0 - 2 1/20/2005	19SB070 19SS0700002 NORMAL 0 - 2 1/20/2005
Volatile Organics (ug/kg)										
METHYLENE CHLORIDE	9100	21000	120000	200000		3 J				
Semivolatile Organics (ug/kg)										
BENZO(A)ANTHRACENE	620	2100	5000	15000		4.33 UJ				
BENZO(A)PYRENE	62	210	500	1500		5 J				
BENZO(B)FLUORANTHENE	620	2100	5000	15000		4.33 UJ				
BENZO(G,H,I)PERYLENE	2300000	29000000	50000	150000		4.33 UJ				
BENZO(K)FLUORANTHENE	6200	21000	50000	150000		4.33 UJ				
CHRYSENE	62000	210000	500000	1500000		4.33 UJ				
FLUORANTHENE	2300000	22000000	6300000	16000000		7 J				
INDENO(1,2,3-CD)PYRENE	620	2100	5000	15000		4.33 UJ				
PHENANTHRENE	2300000	29000000	470000	1200000		4.33 J				
PYRENE	2300000	29000000	4700000	12000000		7 J				
Energetics (mg/kg)										
RDX	4400	16000	---	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)										
ALUMINUM	76000	100000	---	---	3550	4300	4020	8100	3930	4720
ANTIMONY	31	410	140	620	0.6 U	0.55 U	0.36 U	3.3 J	0.43 U	1.2 U
ARSENIC	0.39	1.6	3.9	20	6.4 J	6.7 U	5.6 J	11.1 J	6.2 U	5.5 U
BARIUM	5400	67000	23000	98000	63 J	68.1 J	57.2 J	61.3 J	65.1 J	122 J
BERYLLIUM	150	1900	680	2900	0.59 J	0.69 J	0.52 J	0.65 J	0.65 J	0.72 J
CADMIUM	37	450	12	990	2.3 J	3.2 J	0.57 J	0.28 U	1.1 J	1.8 J
CALCIUM	---	---	---	---	39700 J	2530 J	20000 J	2350 J	16200 J	1540 J
CHROMIUM	30	64	---	---	21.4 J	20 J	17.1 J	24.3 J	19.3 J	20.6 J
COBALT	900	1900	---	---	12.1 J	11.9 J	7.7 J	11 J	11.6 J	7.4 J
COPPER	3100	41000	13000	57000	26.1 J	25.4 J	13.7 J	14.9 J	13.3 J	14.5 J
IRON	23000	100000	---	---	13900 J	14900 J	11200 J	22000 J	12800 J	11800 J
LEAD	400	800	400	1300	15.2 J	16.9 J	15.5 J	36.8 J	13.3 J	15.2 J
LITHIUM	1600	20000	---	---	4.7 J	7.3 J	4.5 J	8.1 J	5 J	6.4 J
MAGNESIUM	---	---	---	---	1330 J	788 J	4600 J	1420 J	6570 J	783 J
MANGANESE	1800	19000	---	---	859 J	655 J	374 J	758 J	800 J	330 J
MERCURY	23	310	100	470	0.007 UJ	0.008 UJ	0.007 UJ	0.008 UJ	0.008 UJ	0.014 J
NICKEL	1600	20000	6900	31000	22.6 J	23.1 J	15.1 J	18.6 J	19.5 J	18.2 J
POTASSIUM	---	---	---	---	1130 J	929 J	834 J	1270 J	923 J	1090 J
SELENIUM	390	5100	1700	7800	0.25 U	0.33 J	0.31 J	0.44 J	0.28 J	0.29 U
SILVER	390	5100	1700	7800	0.18 U	0.2 U	0.044 U	0.052 U	0.11 U	0.06 U
STRONTIUM	47000	100000	---	---	45 J	7.5 J	19 J	6.5 J	15.4 J	8.7 J
THALLIUM	5.2	67	24	110	0.23 U	0.22 U	0.21 U	0.37 J	0.29 J	0.28 U
TIN	47000	100000	---	---	2.6 J	0.49 U	0.29 U	1.2 J	0.4 U	0.62 U
VANADIUM	78	1000	---	---	10.2 J	11.9 J	10.7 J	23.3 J	10.8 J	11.4 J
ZINC	23000	100000	100000	470000	81.7 J	103 J	32.2 J	53.8 J	50.4 J	55.5 J

Exceeds lower industrial criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-6

SUMMARY OF CHEMICLAS DETECTED - SURFACE SOIL
SWMU 19 - PYROTECHNIC TEST AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	19SB047 19SS0470002 NORMAL 0 - 2 1/20/2005	19SB048 19SS0480002 NORMAL 0 - 2 1/20/2005
Volatile Organics (ug/kg)						
METHYLENE CHLORIDE	9100	21000	120000	200000		
Semivolatile Organics (ug/kg)						
BENZO(A)ANTHRACENE	620	2100	5000	15000		
BENZO(A)PYRENE	62	210	500	1500		
BENZO(B)FLUORANTHENE	620	2100	5000	15000		
BENZO(G,H,I)PERYLENE	2300000	29000000	50000	150000		
BENZO(K)FLUORANTHENE	6200	21000	50000	150000		
CHRYSENE	62000	210000	500000	1500000		
FLUORANTHENE	2300000	22000000	6300000	16000000		
INDENO(1,2,3-CD)PYRENE	620	2100	5000	15000		
PHENANTHRENE	2300000	29000000	470000	1200000		
PYRENE	2300000	29000000	4700000	12000000		
Energetics (mg/kg)						
RDX	4400	16000	---	---	0.25 U	0.25 U
Inorganics (mg/kg)						
ALUMINUM	76000	100000	---	---	4210	4850
ANTIMONY	31	410	140	620	0.47 U	1.5 U
ARSENIC	0.39	1.6	3.9	20	7.1 J	6.2 J
BARIUM	5400	67000	23000	98000	63.2 J	68 J
BERYLLIUM	150	1900	680	2900	0.67 J	0.75 J
CADMIUM	37	450	12	990	1.7 J	2.9 J
CALCIUM	---	---	---	---	9170 J	3630 J
CHROMIUM	30	64	---	---	25.1 J	[illegible]
COBALT	900	1900	---	---	10.7 J	13.8 J
COPPER	3100	41000	13000	57000	26.1 J	49.3 J
IRON	23000	100000	---	---	13600 J	13500 J
LEAD	400	800	400	1300	15.7 J	22.9 J
LITHIUM	1600	20000	---	---	10.6 J	9.4 J
MAGNESIUM	---	---	---	---	867 J	1550 J
MANGANESE	1800	19000	---	---	491 J	691 J
MERCURY	23	310	100	470	0.009 J	0.008 UJ
NICKEL	1600	20000	6900	31000	112 J	101 J
POTASSIUM	---	---	---	---	1050 J	974 J
SELENIUM	390	5100	1700	7800	0.38 J	0.35 J
SILVER	390	5100	1700	7800	0.16 U	0.06 U
STRONTIUM	47000	100000	---	---	12.3 J	8.6 J
THALLIUM	5.2	67	24	110	0.22 U	0.32 J
TIN	47000	100000	---	---	0.35 U	0.34 U
VANADIUM	78	1000	---	---	12 J	11.1 J
ZINC	23000	100000	100000	470000	59 J	87.3 J

Exceeds lower industrial criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-7

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
SWMU 19 - ROCKET RANGE
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	19SB061 19SS0610002 NORMAL 0 - 2 1/20/2005	19SB064 19SS0640002 NORMAL 0 - 2 1/20/2005
Volatile Organics (ug/kg)						
METHYLENE CHLORIDE	9100	21000	120000	200000		
Semivolatile Organics (ug/kg)						
BENZO(A)ANTHRACENE	620	2100	5000	15000		
BENZO(A)PYRENE	62	210	500	1500		
BENZO(B)FLUORANTHENE	620	2100	5000	15000		
BENZO(G,H,I)PERYLENE	2300000	29000000	50000	150000		
BENZO(K)FLUORANTHENE	6200	21000	50000	150000		
CHRYSENE	62000	210000	500000	1500000		
FLUORANTHENE	2300000	22000000	6300000	16000000		
INDENO(1,2,3-CD)PYRENE	620	2100	5000	15000		
PHENANTHRENE	2300000	29000000	470000	1200000		
PYRENE	2300000	29000000	4700000	12000000		
Energetics (mg/kg)						
RDX	4400	16000	---	---	0.25 U	1.8
Inorganics (mg/kg)						
ALUMINUM	76000	100000	---	---	4430	4370
ANTIMONY	31	410	140	620	0.26 U	1.6 U
ARSENIC	0.39	1.6	3.9	20	5.6 J	6.1 J
BARIUM	5400	67000	23000	98000	63.5 J	81.1 J
BERYLLIUM	150	1900	680	2900	0.58 J	0.78 J
CADMIUM	37	450	12	990	0.13 U	0.67 J
CALCIUM	---	---	---	---	3110 J	1200 J
CHROMIUM	30	64	---	---	7.6 J	9.9 J
COBALT	900	1900	---	---	8.9 J	7.3 J
COPPER	3100	41000	13000	57000	8.7 J	13 J
IRON	23000	100000	---	---	13000 J	12400 J
LEAD	400	800	400	1300	11.4 J	64.8 J
LITHIUM	1600	20000	---	---	4.6 J	4.1 J
MAGNESIUM	---	---	---	---	819 J	618 J
MANGANESE	1800	19000	---	---	629 J	496 J
MERCURY	23	310	100	470	0.007 UJ	0.008 UJ
NICKEL	1600	20000	6900	31000	9.4 J	8.7 J
POTASSIUM	---	---	---	---	1000 J	926 J
SELENIUM	390	5100	1700	7800	0.39 J	0.5 J
SILVER	390	5100	1700	7800	0.05 U	4.8 J
STRONTIUM	47000	100000	---	---	11.4 J	6.3 J
THALLIUM	5.2	67	24	110	0.25 U	0.28 U
TIN	47000	100000	---	---	0.21 U	0.22 U
VANADIUM	78	1000	---	---	11.9 J	13.1 J
ZINC	23000	100000	100000	470000	36.7 J	63.6 J

Exceeds lower Industrial criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples.

TABLE 3-8

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
SWMU 20 -VICINITY OF BUILDING 2167
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	20SB001 20SS0010002 NORMAL 0 - 2 1/21/2005	20SB002 20SS0020002 NORMAL 0 - 2 1/21/2005	20SB003 20SS0030002 NORMAL 0 - 2 1/21/2005	20SB004 20SS0040002 NORMAL 0 - 2 1/21/2005	20SB005 20SS0050002 NORMAL 0 - 2 1/21/2005
Inorganics (mg/kg)									
ALUMINUM	76000	100000	---	---	6580 J	21700 J	19600 J	17200 J	17400 J
ARSENIC	0.39	1.6	3.9	20	4.5 J	8.6 J	7.2 J	10 J	8 J
BARIUM	5400	67000	23000	98000	78 J	132 J	140 J	164 J	161 J
BERYLLIUM	150	1900	680	2900	0.34 U	0.83 J	1.1 J	0.72 U	0.7 U
CADMIUM	37	450	12	990	0.95 J	2.6 J	0.36 U	0.62 U	0.75 U
CALCIUM	---	---	---	---	278000 J	14800 J	6340 J	70600 J	80300 J
CHROMIUM	30	64	---	---	12.5 J	22.1 J	18.3 J	27.8 J	20.7 J
COBALT	900	1900	---	---	4.2 J	8.8 J	16.3 J	8.3 J	9 J
COPPER	3100	41000	13000	57000	18.6 J	43.9 J	9.2 J	15.7 J	22.9 J
IRON	23000	100000	---	---	7500 J	19800 J	14800 J	26300 J	17900 J
LEAD	400	800	400	1300	19.2 J	38.1 J	19 J	24 J	19.6 J
MAGNESIUM	---	---	---	---	3550 J	2470 J	3250 J	3170 J	3070 J
MANGANESE	1800	19000	---	---	660 J	609 J	1430 J	556 J	611 J
NICKEL	1600	20000	6900	31000	6.8 J	15.1 J	17.5 J	14.4 J	13.7 J
POTASSIUM	---	---	---	---	762 J	1590 J	1390 J	1550 J	1460 J
SELENIUM	390	5100	1700	7800	0.24 U	0.53 U	0.72 J	0.48 U	0.49 U
SODIUM	---	---	---	---	94.1 J	54.3 U	72.8 U	66.1 U	55.2 U
VANADIUM	78	1000	---	---	14.1 J	36.8 J	34.3 J	39.8 J	32.1 J
ZINC	23000	100000	100000	470000	44 J	114 J	61.2 J	60.7 J	70.4 J

Exceeds lower Industrial criteria
Exceeds lower Residential criteria

TABLE 3-9

SUMMARY OF CHEMICALS DETECTED - SURFACE SOIL
OLD GUN TUB STORAGE LOT PARKING AREA
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	Region 9 Residential Soil	Region 9 Industrial Soil	IDEM Residential Soil	IDEM Industrial Soil	OGSTLSB001 OGTSLSS0010002 NORMAL 0 - 2 1/24/2005	OGSTLSB002 OGTSLSS0020002 NORMAL 0 - 2 1/24/2005	OGSTLSB003 OGTSLSS0030002 ORIG 0 - 2 1/24/2005	OGSTLSB004 OGTSLSS0040002 NORMAL 0 - 2 1/24/2005	OGSTLSB005 OGTSLSS0050002 NORMAL 0 - 2 1/24/2005
Semivolatile Organics (ug/kg)									
ACENAPHTHYLENE	3700000	29000000	1100000	2800000	28	4.02 U	4.26 U	3.89 U	12
ANTHRACENE	22000000	100000000	47000000	120000000	24	4.02 U	4.26 U	3.89 U	9
BENZO(A)ANTHRACENE	620	2100	5000	15000	140	18	27	3.89 U	67
BENZO(A)PYRENE	62	210	500	1500	40	15	21 J	3.89 U	49
BENZO(B)FLUORANTHENE	620	2100	5000	15000	390	25	30 J	3.89 U	190
BENZO(G,H,I)PERYLENE	2300000	29000000	50000	150000	140	23	13 J	3.89 U	59
BENZO(K)FLUORANTHENE	6200	21000	50000	150000	180	21	9 J	3.89 U	100
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	300000	980000	1500 J	81.7 UJ	86.5 UJ	78.9 UJ	140 J
CHRYSENE	62000	210000	500000	1500000	260	22	21	3.89 U	130
DIBENZO(A,H)ANTHRACENE	62	210	500	1500	38	4.02 U	4.26 UJ	3.89 U	19
FLUORANTHENE	2300000	22000000	6300000	16000000	310	35	44	3.89 U	210
INDENO(1,2,3-CD)PYRENE	620	2100	5000	15000	130	21	10 J	3.89 U	62
NAPHTHALENE	56000	190000	3200000	8000000	9	4.02 J	4.26 U	3.89 U	4 J
PHENANTHRENE	2300000	29000000	470000	1200000	41	10	4.26 U	3.89 U	26
PYRENE	2300000	29000000	4700000	12000000	310	40	44	3.89 U	170
Pesticides PCBs (ug/kg)									
AROCLOR-1260	220	740	---	---	190	130	11.6 U	10.6 U	110
Inorganics (mg/kg)									
ALUMINUM	76000	100000	---	---	587	24200	19100	7760	2780
ANTIMONY	31	410	140	620	28 J	6.9 J	0.65 U	0.59 U	3.6 J
ARSENIC	0.39	1.6	3.9	20	5.6 J	8.1 J	9.2 J	9.9 J	4.9 J
BARIUM	5400	67000	23000	98000	15.1 J	43 J	62.7 J	60.8 J	26.8 J
BERYLLIUM	150	1900	680	2900	0.07 U	0.32 J	0.53 J	0.5 J	0.15 U
CADMIUM	37	450	12	990	3.9 J	3.6 J	0.46 J	0.34 U	3.1 J
CALCIUM	---	---	---	---	339000 J	82900 J	47000 J	38700 J	182000 J
CHROMIUM	30	64	---	---	573 J	62.4 J	12.4 J	13.8 J	62.4 J
COBALT	900	1900	---	---	11.1 J	4.9 J	6.1 J	6 J	2.8 J
COPPER	3100	41000	13000	57000	99.5 J	76.6 J	13.5 J	11.3 J	17.5 J
IRON	23000	100000	---	---	40000 J	40000 J	20800 J	17900 J	11100 J
LEAD	400	800	400	1300	1000 J	407 J	22 J	14.7 J	74.9 J
MAGNESIUM	---	---	---	---	16400 J	16800 J	6080 J	3690 J	11000 J
MANGANESE	1800	19000	---	---	765 J	209 J	562 J	164 J	128 J
MERCURY	23	310	100	470	0.038 J	0.026 J	0.007 U	0.009 J	0.018 J
NICKEL	1600	20000	6900	31000	442 J	23.8 J	10.4 J	9.8 J	12.5 J
POTASSIUM	---	---	---	---	873 J	974 J	1300 J	1020 J	997 J
SELENIUM	390	5100	1700	7800	0.22 J	0.36 J	0.43 J	0.36 J	0.32 J
SODIUM	---	---	---	---	178 J	178 J	76.2 U	68.4 U	123 U
TIN	47000	100000	---	---	3.8 J	6 J	0.4 U	0.29 U	0.72 U
VANADIUM	78	1000	---	---	8.3 J	22.9 J	22.7 J	23.5 J	11.4 J
ZINC	23000	100000	100000	470000	1650 J	279 J	53.9 J	64.2 J	706 J

Exceeds lower Industrial criteria

Field duplicate samples are excluded from these summaries because they are considered to be field QC samples

REFERENCES

U.S. EPA, 2000. Guidance for the Data Quality Objectives Process, EPA, QA/G-4, U.S. Environmental Protection Agency, EPA/600/R-96/055, August, 2000.

TtNUS, 2004. Quality Assurance Project Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 08) Roads and Grounds Area (SWMU 15) and Environmental Indicator Investigation for SWMU 18 (Load and Fill Area Buildings), SWMU 19 (Pyrotechnic Test Area), SWMU 20 (Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area), and the Old Gun Tub Storage Lot, Naval Surface Warfare Center, Crane, Indiana, Tetra Tech NUS, Inc., September.

APPENDIX A

SAMPLE LOG SHEETS AND OTHER FIELD FORMS

A.1 SOIL SAMPLE LOG SHEETS
SWMU 18 SOIL SAMPLE LOG SHEETS
SWMU 19 SOIL SAMPLE LOG SHEETS
SWMU 20 SOIL SAMPLE LOG SHEETS
OGTSL SOIL SAMPLE LOG SHEETS

A.2 CHAIN OF CUSTODY RECORDS

SWMU 18 SOIL SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS 0010002
Sample Location: 18SS 001
Sampled By: TA / CO
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05	0" to 6"	brown	silty, clay, very moist abundant sand abundant gravel
Time: 1045			
Method: trowel			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

- more of a sediment sample culvert next to road and train tracks

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
yes	18FD0124C501

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0020002
Sample Location: 18SS002
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05			
Time: 1107	0" to 18"	Yellow orange to brown	Clayey silt, moist
Method: hand auger			trace sand
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

Corner of fence behind lightning rod at corner of building.
- soft surface

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0030002
Sample Location: 18SS003
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7/24/05	0" to 12"	brown to orange	Silty clay, moist, some veg material (roots), some sand, some gravel
Time: 1135			
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area outside fence next to asphalt surface

refusal at 12"

gravel on surface

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS 004
Sample Location: 18SS 004
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05	0" to 18"	dark brown to yellow brown	silty clay, moist abundant roots trace sand
Time: 1055			
Method: disposable trowel			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area at top of burm behind building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0050002
Sample Location: 18SS005
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05			
Time: 1143	0" to 6"	dark brown	silt, moist abundant organic material (roots) some sand, some clay
Method: trowel			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

Sediment sample
drainage pathway in an eroded slope outside curve in fence at corner of building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS006 0002
Sample Location: 18SS006
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05	0" to 18"	dark to light brown	silty clay, very moist some organic material
Time: 1150			
Method: hand auger			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

depression behind electrical box outside curve in fence

abundant rope on surface

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0070002
Sample Location: 18SS007
Sampled By: TA/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05 Time: 1100 Method: disposable hand auger trowel Monitor Reading (ppm):	0" to 18"	very dark brown to light yellow brown	clayey silt, moist trace sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

ivy covered area at the corner of the building at bottom of the berm

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245; CTO 0331

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

Sample ID No.: 18SS008 0002
Sample Location: 18SS 008
Sampled By: TR / CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1240	0" to ~~10~~ 6"	brown	silt, wet to saturated some sand, rock fragments
Method: ~~Hand Auger~~ Dis. Trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

drainage ditch at corner of building

more of a sediment sample rather than a soil sample

sample collected under an inch of water

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS009 0002
Sample Location: 18SS009
Sampled By: TA/CO
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1251	0" to 6"	brown	organic muck, saturated abundant organic materials
Method: trowel (DIS)			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

drainage ditch next to fence behind shed
asphalt pile adjacent
algae present cattails present
more of a sediment sample than a soil sample

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0100002
Sample Location: 18SS010
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05	0" to 18"	brown to orange brown	clayey silt, moist organic materials abundant fine sand
Time: 1215			
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area by corner of fence, runoff from two directions

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS011 0002
Sample Location: 18SS011
Sampled By: TR/CO
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1226	0" to 18"	orangish brown	silty clay, moist trace organic material
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area on top of mound behind building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS012 0002
Sample Location: 18SS012
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1245	0" to 18"	brown and gray mottled	clay, wet to saturated trace sand and silt
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

drainage ditch next to railroad tracks on side of building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Chris Doucher

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

Sample ID No.: 18SS0130002
Sample Location: 18SS013
Sampled By: TA / CD
C.O.C. No.: 3676

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05	0" to 18"	dark brown	clayey silt, moist abundant roots trace sand
Time: 1502			
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

culvert with a concrete diversion ditch near corner of building

large piece of rubber in auger (possible piece of fence)

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS014C002
Sample Location: 18SS014
Sampled By: TR/CD
C.O.C. No.: 3676

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05 Time: 1457 Method: hand auger Monitor Reading (ppm):	0" to 18"	brown to yellowish and orangish brown	sandy to silty clay, wet to saturated abundant organics some muck on top

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

low lying grassy drainage area behind building

MAP:

See Figures 3-3 through 3-6

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS015 0007
Sample Location: 18SS015
Sampled By: TR / CD
C.O.C. No.: 3676

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/31/05	0" to 18"	brown to dark brown	clay wet abundant organic material (roots) trace sand trace pebbles
Time: 1443			
Method: ~~trowel~~ hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

low lying grassy area near corner of building
- drainage area

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS016 0002
Sample Location: 18SS016
Sampled By: TR/CD
C.O.C. No.: 3676

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1435	0" to 18"	brown to orange	clayey sand to clayey silt very damp to moist some pebbles
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area down gradient from pavement on side of building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

Sample ID No.: 18SS017 0002
Sample Location: 18SS017
Sampled By: TR / CD
C.O.C. No.: 3676

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/31/05			
Time: 1413	0" to 6"	brown	silty clay, wet to saturated
Method: disposable trowel			abundant organic material
Monitor Reading (ppm):			abundant coarse sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

moved location 50' to North into a culvert at corner of building near fence.

more sediment than soil

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0180002
Sample Location: 18SS018
Sampled By: TR / CO
C.O.C. No.: 3676

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/31/05			
Time: 1405	0" to ~~18"~~	brown	clay, wet
Method: disposable trowel			
Monitor Reading (ppm):			some gravel, some sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

in culvert near fence behind building

more sediment than soil

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0190002
Sample Location: 18SS019
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1400	0" to 18"	dark brown	silty clay, moist to very moist organic material (abundant roots) trace sand
Method: disposable trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

in grass next to storm drain between bunker and back of building

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS020C02
Sample Location: 18SS020
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7/21/05			
Time: 1355	0" to 18"	dark brown to yellow mottled	Clay, wet trace organic material trace silt and med. sand
Method: disposable trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

Culvert near corner of fence beyond railroad tracks

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU18
Project No.: N1245, CTO 0331

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

Sample ID No.: 18SS0210002
Sample Location: 18SS021
Sampled By: TR/CO
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1350	0" to 18"	brown to yellow brown	Silty clay, very moist Organic Material trace Sand
Method: disposable trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics & Nitramines	(1) 4oz Jar	Yes	
TAL Metals plus SN	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

Culvert between rail road tracks

MAP:

See Figures 3-3 through 3-6

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SWMU 19 SOIL SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS070002
Sample Location: 19SB070
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 1454	0" to 18"	brown	sandy silt, wet abundant organic material and gravel
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area
runoff from bank and driveway

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS064-0002
Sample Location: 19SB064
Sampled By: TR, CO
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 0925	0" to 18"	gray and orange-brown mottled	Silt, moist to very moist roots and organic material trace sand and clay
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy field
near edge of gravel

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS061 0002
Sample Location: 19SB061
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 0912	0" to 18"	brown	silty clay, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

first 6" is gravel

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS049CC02
Sample Location: 19SB049
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05	0" to 18"	brown	silty clay, very moist to wet abundant organic material (roots) trace sand
Time: 1015			
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area near gravel
low spot
~~[illegible]~~ receives drainage from gravel area

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS 0470002
Sample Location: 19SB 047
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05	0" to 18"	brown	silty clay, moist to wet abundant organic material (roots) trace sand
Time: 1004			
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

drainage ditch near gravel road
~~abundant gravel~~ Grassy Area

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS 041 0002
Sample Location: 19SB 041
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05	0" to 18"	brown	Sandy Silt, very moist
Time: 1443			trace clay
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

bare ground

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS026 0002
Sample Location: 19SB 026
Sampled By: TA, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 1504	0" to 18"	brown	clayey silt, moist Organic matter with worms trace sand
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Colin Deeds

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS 0130002
Sample Location: 19SB 013
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 1338	0" to 18"	grey brown	sandy silt (fine to med. sand), wet abundant organic material
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

depression at the end of the gravel area behind drums
wet surficial conditions
Grassy AREA

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

Sample ID No.: 19SS0070002
Sample Location: 19SB007
Sampled By: TR, CD
C.O.C. No.: 3668

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 1410	0" to 18"	brown	silt, moist
Method: Hand Auger			trace sand
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

drainage from tank structure
GRASSY AREA

MAP:

See Figures 3-7

Circle if Applicable:

MS/MSD: yes

Duplicate ID No.: 19FD01200501

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU19
Project No.: N1245, CTO 0331

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

Sample ID No.: 19SS 0030002
Sample Location: 19SB 003
Sampled By: TR, CD
C.O.C. No.: 3668

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/20/05			
Time: 1310	0" to 18"	brown	~~silt~~ clayey silt, moist
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

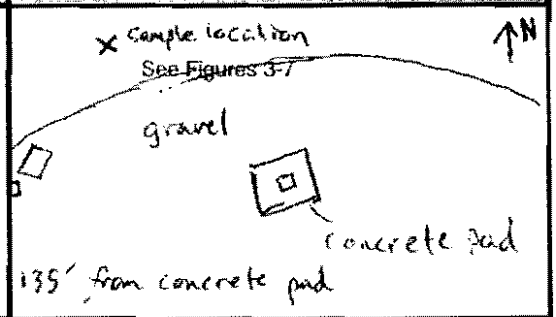
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes/No	
SVOCs w/ PAHs	(1) 4oz Jar	Yes/No	
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Li & Sr	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

closest drainage point for the gravel
left surficial gravel
out of sample
abundant metal chips on surface
moved sample location due to large amount of gravel fill around concrete pad

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SWMU 20 SOIL SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU20
Project No.: N1245, CTO 0331

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

Sample ID No.: 20SS 0010002
Sample Location: 20SB001
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 0955	0" to 18"	light to dark brown and orange brown mottled	silty clay, moist trace sand
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area next to shed and drums

MAP:

See Figures 3-8

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU20
Project No.: N1245, CTO 0331

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

Sample ID No.: 20SS000003
Sample Location: 20SB003
Sampled By: TR/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 0950	0" to 18"	dark brown with black stain	Silty clay, moist
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area next to shed and concrete pad

MAP:

See Figures 3-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU20
Project No.: N1245, CTO 0331

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

Sample ID No.: 20SS0030002
Sample Location: 20SB003
Sampled By: TA/CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05	0" to 18"	brown to orange brown	silty clay, moist charcoal present organic material
Time: 1000			
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area next to sand pile down gradient

MAP:

See Figures 3-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Chris Beach

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU20
Project No.: N1245, CTO 0331

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

Sample ID No.: 20SS0040002
Sample Location: 20SB004
Sampled By: TR / CD
C.O.C. No.: 3675

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05	8" to 18"	brown to orange brown	silty clay, moist some organics some sand
Time: 1010			
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area next to fence in line with concrete and gravel on surface gravel to depth

MAP:

See Figures 3-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU20
Project No.: N1245, CTO 0331

Sample ID No.: 20SS050002
Sample Location: 20SB005
Sampled By: TR / CD
C.O.C. No.: 3675

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/21/05			
Time: 1005	0" to 18"	brown to orange brown	Silty clay, moist trace sand trace organic material
Method: Hand Auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Energetics - Nitroaromatics, Nitramines & Perchlorates	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area next to fence in line with sand pile

MAP:

See Figures 3-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

OGTSL SOIL SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, OGTSL
Project No.: N1245, CTO 0331

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

Sample ID No.: OGTSLSS 0010002
Sample Location: OGTSLSS 001
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05			
Time: 1443	0" to 8"	tan to light brown	gravel, moist some sand
Method: hand auger			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SVOCs w/PAHs & PCBs	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

gravelly / grassy area down slope from the road
numerous metal scrap
-refusal at 8"

MAP:

See Figures 3-9

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, OGTSL
Project No.: N1245, CTO 0331

Sample ID No.: OGTSLSS 0020002
Sample Location: OGTSLSS 002
Sampled By: TR / CD
C.O.C. No.: 3670

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05	0" to 18"	brown to orange brown	silty clay, moist
Time: 1517			trace sand and gravel
Method: hand auger			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SVOCs w/PAHs & PCBs	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy / gravelly area down grade from road to the north towards back of lot
- surface fill

MAP:

See Figures 3-9

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, OGTSL
Project No.: N1245, CTO 0331

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

Sample ID No.: OGTSLSS0030002
Sample Location: OGTSLSS003
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05	0" to 18"	brown to orange brown	silty clay, very moist ~~brown~~ some organic material some sand
Time: 1520			
Method: hand auger			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SVOCs w/PAHs & PCBs	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

grassy area at back of lot at tree line.
- lowlying area receives drainage from two directions
- receives sheet runnoff
- construction piles up gradient ≈ 100 ft

MAP:

See Figures 3-9

Circle if Applicable:

MS/MSD: yes PCB only

Duplicate ID No.: OGTSSLFD0124050 1 PCB only

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, OGTSL
Project No.: N1245, CTO 0331

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

Sample ID No.: OGTSLSS0040002
Sample Location: OGTSLSS004
Sampled By: TR/CD
C.O.C. No.: 3670

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05			
Time: 1512	0" to 18"	brown to orange brown	silty clay, moist trace sand
Method: hand auger			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SVOCs w/PAHs & PCBs	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

- gravelly area down grade from the road near the back of the lot.
- south of road
- surface fill

MAP:

See Figures 3-9

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, OGTSL
Project No.: N1245, CTO 0331

Sample ID No.: OGTSLSS 005 0002
Sample Location: OGTSLSS 005
Sampled By: TR / CO
C.O.C. No.: 3670

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/05 Time: 1455 Method: hand auger Monitor Reading (ppm): —	0" to 18"	dark orange, yellow, brown mottled	clayey silt and fine sand moist trace sand trace gravel

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SVOCs w/PAHs & PCBs	(1) 4oz Jar	Yes	
TAL Metals plus Sn	(1) 4oz Jar	Yes	

OBSERVATIONS / NOTES:

gravelly / grassy area down slope from the road to the South close to the entrance

MAP:

See Figures 3-9

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

A.2 CHAIN OF CUSTODY RECORDS

TRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3676 | PAGE 1 OF ___

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASIWSKI	(412) 921-8308	LAUCKS / ANN NO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Clem Dodson / Terry Rojahn		TERRY ROJAHNO	(412)921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED.EX. AB# 8447 8135 7940		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Nitroaromatics & Nitramines	TYPE OF ANALYSIS: TAL Metals SN							COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G							
PRESERVATIVE USED									4°C	4°C							
1/21	1413	1855017 0002	1855 017	0	2	SO	G	2	1	1							
1/21	1405	1855018 0002	1855 018	0	2	SO	G	2	1	1							
1/21	1435	1855016 0002	1855 016	0	2	SO	G	2	1	1							
1/21	1443	1855015 0002	1855 015	0	2	SO	G	2	1	1							
1/21	1457	1855014 0002	1855 014	0	2	SO	G	2	1	1							
1/21	1502	1855013 0002	1855 013	0	2	SO	G	2	1	1							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	1/21/05	1830	1. RECEIVED BY FEDERAL EXPRESS	1/21/05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3675 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANN Ho
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 7940		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G
PRESERVATIVE USED: 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	Nitroaromatics, Nitramines & Perchlorate	TAL Metals & SN	Nitroaromatics & Nitramines						COMMENTS
1/21	0950	2055002 0002	2055 002	0	2	SO	G	2	1	1							
1/21	0955	2055001 0002	2055 001	0	2	SO	G	2	1	1							
1/21	1000	2055003 0002	2055 003	0	2	SO	G	2	1	1							
1/21	1005	2055005 0002	2055 005	0	2	SO	G	2	1	1							
1/21	1010	2055004 0002	2055 004	0	2	SO	G	2	1	1							
1/21	1215	1855010 0002 (TR)	1855 010	0	2	SO	G	2	–	1	1						
1/21	1226	1855011 0002	1855 011	0	2	SO	G	2	–	1	1						
1/21	1240	1855008 0002	1855 008	0	2	SO	G	2	–	1	1						
1/21	1245	1855012 0002	1855 012	0	2	SO	G	2	–	1	1						
1/21	1251	1855009 0002	1855 009	0	2	SO	G	2	–	1	1						
1/21	1350	1855021 0002	1855 021	0	2	SO	G	2	–	1	1						
1/21	1355	1855020 0002	1855 020	0	2	SO	G	2	–	1	1						
1/21	1400	1855019 0002	1855 019	0	2	SO	G	2	–	1	1						

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/21/05	1830	1. RECEIVED BY FEDERAL EXPRESS	1/21/05	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBU WHITE (ACCOMPANIES SAMPLE) YELLOW (FIL OPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3674 PAGE 1 OF

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROSAHN	(412) 921-8857	940 South HARNEY St.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 7940		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	Nitroaromatics & Nitramines	PERCHLORATE	TAL METALS Li, Sr & Sn	SVOCs & PAHs	TAL METALS & Sn			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	P	P	G				
PRESERVATIVE USED									4°C/HCl	4°C	4°C	4°C/HNO3	4°C				
1/21	0755	TB01210501	QC	-	-	QC	G	2	2								
1/21	0800	RB01210501	QC	-	-	QC	G	8	3	1	1	1	2				HAND Auger
1/21	1100	RB01210502	QC	-	-	QC	G	3	-	1	1	-	-	1			HAND Auger
1/21	1555	RB01210503	QC	-	-	QC	G	2	-	1	-	-	-	1			HAND Auger

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/21/05	1830	1. RECEIVED BY FEDERAL EXPRESS	1/21/05	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3671 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINSKI	(412)921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412)921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 7939		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TAL METALS + SM	SVOCS	PAHS	PCBS	Nitroaromatics & Nitramines				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	G	G	G	G				
PRESERVATIVE USED									4°C/HNO3	4°C	4°C	4°C	4°C				
1/24	1315	RB01240501	QC	–	–	QC	G	6	1	2	1	1	1				HAND AUGER RINSATE
1/24	0000	OGTSLFD01240501	QC	0	2	SO	G	1	–	–	–	1	–				SOIL DUP FROM OGTSLSS003

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	1/24/05	1830	FEDERAL EXPRESS	1/24/05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBU... WHITE (ACCOMPANIES SAMPLE) YELLOW (FIL... COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

RA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3670 | PAGE 1 OF ____

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANN HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 7939		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G

PRESERVATIVE USED: 4°C 4°C 4°C

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: NITROAROMATICS & NITRAMINES	TAL METALS PLUS SN	SVOCS, PAHS & PCBS							COMMENTS
1/24	1045	18SS0010002	1855 001	0	2	SO	G	4	2	2								DO MS/MSD
1/24	1055	18SS0040002	1855 004	0	2	SO	G	2	1	1								
1/24	1100	18SS0070002	1855 007	0	2	SO	G	2	1	1								
1/24	1107	18SS0020002	1855 002	0	2	SO	G	2	1	1								
1/24	1135	18SS0030002	1855 003	0	2	SO	G	2	1	1								
1/24	1143	18SS0050002	1855 005	0	2	SO	G	2	1	1								
1/24	1150	18SS0060002	1855 006	0	2	SO	G	2	1	1								
1/24	0000	18FD0124050 1	QC	0	2	SO	G	2	1	1								DUP FROM 1855001 0002
1/24	1443	OGTSLSS0010002	OGTSL 001	0	2	SO	G	2	—	1	1							
1/24	1455	OGTSLSS0050002	OGTSL 005	0	2	SO	G	2	—	1	1							
1/24	1512	OGTSLSS0040002	OGTSL 004	0	2	SO	G	2	—	1	1							
1/24	1517	OGTSLSS0020002	OGTSL 002	0	2	SO	G	2	—	1	1							
1/24	1520	OGTSLSS0030002	OGTSL 003	0	2	SO	G	3	—	1	*2							DO MS/MSD ON PCBs only

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/24/05	1830	1. RECEIVED BY FEDERAL EXPRESS	1/24/05	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3668 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	ANN HO / LAUCKS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412)921-8857	940 SOUTH HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 6461		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	Nitroaromatics, Nitramines & Perchlorates	TAL METALS plus Li & Sr	SVOCS & PAHS					COMMENTS
1/20	0730	TB01200501	QC	–	–	QC	G	2	*2								TRIP BLANK *GLASS w/ HCl
1/20	0912	1955061 0002	1955 061	0	2	SO	G	2	–	1	1						
1/20	0925	1955064 0002	1955 064	0	2	SO	G	2	–	1	1						
1/20	1004	1955047 0002	1955 047	0	2	SO	G	2	–	1	1						
1/20	1015	1955049 0002	1955 049	0	2	SO	G	2	–	1	1						
1/20	1310	1955003 0002	1955 003	0	2	SO	G	2	–	1	1						
1/20	1338	1955013 0002	1955 013	0	2	SO	G	2	–	1	1						
1/20	1410	1955007 0002	1955 007	0	2	SO	G	15	9	2	2	2					DO MS/MSD
1/20	1443	1955041 0002	1955 041	0	2	SO	G	2	–	1	1						
1/20	1454	1955070 0002	1955 070	0	2	SO	G	2	–	1	1						
1/20	1504	1955026 0002	1955 026	0	2	SO	G	2	–	1	1						
1/20	0000	19FD01200501 ~~19FD0012~~ (TC)	QC	–	–	SO	G	6	3	1	1	1					DUP OF 1955007 0002

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/20/05	1900	1. RECEIVED BY FEDERAL EXPRESS	1/20/05	1900
2. RELINQUISHED BY (TC)			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBU WHITE (ACCOMPANIES SAMPLE) YELLOW (FIE OPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

APPENDIX B

MISCELLANEOUS FIELD DOCUMENTATION

B.1 SITE LOGBOOK

B.2 LAND SURVEY DATA

B.3 HEALTH AND SAFETY DOCUMENTATION

B.1 SITE LOGBOOK

TITLE NSWC CRANE

Crew: C. Dodson, T. Kujala

PROJECT NO. 1245

BOOK NO. 1380

MON. 1/17/05

Work continued from Page

MORNING - TRAVEL

1349 Hrs - Pick up Hardware & wooden stakes @ Lowes Hardware - to repair outside water line run filling water tanks w/potable water - possibly Broken by drillers.

1425 Hrs - Arrive @ B-3245

- Water line blocked by pick up
- Resp. to ~~contact~~ @ measure water levels tomorrow @ SWMUS 9, 12 & 13
- Paperwork

1600 Hrs - Leave B 3245 for Menards Purchase strapping tape, batteries etc. @ 1657 Hrs

END

C BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature]

DATE 1/17/05

DISCLOSED TO AND UNDERSTOOD BY | **DATE** | **WITNESS** | **DATE**

SAMPLE SUMMARY 1/20/05

SAMPLED SWMU 19 SURFACE SOIL all ten locations.

TALKED to TEISHA JACKSON @ SWMU 20...SHOULD be OK to SAMPLE 1/21/05

TITLE NSWC CRANE

CREW
C. Doolan
T. Rojahn

PROJECT NO. 1245

BOOK NO. 1380

THURS 1/20/05

Work continued from Page

WEATHER - Cold 20's Mostly Cloudy

705 Hrs - Arrive @ B 3245
- PREP. to collect soil samples

0745 Hrs - T. BRENT SHOWED Tetra Tech Personnel OGISL SITE
Also, stopped @ SWMU 20 - OK to sample FRI 1/21

0820 Hrs - Arrived @ B-2797 w/ T. Brent
MEET w/ STEVE SCHANTZ (AREA Supervisor & HES OFFICER
STEVE gave HES BRIEFING prior to signing in to go on site (PTA) (SWMU 19)

SAMPLE ID	TIME	Comments
1955061 0002	0912	Escorted by T. Brent
1955064 0002	0925	" " "
1955047 0002	1004	" " "
1955049 0002	1015	" " "
1955003 0002	1310	MOVED location OFF Gravel to the NW
1955013 0002	1338	—
1955007 0002	1410	MOVED location in line w/ trunk drainage
1955041 0002	1443	—
1955070 0002	1454	—
1955026 0002	1504	—
19FD0120050 1	0000	From 1955007 0002

1512 Hrs - Checked out of PAT
1535 Hrs - Arrive @ B-3245
- Prep. samples for shipment on COC #3668 VIA FED EX AB # 8447 8135 6461

1630 Hrs - LEFT B 3245 for FED. EX.
1705 Hrs - Drop off Samples @ FED. EX.
1729 Hrs - Purchase supplies @ Sam's Club (Zip lock bags etc.)
1811 Hrs - Hotel FAXED COC # 3668 to Laucks LABS
1812 Hrs - " " " " to THNUS Pittsburgh

END

SC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Troy Rojahn

DATE 1-20-05

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 1/21/05

COMPLETED SOIL SAMPLING @ SWMU 20
WITH the collection of SURFACE SOIL
SAMPLES 20SS001 → 005

SAMPLED 14 OF 21 SURFACE SOIL LOCATIONS
FOR SWMU 18 (18SS008 – 18SS021)

SHIPPED SAMPLES ON COCs 3674-3676
VIA FED. EX. AB# 8447 8133 7940

SCIENTIFIC BINDERY PRODUCTS CH-3400 MADE IN USA

FRI. 1/21/05

Work continued from Page WEATHER :

'20 Hrs - Arrive @ B-3245
- PREP. to SAMPLE soils
- Collect TB012105 01 @ ~~0800~~ 0755 Hrs
- Collect RB012105 01 @ 0800 Hrs
  NERL (DI) Lot # 1009064 EXP Date 10/05
- Organize VEHICEL / unload supplies purchased 1/20
- PREP PAPERWORK / CHECK IN w/ PITTS OFFICE

0920 Hrs - Arrive @ SWMU 20 - No one answered BELL
0930 Hrs - Begin staking out sample locations

SAMPLE ID	TIME
2055001 000Z	0955
2055002 000Z	0950
2055003 000Z	1000
2055004 000Z	1010
2055005 000Z	1005

1030 Hrs - Return to B-3245 to process samples
- PAPERWORK
- Collect 2nd Rinsate RB012105 02 @ 1110 Hrs

1120 Hrs - LUNCH
1148 Hrs - FINISH LUNCH
1205 Hrs - CHECK IN @ B-105 - OK to SAMPLE (Joe)
1257 Hrs - CHECK out @ B-105
1303 Hrs - B104 Fence Locked
- CHECKED 198 & 200 - Both OK (Active)

1315 Hrs - Arrive @ B 3245
- Pick up more stakes
- Decon HAND AUGERS
- Put samples in Frig. from B-105

1343 Hrs - Check in w/ Bldg Sup @ B-200
1422 Hrs - Check out @ Bldg 200
1428 Hrs - Check in @ BLDG 198
1510 Hrs - LEAVE B-198 AREA; All personnel gone Bldg locked up
1525 Hrs - RETURN to B-3245

IDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page 48 & 49

SIGNATURE Troy Rogal DATE 1/21/05

CLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

FRI 1/21/05 Con't

ADDITIONAL SURFACE SOIL SAMPLES COLLECTED 1/21

SAMPLE ID	TIME
1855010 0002	1213
1855011 0002	1226
1855008 0002	1240
1855012 0002	1245
1855009 0002	1251
1855021 0002	1350
1855020 0002	1355
1855019 0002	1400
1855018 0002	1405
1855017 0002	1413
1855016 0002	1435
1855015 0002	1443
1855014 0002	1457
1855013 0002	1502

END

SCIENTIFIC SINDERAY PRODUCTS CHICAGO 8963 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

FRI 1/21/05 Cont

Work continued from Page

@ B-3245 :

- Process samples for shipment on COFCs 3674-3676 via FED EX AB # 8447 8135 7940
- Change tires on SUV Rental

1733 Hrs - LEAVE B-3245 FOR FED. EX.

1810 Hrs - Drop off samples @ FED EX.

1820 Hrs - Arrive @ Motel

1833 Hrs - Send COCs 3674-3676 via FAX to Laucks Labs

END

FIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Ty Rozal

DATE 1/21/05

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

B 100 P ©

SAMPLE SUMMARY 1/24/05:

- SHOW SURVEY CREW SITES that follow:
  SWMU 18, 19, 20 & OGTSL
- Sample Soils @ OGTSL
- Complete ~~SITE~~ @ SWMU 18 with the sampling of BLDG 104 (18S001 → 007)
- Ship samples on COCs 3669 - 3671 to Laucks Lab via AB# 8447 0135 7939

SCIENTIFIC BINDERY PRODUCTS CHICAGO 66605 MADE IN USA

TITLE NSWC CRANE

CREW
C. Dunlap
T. Rojahn

PROJECT NO. 1295
BOOK NO. 1380

MON 1/24/05

Work continued from Page

0 20 Hrs - Arrive @ B 3245
- CD prep for soil sampling
- TR prep for surveyors - maps to locate bldgs & PTA

0800 Hrs - Surveyors arrive Corey Allen & Gary Wood
Show surveyors the following sites:
- OGTSL
- Bldgs 104, 105, 198 & 200 (SWMU 18)
- PTA (SWMU 19) - introduce crew to S. Schantz
- SWMU 20 - introduce crew to Mr McRoberts

1000 Hrs - Return to B-3245
- Survey crew left B-3245 to start survey of SW & SD @ SWMUs 8 & 15
- TR & CD prep to sample soils @ B-104

Sample ID	Time	Comments
1855001 0002	1045	Dup 18FD012405 01 & MS/MSD
1855004 0002	1055	
1855007 0002	1100	
1855002 0002	1107	
1855003 0002	1135	Outside Fence
1855005 0002	1143	" "
1855006 0002	1150	" "

1210 - 1230 Hrs - Lunch

1235 Hrs - Arrive @ B-3245
- CD Process samples
- TR Paperwork & Collect Rinsate RB012405 01 @ 1315 Hrs
- Prep to sample site - OGTSL

1405 Hrs - Arrive @ OGTSL - Lay out sample locations

Sample ID	Time	
OGTSLSS001	1443	
OGTSLSS005	1455	
OGTSLSS004	1512	
OGTSLSS002	1517	
OGTSLSS003	1520	Also Dup OGTSLFD012405 01

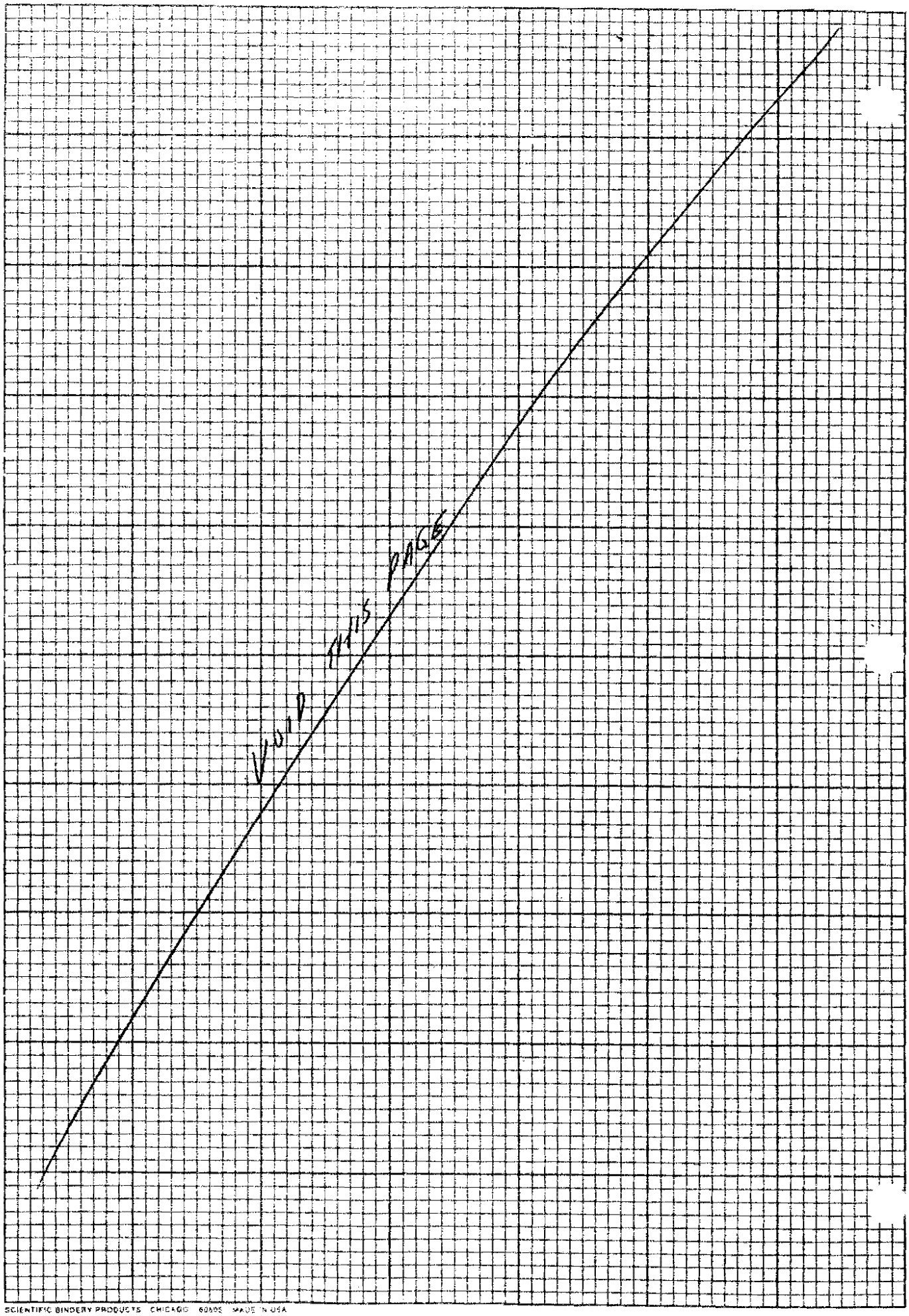
SCIENTIFIC INDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page 53

SIGNATURE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

DATE 1/24/05



SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

Mon 1/24/05 Cont.

Work continued from Page

1040 Hrs - Return to B 3245
- CD Prep. Samples / Process
- TL Paperwork
- Pack samples on COCs 3669 - 3671
For shipment via Fed. Ex. AB# 8447 8135 7939

1705 Hrs - Leave B 3245 for Fed Ex

1740 Hrs - Drop off samples @ Fed. Ex.

END

SCHLINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 1-24-05

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLE SUMMARY 2-14-05:

Sampled SUL @ 15550470002,
15550480002 & 15558048 0206.

TRAVEL DAY!

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60801 MADE IN USA

MON. 2/14/05

Work continued from Page

TRAVEL DAY

1330 Hrs - ARRIVE @ B-3245
- PREP. to collect soil samples @ SWMU 15

1420 Hrs - Collect 15550470002 FOR PEST./PCBs @ SWMU 15
1430 Hrs - Collect 15550480002 " " " " " "
1448 Hrs - Collect 15580480206 " " " " " "
SAMPLES ON COC # 3694

1500 Hrs - RETURN to B-3245
- PROCESS samples @ (XM) AND place in FRIG.
- DECON Auger bucket bits

1545 Hrs - LEAVE B-3245 FOR BEDFORD.

END

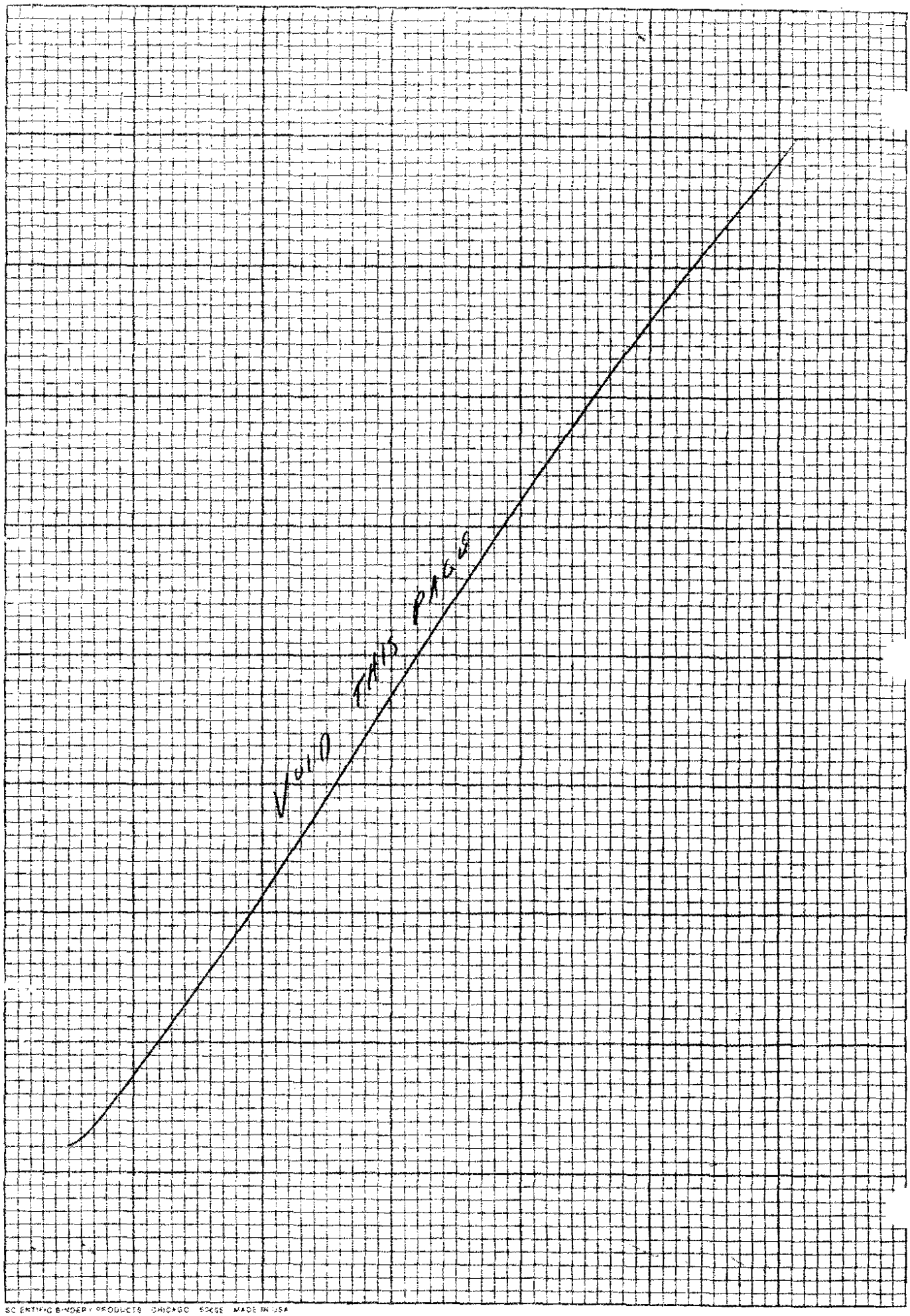
S TIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 2-14-05

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE



SCIENTIFIC BINDERY PRODUCTS CHICAGO 50608 MADE IN USA

WED 2-16-05

Work continued from Page

SHIPPER SAMPLES Collected on 2-14-05 (see P 55.)
VIA FED.EX. AO-II 8497 8135 7990

END

IFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 2-16-05

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

B.2 LAND SURVEY DATA

SWMU 18 SURVEY LOCATIONS- JANUARY - FEBRUARY, 2005

DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC

Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
SOIL BORING					
18SB001	1307399.95	3018573.32	656.43	N/A	N/A
18SB002	1307265.00	3018887.60	653.08	N/A	N/A
18SB003	1307137.18	3018816.72	652.27	N/A	N/A
18SB004	1307147.49	3018633.05	668.85	N/A	N/A
18SB005	1307046.25	3018627.06	648.60	N/A	N/A
18SB006	1307028.50	3018582.67	646.88	N/A	N/A
18SB007	1307140.59	3018604.86	656.51	N/A	N/A
18SB008	1309562.60	3015646.13	677.51	N/A	N/A
18SB009	1309688.81	3015583.68	677.16	N/A	N/A
18SB010	1309832.40	3015907.40	676.67	N/A	N/A
18SB011	1309712.12	3015871.73	693.76	N/A	N/A
18SB012	1309552.68	3015686.39	677.69	N/A	N/A
18SB013	1305684.06	3017516.00	645.77	N/A	N/A
18SB014	1305640.19	3017614.06	649.97	N/A	N/A
18SB015	1305408.97	3017731.98	649.91	N/A	N/A
18SB016	1305298.07	3017651.90	648.71	N/A	N/A
18SB017	1304173.98	3015255.22	682.11	N/A	N/A
18SB018	1303902.18	3015224.68	684.69	N/A	N/A
18SB019	1303941.21	3015058.22	685.09	N/A	N/A
18SB020	1303893.15	3014906.38	683.32	N/A	N/A
18SB021	1303972.19	3014898.03	683.97	N/A	N/A

SB= Soil Boring SW = Surface Water SG = Staff Guage
MW = Monitoring Well SD = Sediment SP = Seep

SWMU 19 SURVEY LOCATIONS- JANUARY - FEBRUARY, 2005

DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC

Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
SOIL BORING					
19SB003	1293284.25	3020196.34	484.16	N/A	N/A
19SB007	1292395.02	3020279.77	484.10	N/A	N/A
19SB013	1291817.50	3020646.02	484.04	N/A	N/A
19SB026	1291412.35	3019307.96	524.18	N/A	N/A
19SB041	1290702.14	3020097.59	482.26	N/A	N/A
19SB047	1289132.17	3020305.55	481.14	N/A	N/A
19SB049	1289020.58	3020258.88	482.20	N/A	N/A
19SB061	1279271.89	3019446.16	477.75	N/A	N/A
19SB064	1279088.28	3019436.28	475.91	N/A	N/A
19SB070	1291057.71	3020348.42	483.31	N/A	N/A

SB= Soil Boring SW = Surface Water SG = Staff Guage
MW = Monitoring Well SD = Sediment SP = Seep

SWMU 20 SURVEY LOCATIONS- JANUARY - FEBRUARY, 2005

DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC

Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
SOIL BORING					
20SB001	1309519.65	3025717.75	696.13	N/A	N/A
20SB002	1309534.41	3025697.87	696.53	N/A	N/A
20SB003	1309504.90	3025779.58	696.09	N/A	N/A
20SB004	1309414.77	3025657.31	692.26	N/A	N/A
20SB005	1309389.43	3025753.12	692.34	N/A	N/A

SB= Soil Boring SW = Surface Water SG = Staff Guage
MW = Monitoring Well SD = Sediment SP = Seep

OGTSL SURVEY LOCATIONS- JANUARY - FEBRUARY 2005

DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC

Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
SOIL BORING					
OGSTLSB001	1316996.65	3031549.02	795.95	N/A	N/A
OGSTLSB002	1316958.01	3031884.01	792.83	N/A	N/A
OGSTLSB003	1317021.00	3032184.12	779.38	N/A	N/A
OGSTLSB004	1316848.07	3031859.86	792.94	N/A	N/A
OGSTLSB005	1316896.49	3031525.88	796.04	N/A	N/A

SB= Soil Boring SW = Surface Water SG = Staff Guage
MW = Monitoring Well SD = Sediment SP = Seep

B.3 HEALTH AND SAFETY DOCUMENTATION

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

	Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam	
245	Jay McFall Jay McFall	12/7/04	2/19/04	N/A	N/A	7/30/04	
WMU 9	DOU COOSTOLHOFF [illegible]	"	1/93	8/04	8/04	2/12/03	
	TERRY ROWAHN [illegible]	"	10/85	1/04	1/04	11/10/04	ALSO SWMU 9
245 878 1448	[illegible] [illegible]	12/8/04	12/91	10/04	NA	11/7/04	
	Stan Conti S Conti	12/8/04	8/83	5/04	8/84	12/6/04	
	Colin Doolan Colin Doolan	1/6/05	5/99	12/04	NA	12/04	

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: **Baseline Examination** **UPDATE**

EMPLOYEE:	**Doolan, Colin**	**COMPANY:**	**TT/NUS**
SSN:	**XXX-XX-8351**	**POSITION:**	**Earth Scientist**
DATE OF EXAM:	**12/02/2004**	**LOCATION:**	**TT/NUS-Pittsburgh**
EXPIRATION DATE:	**12/02/2006**	**SITE:**	**Pittsburgh**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Status changed to Biennial.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/07/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Colin A. Doolan

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER

REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc

Pittsburgh, Pennsylvania

December 23, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-003

December 3, 2004

Project Number N6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from December 6, 2004 through December 17, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn
Donald Westerhoff

TETRA TECH NUS, INC.

PITT-12-4-003

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/mlg

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0160, 0331, 0343, and 0357

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-053

December 30, 2004

Project Numbers 3961, 1245, 7448, and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, an[redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from January 4-28, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Colin Doolan
Jim Goerdt
Terry Rojahn

TETRA TECH NUS, INC.

PITT-12-4-053

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/lld

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0160, 0331, 0343, and 0357

TETRA TECH NUS, INC.
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PITT-2-5-050

February 25, 2005

Project Numbers N1245, N6878, and 00042

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0331, 0357, and 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from February 28 through March 16, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- Health and Safety Plan for Risk Assessment and CMS at Solid Waste Management Unit (SWMU) 9, dated February 2005, prepared under CTO 0376.

These individuals are as follows:

Jim Goerdt
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/lld

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0331, 0357, and 0376

APPENDIX C
ANALYTICAL DATA

SUMMARY OF ANALYTICAL RESULTS
SWMU 18 – LOAD AND FILL AREA BUILDINGS

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB001	18SB001	18SB002
SAMPLE NUMBER	18SS0010002	18SS0010002-D	18SS0020002
SAMPLE CODE	ORIG	DUP	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005	1/24/2005
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	4910	4290	7420
ANTIMONY	1.1 U	1 U	0.56 U
ARSENIC	21.9 J	19.8 J	11.4 J
BARIUM	82.1 J	87.9 J	100 J
BERYLLIUM	0.59 J	0.67 J	0.95 J
CADMIUM	2.1 J	1.9 J	0.39 U
CALCIUM	61700 J	71500 J	2630 U
CHROMIUM	14.8 J	16.4 J	13.6 J
COBALT	4.4 J	4.9 J	12.8 J
COPPER	17.1 J	17.6 J	12.8 J
IRON	17500 J	18500 J	29400 J
LEAD	30.1 J	32.7 J	21.5 J
MAGNESIUM	6980 J	7460 J	1180 J
MANGANESE	259 J	283 J	603 J
MERCURY	0.011 J	0.007 U	0.016 J
NICKEL	9.2 J	9.2 J	9.9 J
POTASSIUM	1250 J	1270 J	1130 J
SELENIUM	0.3 J	0.33 J	0.41 J
SILVER	0.08 U	0.06 U	0.047 U
SODIUM	107 U	107 U	45 U
THALLIUM	0.22 U	0.19 U	0.25 U
TIN	0.56 U	0.58 U	0.33 U
VANADIUM	20 J	21.5 J	23.2 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB001	18SB001	18SB002
SAMPLE NUMBER	18SS0010002	18SS0010002-D	18SS0020002
SAMPLE CODE	ORIG	DUP	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005	1/24/2005
ZINC	1190 U	2610 J	74 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB003	18SB004	18SB005	18SB006
SAMPLE NUMBER	18SS0030002	18SS0040002	18SS0050002	18SS0060002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005	1/24/2005	1/24/2005
Energetics (mg/kg)				
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.26 J	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.3	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)				
ALUMINUM	4050	3700	4460	4420
ANTIMONY	0.36 U	1.7 U	2 U	0.48 U
ARSENIC	9.1 J	8.4 J	8.3 J	5.9 J
BARIUM	56.1 J	201 J	9500 J	71.9 J
BERYLLIUM	0.63 J	0.69 J	0.59 J	0.46 J
CADMIUM	0.25 U	1.3 J	3.1 J	0.52 J
CALCIUM	74300 J	2420 U	22300 J	5180 J
CHROMIUM	12 J	20.4 J	40.7 J	10.5 J
COBALT	7.8 J	6.9 J	8.2 J	5.4 J
COPPER	10.8 J	34.7 J	34.8 J	18.7 J
IRON	19200 J	22000 J	16100 J	15000 J
LEAD	14.9 J	51.9 J	185 J	45.4 J
MAGNESIUM	10500 J	987 J	6570 J	1050 J
MANGANESE	228 J	259 J	424 J	302 J
MERCURY	0.007 U	0.007 U	0.12 J	0.03 J
NICKEL	12.9 J	22.5 J	11.8 J	7.6 J
POTASSIUM	1000 J	1480 J	1500 J	1410 J
SELENIUM	0.29 J	0.41 J	0.57 J	0.33 J
SILVER	0.05 U	0.12 U	0.69 J	0.054 U
SODIUM	111 U	34.6 U	80.2 U	44.6 U
THALLIUM	0.12 U	0.24 U	0.2 U	0.53 U
TIN	0.23 U	2.8 J	1.4 J	0.41 U
VANADIUM	16.8 J	15.3 J	16.4 J	15.4 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB003	18SB004	18SB005	18SB006
SAMPLE NUMBER	18SS0030002	18SS0040002	18SS0050002	18SS0060002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005	1/24/2005	1/24/2005
ZINC	49.8 J	67.8 J	714 J	66.4 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB007	18SB008	18SB009	18SB010
SAMPLE NUMBER	18SS0070002	18SS0080002	18SS0090002	18SS0100002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/21/2005	1/21/2005	1/21/2005
Energetics (mg/kg)				
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 UJ	0.25 U
Inorganics (mg/kg)				
ALUMINUM	3090	21300 J	15600 J	20500 J
ANTIMONY	1.3 U	1.4 U	0.93 U	0.36 U
ARSENIC	34.7 J	110 J	18 J	8.5 J
BARIUM	422 J	109 J	75.9 J	73.8 J
BERYLLIUM	0.42 J	1.1 J	0.77 U	0.63 U
CADMIUM	6.2 J	1.8 J	1.1 U	0.23 U
CALCIUM	188000 J	4080 J	58600 J	2450 J
CHROMIUM	66.7 J	30.6 J	25.2 J	22.8 J
COBALT	5.8 J	11.4 J	9.4 J	5.6 J
COPPER	56.6 J	18.1 J	16 J	11.7 J
IRON	9260 J	34800 J	21900 J	22400 J
LEAD	299 J	49.9 J	35.2 J	11.9 J
MAGNESIUM	12400 J	2210 J	5100 J	1940 J
MANGANESE	257 J	449 J	342 J	212 J
MERCURY	0.03 J	1.4 J	0.01 UJ	0.008 UJ
NICKEL	16.4 J	16.2 J	14.3 J	12.8 J
POTASSIUM	1260 J	1300 J	1190 J	1450 J
SELENIUM	0.32 J	0.64 U	0.51 U	0.37 U
SILVER	0.13 U	0.056 UJ	0.07 UJ	0.048 UJ
SODIUM	131 U	51 U	81.9 U	43.2 U
THALLIUM	0.15 U	0.24 U	0.19 U	0.22 U
TIN	2.5 J	1.4 J	0.73 U	0.29 U
VANADIUM	11.4 J	81.3 J	33.6 J	33.3 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB007	18SB008	18SB009	18SB010
SAMPLE NUMBER	18SS0070002	18SS0080002	18SS0090002	18SS0100002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/21/2005	1/21/2005	1/21/2005
ZINC	567 J	268 J	212 J	50 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB011	18SB012	18SB013	18SB014
SAMPLE NUMBER	18SS0110002	18SS0120002	18SS0130002	18SS0140002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005	1/21/2005
Energetics (mg/kg)				
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)				
ALUMINUM	25300 J	17400 J	14600 J	19600 J
ANTIMONY	3.8 J	0.27 U	8.9 J	0.37 U
ARSENIC	10.1 J	7 J	8 J	5.9 J
BARIUM	89.3 J	112 J	72.9 J	119 J
BERYLLIUM	0.68 U	0.66 U	0.67 U	0.89 J
CADMIUM	0.42 U	0.67 U	0.91 U	0.55 U
CALCIUM	1770 J	1720 J	5780 J	2280 J
CHROMIUM	26.8 J	21.3 J	23.8 J	22.7 J
COBALT	5.5 J	10.8 J	15 J	7.9 J
COPPER	21 J	10.5 J	24.4 J	16.5 J
IRON	26100 J	18800 J	18600 J	17200 J
LEAD	44.6 J	20.4 J	4020 J	22.1 J
MAGNESIUM	3160 J	1590 J	2240 J	1760 J
MANGANESE	247 J	232 J	499 J	495 J
MERCURY	0.011 J	0.007 UJ	0.047 J	0.058 J
NICKEL	14.9 J	12.8 J	12.5 J	14.8 J
POTASSIUM	2270 J	1020 J	1460 J	2030 J
SELENIUM	0.47 U	0.24 U	0.5 U	0.41 U
SILVER	0.053 UJ	0.047 UJ	1.1 J	0.19 U
SODIUM	45 U	43.5 U	20.7 U	74.4 U
THALLIUM	0.3 U	0.18 U	0.37 U	0.25 U
TIN	0.47 U	0.39 U	1.9 J	0.32 U
VANADIUM	43.7 J	26 J	29 J	31.4 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB011	18SB012	18SB013	18SB014
SAMPLE NUMBER	18SS0110002	18SS0120002	18SS0130002	18SS0140002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005	1/21/2005
ZINC	67.6 J	43.3 J	178 J	70.1 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB015	18SB016	18SB017	18SB018
SAMPLE NUMBER	18SS0150002	18SS0160002	18SS0170002	18SS0180002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005	1/21/2005
Energetics (mg/kg)				
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)				
ALUMINUM	24500 J	16300 J	17100 J	29700 J
ANTIMONY	0.53 U	0.94 U	0.41 U	0.69 U
ARSENIC	6.3 J	7 J	8.3 J	12.4 J
BARIUM	147 J	84.5 J	93 J	220 J
BERYLLIUM	1.1 J	0.71 U	0.99 J	1.1 J
CADMIUM	0.65 U	0.73 U	0.99 U	0.43 U
CALCIUM	2630 J	1570 J	21100 J	2830 J
CHROMIUM	28.1 J	51.3 J	22.6 J	34.5 J
COBALT	8.4 J	13.6 J	7.2 J	10.1 J
COPPER	17.6 J	18 J	19.3 J	66.6 J
IRON	21100 J	18900 J	24200 J	26800 J
LEAD	29.4 J	111 J	21.5 J	31.2 J
MAGNESIUM	2230 J	1720 J	2630 J	2170 J
MANGANESE	303 J	464 J	254 J	196 J
MERCURY	0.053 J	0.06 J	0.025 J	0.013 J
NICKEL	18.8 J	14.7 J	18.4 J	21.3 J
POTASSIUM	2140 J	1940 J	1620 J	2280 J
SELENIUM	0.63 U	0.38 U	0.5 U	0.39 U
SILVER	0.54 U	0.049 UJ	0.054 UJ	0.054 UJ
SODIUM	47.7 U	22.6 U	32.9 U	48.7 U
THALLIUM	0.33 U	0.21 U	0.18 U	0.26 U
TIN	0.57 U	0.47 U	0.38 U	0.32 U
VANADIUM	38.7 J	28.6 J	30.4 J	43.5 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB015	18SB016	18SB017	18SB018
SAMPLE NUMBER	18SS0150002	18SS0160002	18SS0170002	18SS0180002
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005	1/21/2005
ZINC	89.1 J	147 J	232 J	112 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB019	18SB020	18SB021
SAMPLE NUMBER	18SS0190002	18SS0200002	18SS0210002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	15500 J	24600 J	18700 J
ANTIMONY	0.94 U	0.41 U	0.24 U
ARSENIC	5 J	10 J	9.3 J
BARIUM	81.3 J	126 J	91.8 J
BERYLLIUM	0.8 U	1.1 J	1.2 J
CADMIUM	1.4 J	2 J	0.69 U
CALCIUM	11400 J	22100 J	3100 J
CHROMIUM	23.1 J	29.1 J	28.9 J
COBALT	9.5 J	8.6 J	12.9 J
COPPER	27.2 J	13.5 J	16.3 J
IRON	16700 J	29200 J	38400 J
LEAD	52.3 J	23.2 J	70.4 J
MAGNESIUM	4180 J	2420 J	1760 J
MANGANESE	242 J	242 J	695 J
MERCURY	0.028 J	0.008 UJ	0.008 UJ
NICKEL	17.5 J	18.6 J	20.7 J
POTASSIUM	1770 J	1640 J	1590 J
SELENIUM	0.47 U	0.43 U	0.56 U
SILVER	0.058 UJ	0.047 UJ	0.049 UJ
SODIUM	52.9 U	52.2 U	31.7 U
THALLIUM	0.18 U	0.22 U	0.2 U
TIN	1.2 U	0.32 U	0.26 U
VANADIUM	25.7 J	41.6 J	36.8 J

Table C-1

Summary of Analytic Results - Surface Soil
SWMU 18 - Load and Fill Area Buildings
NSWC Crane
Crane, Indiana

LOCATION	18SB019	18SB020	18SB021
SAMPLE NUMBER	18SS0190002	18SS0200002	18SS0210002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005
ZINC	165 J	74.3 J	93 J

SUMMARY OF ANALYTICAL RESULTS
SWMU 19 – PYROTECHNIC TEST AREA

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB003	19SB007	19SB007
SAMPLE NUMBER	19SS0030002	19SS0070002	19SS0070002-D
SAMPLE CODE	NORMAL	ORIG	DUP
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
Volatile Organics (ug/kg)			
1,1,1,2-TETRACHLOROETHANE		1.34 U	1.23 U
1,1,1-TRICHLOROETHANE		1.34 U	1.23 U
1,1,2,2-TETRACHLOROETHANE		1.34 U	1.23 U
1,1,2-TRICHLOROETHANE		1.34 U	1.23 U
1,1-DICHLOROETHANE		1.34 U	1.23 U
1,1-DICHLOROETHENE		1.34 U	1.23 U
1,2,3-TRICHLOROPROPANE		1.34 U	1.23 U
1,2-DIBROMO-3-CHLOROPROPANE		1.34 U	1.23 U
1,2-DIBROMOETHANE		1.34 U	1.23 U
1,2-DICHLOROETHANE		1.34 U	1.23 U
1,2-DICHLOROPROPANE		1.34 U	1.23 U
2-BUTANONE		1.34 U	1.23 U
2-HEXANONE		1.34 U	1.23 U
3-CHLOROPROPENE		1.34 U	1.23 U
4-METHYL-2-PENTANONE		1.34 U	1.23 U
ACETONE		1.34 UJ	1.23 UJ
ACETONITRILE		53.5 UR	49.3 UR
ACROLEIN		1.34 UR	1.23 UR
ACRYLONITRILE		1.34 U	1.23 U
BENZENE		1.34 U	1.23 U
BROMODICHLOROMETHANE		1.34 U	1.23 U
BROMOFORM		1.34 U	1.23 U
BROMOMETHANE		1.34 U	1.23 U
CARBON DISULFIDE		1.34 U	1.23 U
CARBON TETRACHLORIDE		1.34 U	1.23 U
CHLOROBENZENE		1.34 U	1.23 U
CHLORODIBROMOMETHANE		1.34 U	1.23 U
CHLOROETHANE		1.34 U	1.23 U
CHLOROFORM		1.34 U	1.23 U
CHLOROMETHANE		1.34 U	1.23 U
CHLOROPRENE		1.34 U	1.23 U
CIS-1,2-DICHLOROETHENE		1.34 U	1.23 U
CIS-1,3-DICHLOROPROPENE		1.34 U	1.23 U
DIBROMOMETHANE		1.34 U	1.23 U
DICHLORODIFLUOROMETHANE		1.34 U	1.23 U
ETHYL METHACRYLATE		1.34 U	1.23 U
ETHYLBENZENE		1.34 U	1.23 U
ISOBUTANOL		53.5 UR	49.3 UR

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB003 19SS0030002 NORMAL 0 - 2 1/20/2005	19SB007 19SS0070002 ORIG 0 - 2 1/20/2005	19SB007 19SS0070002-D DUP 0 - 2 1/20/2005
METHACRYLONITRILE		1.34 U	1.23 U
METHYL IODIDE		1.34 U	1.23 U
METHYL METHACRYLATE		1.34 U	1.23 U
METHYL TERT-BUTYL ETHER		1.34 U	1.23 U
METHYLENE CHLORIDE		3 J	1.23 UJ
PROPIONITRILE		53.5 UR	49.3 UR
STYRENE		1.34 U	1.23 U
TETRACHLOROETHENE		1.34 U	1.23 U
TOLUENE		1.34 U	1.23 U
TOTAL XYLENES		1.34 U	1.23 U
TRANS-1,2-DICHLOROETHENE		1.34 U	1.23 U
TRANS-1,3-DICHLOROPROPENE		1.34 U	1.23 U
TRANS-1,4-DICHLORO-2-BUTENE		1.34 U	1.23 U
TRICHLOROETHENE		1.34 U	1.23 U
TRICHLOROFLUOROMETHANE		1.34 U	1.23 U
VINYL ACETATE		1.34 UJ	1.23 UJ
VINYL CHLORIDE		1.34 U	1.23 U
Semivolatile Organics (ug/kg)			
1,2,4,5-TETRACHLOROBENZENE		87.8 UJ	90.9 UJ
1,2,4-TRICHLOROBENZENE		87.8 UJ	90.9 UJ
1,2-DICHLOROBENZENE		87.8 UJ	90.9 UJ
1,3-DICHLOROBENZENE		87.8 UJ	90.9 UJ
1,4-DICHLOROBENZENE		87.8 UJ	90.9 UJ
1,4-DIOXANE		131 UJ	136 UJ
1,4-NAPHTHOQUINONE		87.8 UJ	90.9 UJ
1,4-PHENYLENEDIAMINE		87.8 UJ	90.9 UJ
1-NAPHTHYLAMINE		87.8 UJ	90.9 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)		87.8 UJ	90.9 UJ
2,3,4,6-TETRACHLOROPHENOL		87.8 UJ	90.9 UJ
2,4,5-TRICHLOROPHENOL		87.8 UJ	90.9 UJ
2,4,6-TRICHLOROPHENOL		87.8 UJ	90.9 UJ
2,4-DICHLOROPHENOL		87.8 UJ	90.9 UJ
2,4-DIMETHYLPHENOL		87.8 UJ	90.9 UJ
2,4-DINITROPHENOL		87.8 UJ	90.9 UJ
2,6-DICHLOROPHENOL		87.8 UJ	90.9 UJ
2-ACETYLAMINOFLUORENE		87.8 UJ	90.9 UJ
2-CHLORONAPHTHALENE		87.8 UJ	90.9 UJ
2-CHLOROPHENOL		87.8 UJ	90.9 UJ
2-METHYLNAPHTHALENE		4.33 UJ	4.48 UJ

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB003 19SS0030002 NORMAL 0 - 2 1/20/2005	19SB007 19SS0070002 ORIG 0 - 2 1/20/2005	19SB007 19SS0070002-D DUP 0 - 2 1/20/2005
2-METHYLPHENOL		87.8 UJ	90.9 UJ
2-NAPHTHYLAMINE		87.8 UJ	90.9 UJ
2-NITROANILINE		87.8 UJ	90.9 UJ
2-NITROPHENOL		87.8 UJ	90.9 UJ
2-PICOLINE		87.8 UJ	90.9 UJ
3&4-METHYLPHENOL		87.8 UJ	90.9 UJ
3,3'-DICHLOROBENZIDINE		87.8 UR	90.9 UJ
3,3'-DIMETHYLBENZIDINE		87.8 UJ	90.9 UJ
3-METHYLCHOLANTHRENE		87.8 UJ	90.9 UJ
3-NITROANILINE		87.8 UJ	90.9 UJ
4,6-DINITRO-2-METHYLPHENOL		87.8 UJ	90.9 UJ
4-AMINOBIPHENYL		87.8 UJ	90.9 UJ
4-BROMOPHENYL PHENYL ETHER		87.8 UJ	90.9 UJ
4-CHLORO-3-METHYLPHENOL		87.8 UJ	90.9 UJ
4-CHLOROANILINE		87.8 UJ	90.9 UJ
4-CHLOROPHENYL PHENYL ETHER		87.8 UJ	90.9 UJ
4-NITROANILINE		87.8 UJ	90.9 UJ
4-NITROPHENOL		87.8 UJ	90.9 UJ
4-NITROQUINOLINE-1-OXIDE		87.8 UR	90.9 UR
5-NITRO-O-TOLUIDINE		87.8 UJ	90.9 UJ
7,12-DIMETHYLBENZ(A)ANTHRACENE		87.8 UJ	90.9 UJ
A,A-DIMETHYLPHENETHYLAMINE		87.8 UJ	90.9 UJ
ACENAPHTHENE		4.33 UJ	4.48 UJ
ACENAPHTHYLENE		4.33 UJ	4.48 UJ
ACETOPHENONE		87.8 UJ	90.9 UJ
ANILINE		87.8 UJ	90.9 UJ
ANTHRACENE		4.33 UJ	4.48 UJ
ARAMITE		87.8 UJ	90.9 UJ
BENZO(A)ANTHRACENE		4.33 UJ	8 J
BENZO(A)PYRENE		5 J	10 J
BENZO(B)FLUORANTHENE		4.33 UJ	11 J
BENZO(G,H,I)PERYLENE		4.33 UJ	11 J
BENZO(K)FLUORANTHENE		4.33 UJ	9 J
BENZYL ALCOHOL		87.8 UJ	90.9 UJ
BIS(2-CHLOROETHOXY)METHANE		87.8 UJ	90.9 UJ
BIS(2-CHLOROETHYL)ETHER		87.8 UJ	90.9 UJ
BIS(2-ETHYLHEXYL)PHTHALATE		87.8 UJ	90.9 UJ
BUTYL BENZYL PHTHALATE		87.8 UJ	90.9 UJ
CHLOROBENZILATE		87.8 UJ	90.9 UJ

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB003 19SS0030002 NORMAL 0 - 2 1/20/2005	19SB007 19SS0070002 ORIG 0 - 2 1/20/2005	19SB007 19SS0070002-D DUP 0 - 2 1/20/2005
CHRYSENE		4.33 UJ	13 J
DI-N-BUTYL PHTHALATE		87.8 UJ	90.9 UJ
DI-N-OCTYL PHTHALATE		87.8 UJ	90.9 UJ
DIALLATE		87.8 UJ	90.9 UJ
DIBENZO(A,H)ANTHRACENE		4.33 UJ	4.48 UJ
DIBENZOFURAN		87.8 UJ	90.9 UJ
DIETHYL PHTHALATE		87.8 UJ	90.9 UJ
DIMETHYL PHTHALATE		87.8 UJ	90.9 UJ
DIPHENYLAMINE		87.8 UJ	90.9 UJ
ETHYL METHANE SULFONATE		87.8 UJ	90.9 UJ
FLUORANTHENE		7 J	20 J
FLUORENE		4.33 UJ	4.48 UJ
HEXACHLOROBENZENE		87.8 UJ	90.9 UJ
HEXACHLOROBUTADIENE		87.8 UJ	90.9 UJ
HEXACHLOROCYCLOPENTADIENE		87.8 UJ	90.9 UJ
HEXACHLOROETHANE		87.8 UJ	90.9 UJ
HEXACHLOROPROPENE		87.8 UJ	90.9 UJ
INDENO(1,2,3-CD)PYRENE		4.33 UJ	8 J
ISODRIN		87.8 UJ	90.9 UJ
ISOPHORONE		87.8 UJ	90.9 UJ
ISOSAFROLE		87.8 UJ	90.9 UJ
KEPONE		87.8 UJ	90.9 UJ
METHAPYRILENE		87.8 UJ	90.9 UJ
METHYL METHANE SULFONATE		87.8 UJ	90.9 UJ
N-NITROSO-DI-N-BUTYLAMINE		87.8 UJ	90.9 UJ
N-NITROSO-DI-N-PROPYLAMINE		87.8 UJ	90.9 UJ
N-NITROSODIETHYLAMINE		87.8 UJ	90.9 UJ
N-NITROSODIMETHYLAMINE		87.8 UJ	90.9 UJ
N-NITROSODIPHENYLAMINE		87.8 UJ	90.9 UJ
N-NITROSOMETHYLETHYLAMINE		87.8 UJ	90.9 UJ
N-NITROSOMORPHOLINE		87.8 UJ	90.9 UJ
N-NITROSOPIPERIDINE		87.8 UJ	90.9 UJ
N-NITROSOPYRROLIDINE		87.8 UJ	90.9 UJ
NAPHTHALENE		4.33 UJ	4.48 UJ
O,O,O-TRIETHYL PHOSPHOROTHIOATE		87.8 UJ	90.9 UJ
O-TOLUIDINE		87.8 UJ	90.9 UJ
P-(DIMETHYLAMINO)AZOBENZENE		87.8 UJ	90.9 UJ
PENTACHLOROBENZENE		87.8 UJ	90.9 UJ
PENTACHLOROETHANE		87.8 UJ	90.9 UJ

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB003 19SS0030002 NORMAL 0 - 2 1/20/2005	19SB007 19SS0070002 ORIG 0 - 2 1/20/2005	19SB007 19SS0070002-D DUP 0 - 2 1/20/2005
PENTACHLORONITROBENZENE		87.8 UJ	90.9 UJ
PHENACETIN		87.8 UJ	90.9 UJ
PHENANTHRENE		4.33 J	12 J
PHENOL		87.8 UJ	90.9 UJ
PRONAMIDE		87.8 UJ	90.9 UJ
PYRENE		7 J	17 J
PYRIDINE		87.8 UJ	90.9 UJ
SAFROLE		87.8 UJ	90.9 UJ
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	3550	4300	3990
ANTIMONY	0.6 U	0.55 U	0.56 U
ARSENIC	6.4 J	6.7 U	7 U
BARIUM	83 J	68.1 J	71 J
BERYLLIUM	0.59 J	0.69 J	0.71 J
CADMIUM	2.3 J	3.2 J	3.4 J
CALCIUM	39700 J	2530 J	2900 J
CHROMIUM	21.4 J	20 J	20.8 J
COBALT	12.1 J	11.9 J	12.2 J
COPPER	26.1 J	25.4 J	26.6 J
IRON	13900 J	14900 J	15300 J
LEAD	15.2 J	16.9 J	17.8 J
LITHIUM	4.7 J	7.3 J	7.4 J
MAGNESIUM	1330 J	788 J	813 J
MANGANESE	659 J	655 J	750 J

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB003	19SB007	19SB007
SAMPLE NUMBER	19SS0030002	19SS0070002	19SS0070002-D
SAMPLE CODE	NORMAL	ORIG	DUP
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
MERCURY	0.007 UJ	0.008 UJ	0.008 UJ
NICKEL	22.6 J	23.1 J	25.4 J
POTASSIUM	1130 J	929 J	975 J
SELENIUM	0.25 U	0.33 J	0.4 J
SILVER	0.18 U	0.2 U	0.23 U
SODIUM	36.2 U	28 U	30.9 U
STRONTIUM	45 J	7.5 J	7.6 J
THALLIUM	0.23 U	0.22 U	0.21 U
TIN	2.6 J	0.49 U	0.45 U
VANADIUM	10.2 J	11.9 J	12.2 J
ZINC	81.7 J	103 J	108 J
Miscellaneous Parameter (mg/kg)			
PERCHLORATE	0.101 U	0.103 U	0.107 UJ

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB013	19SB026	19SB041
SAMPLE NUMBER	19SS0130002	19SS0260002	19SS0410002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
Volatile Organics (ug/kg)			
1,1,1,2-TETRACHLOROETHANE			
1,1,1-TRICHLOROETHANE			
1,1,2,2-TETRACHLOROETHANE			
1,1,2-TRICHLOROETHANE			
1,1-DICHLOROETHANE			
1,1-DICHLOROETHENE			
1,2,3-TRICHLOROPROPANE			
1,2-DIBROMO-3-CHLOROPROPANE			
1,2-DIBROMOETHANE			
1,2-DICHLOROETHANE			
1,2-DICHLOROPROPANE			
2-BUTANONE			
2-HEXANONE			
3-CHLOROPROPENE			
4-METHYL-2-PENTANONE			
ACETONE			
ACETONITRILE			
ACROLEIN			
ACRYLONITRILE			
BENZENE			
BROMODICHLOROMETHANE			
BROMOFORM			
BROMOMETHANE			
CARBON DISULFIDE			
CARBON TETRACHLORIDE			
CHLOROBENZENE			
CHLORODIBROMOMETHANE			
CHLOROETHANE			
CHLOROFORM			
CHLOROMETHANE			
CHLOROPRENE			
CIS-1,2-DICHLOROETHENE			
CIS-1,3-DICHLOROPROPENE			
DIBROMOMETHANE			
DICHLORODIFLUOROMETHANE			
ETHYL METHACRYLATE			
ETHYLBENZENE			
ISOBUTANOL			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB013 19SS0130002 NORMAL 0 - 2 1/20/2005	19SB026 19SS0260002 NORMAL 0 - 2 1/20/2005	19SB041 19SS0410002 NORMAL 0 - 2 1/20/2005
METHACRYLONITRILE			
METHYL IODIDE			
METHYL METHACRYLATE			
METHYL TERT-BUTYL ETHER			
METHYLENE CHLORIDE			
PROPIONITRILE			
STYRENE			
TETRACHLOROETHENE			
TOLUENE			
TOTAL XYLENES			
TRANS-1,2-DICHLOROETHENE			
TRANS-1,3-DICHLOROPROPENE			
TRANS-1,4-DICHLORO-2-BUTENE			
TRICHLOROETHENE			
TRICHLOROFLUOROMETHANE			
VINYL ACETATE			
VINYL CHLORIDE			
Semivolatile Organics (ug/kg)			
1,2,4,5-TETRACHLOROBENZENE			
1,2,4-TRICHLOROBENZENE			
1,2-DICHLOROBENZENE			
1,3-DICHLOROBENZENE			
1,4-DICHLOROBENZENE			
1,4-DIOXANE			
1,4-NAPHTHOQUINONE			
1,4-PHENYLENEDIAMINE			
1-NAPHTHYLAMINE			
2,2'-OXYBIS(1-CHLOROPROPANE)			
2,3,4,6-TETRACHLOROPHENOL			
2,4,5-TRICHLOROPHENOL			
2,4,6-TRICHLOROPHENOL			
2,4-DICHLOROPHENOL			
2,4-DIMETHYLPHENOL			
2,4-DINITROPHENOL			
2,6-DICHLOROPHENOL			
2-ACETYLAMINOFLUORENE			
2-CHLORONAPHTHALENE			
2-CHLOROPHENOL			
2-METHYLNAPHTHALENE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB013 19SS0130002 NORMAL 0 - 2 1/20/2005	19SB026 19SS0260002 NORMAL 0 - 2 1/20/2005	19SB041 19SS0410002 NORMAL 0 - 2 1/20/2005
2-METHYLPHENOL			
2-NAPHTHYLAMINE			
2-NITROANILINE			
2-NITROPHENOL			
2-PICOLINE			
3&4-METHYLPHENOL			
3,3'-DICHLOROBENZIDINE			
3,3'-DIMETHYLBENZIDINE			
3-METHYLCHOLANTHRENE			
3-NITROANILINE			
4,6-DINITRO-2-METHYLPHENOL			
4-AMINOBIPHENYL			
4-BROMOPHENYL PHENYL ETHER			
4-CHLORO-3-METHYLPHENOL			
4-CHLOROANILINE			
4-CHLOROPHENYL PHENYL ETHER			
4-NITROANILINE			
4-NITROPHENOL			
4-NITROQUINOLINE-1-OXIDE			
5-NITRO-O-TOLUIDINE			
7,12-DIMETHYLBENZ(A)ANTHRACENE			
A,A-DIMETHYLPHENETHYLAMINE			
ACENAPHTHENE			
ACENAPHTHYLENE			
ACETOPHENONE			
ANILINE			
ANTHRACENE			
ARAMITE			
BENZO(A)ANTHRACENE			
BENZO(A)PYRENE			
BENZO(B)FLUORANTHENE			
BENZO(G,H,I)PERYLENE			
BENZO(K)FLUORANTHENE			
BENZYL ALCOHOL			
BIS(2-CHLOROETHOXY)METHANE			
BIS(2-CHLOROETHYL)ETHER			
BIS(2-ETHYLHEXYL)PHTHALATE			
BUTYL BENZYL PHTHALATE			
CHLOROBENZILATE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB013 19SS0130002 NORMAL 0 - 2 1/20/2005	19SB026 19SS0260002 NORMAL 0 - 2 1/20/2005	19SB041 19SS0410002 NORMAL 0 - 2 1/20/2005
CHRYSENE			
DI-N-BUTYL PHTHALATE			
DI-N-OCTYL PHTHALATE			
DIALLATE			
DIBENZO(A,H)ANTHRACENE			
DIBENZOFURAN			
DIETHYL PHTHALATE			
DIMETHYL PHTHALATE			
DIPHENYLAMINE			
ETHYL METHANE SULFONATE			
FLUORANTHENE			
FLUORENE			
HEXACHLOROBENZENE			
HEXACHLOROBUTADIENE			
HEXACHLOROCYCLOPENTADIENE			
HEXACHLOROETHANE			
HEXACHLOROPROPENE			
INDENO(1,2,3-CD)PYRENE			
ISODRIN			
ISOPHORONE			
ISOSAFROLE			
KEPONE			
METHAPYRILENE			
METHYL METHANE SULFONATE			
N-NITROSO-DI-N-BUTYLAMINE			
N-NITROSO-DI-N-PROPYLAMINE			
N-NITROSODIETHYLAMINE			
N-NITROSODIMETHYLAMINE			
N-NITROSODIPHENYLAMINE			
N-NITROSOMETHYLETHYLAMINE			
N-NITROSOMORPHOLINE			
N-NITROSOPIPERIDINE			
N-NITROSOPYRROLIDINE			
NAPHTHALENE			
O,O,O-TRIETHYL PHOSPHOROTHIOATE			
O-TOLUIDINE			
P-(DIMETHYLAMINO)AZOBENZENE			
PENTACHLOROBENZENE			
PENTACHLOROETHANE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB013 19SS0130002 NORMAL 0 - 2 1/20/2005	19SB026 19SS0260002 NORMAL 0 - 2 1/20/2005	19SB041 19SS0410002 NORMAL 0 - 2 1/20/2005
PENTACHLORONITROBENZENE			
PHENACETIN			
PHENANTHRENE			
PHENOL			
PRONAMIDE			
PYRENE			
PYRIDINE			
SAFROLE			
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	4020	8100	3930
ANTIMONY	0.36 U	3.3 J	0.43 U
ARSENIC	5.6 J	11.1 J	6.2 U
BARIUM	57.2 J	61.3 J	65.1 J
BERYLLIUM	0.52 J	0.65 J	0.65 J
CADMIUM	0.57 J	0.28 U	1.1 J
CALCIUM	20000 J	2350 J	16200 J
CHROMIUM	17.1 J	24.3 J	19.3 J
COBALT	7.7 J	11 J	11.6 J
COPPER	13.7 J	14.9 J	13.3 J
IRON	11200 J	22000 J	12800 J
LEAD	15.5 J	36.8 J	13.3 J
LITHIUM	4.5 J	8.1 J	5 J
MAGNESIUM	4600 J	1420 J	6570 J
MANGANESE	374 J	758 J	800 J

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB013	19SB026	19SB041
SAMPLE NUMBER	19SS0130002	19SS0260002	19SS0410002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
MERCURY	0.007 UJ	0.008 UJ	0.008 UJ
NICKEL	15.1 J	18.6 J	19.5 J
POTASSIUM	834 J	1270 J	923 J
SELENIUM	0.31 J	0.44 J	0.28 J
SILVER	0.044 U	0.052 U	0.11 U
SODIUM	57.6 U	38.4 U	51.4 U
STRONTIUM	19 J	6.5 J	15.4 J
THALLIUM	0.21 U	0.37 J	0.29 J
TIN	0.29 U	1.2 J	0.4 U
VANADIUM	10.7 J	23.3 J	10.8 J
ZINC	32.2 J	53.8 J	50.4 J
Miscellaneous Parameter (mg/kg)			
PERCHLORATE	0.095 U	0.1 UJ	0.1 UJ

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB047	19SB049	19SB061
SAMPLE NUMBER	19SS0470002	19SS0490002	19SS0610002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
Volatile Organics (ug/kg)			
1,1,1,2-TETRACHLOROETHANE			
1,1,1-TRICHLOROETHANE			
1,1,2,2-TETRACHLOROETHANE			
1,1,2-TRICHLOROETHANE			
1,1-DICHLOROETHANE			
1,1-DICHLOROETHENE			
1,2,3-TRICHLOROPROPANE			
1,2-DIBROMO-3-CHLOROPROPANE			
1,2-DIBROMOETHANE			
1,2-DICHLOROETHANE			
1,2-DICHLOROPROPANE			
2-BUTANONE			
2-HEXANONE			
3-CHLOROPROPENE			
4-METHYL-2-PENTANONE			
ACETONE			
ACETONITRILE			
ACROLEIN			
ACRYLONITRILE			
BENZENE			
BROMODICHLOROMETHANE			
BROMOFORM			
BROMOMETHANE			
CARBON DISULFIDE			
CARBON TETRACHLORIDE			
CHLOROBENZENE			
CHLORODIBROMOMETHANE			
CHLOROETHANE			
CHLOROFORM			
CHLOROMETHANE			
CHLOROPRENE			
CIS-1,2-DICHLOROETHENE			
CIS-1,3-DICHLOROPROPENE			
DIBROMOMETHANE			
DICHLORODIFLUOROMETHANE			
ETHYL METHACRYLATE			
ETHYLBENZENE			
ISOBUTANOL			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB047 19SS0470002 NORMAL 0 - 2 1/20/2005	19SB049 19SS0490002 NORMAL 0 - 2 1/20/2005	19SB061 19SS0610002 NORMAL 0 - 2 1/20/2005
METHACRYLONITRILE			
METHYL IODIDE			
METHYL METHACRYLATE			
METHYL TERT-BUTYL ETHER			
METHYLENE CHLORIDE			
PROPIONITRILE			
STYRENE			
TETRACHLOROETHENE			
TOLUENE			
TOTAL XYLENES			
TRANS-1,2-DICHLOROETHENE			
TRANS-1,3-DICHLOROPROPENE			
TRANS-1,4-DICHLORO-2-BUTENE			
TRICHLOROETHENE			
TRICHLOROFLUOROMETHANE			
VINYL ACETATE			
VINYL CHLORIDE			
Semivolatile Organics (ug/kg)			
1,2,4,5-TETRACHLOROBENZENE			
1,2,4-TRICHLOROBENZENE			
1,2-DICHLOROBENZENE			
1,3-DICHLOROBENZENE			
1,4-DICHLOROBENZENE			
1,4-DIOXANE			
1,4-NAPHTHOQUINONE			
1,4-PHENYLENEDIAMINE			
1-NAPHTHYLAMINE			
2,2'-OXYBIS(1-CHLOROPROPANE)			
2,3,4,6-TETRACHLOROPHENOL			
2,4,5-TRICHLOROPHENOL			
2,4,6-TRICHLOROPHENOL			
2,4-DICHLOROPHENOL			
2,4-DIMETHYLPHENOL			
2,4-DINITROPHENOL			
2,6-DICHLOROPHENOL			
2-ACETYLAMINOFLUORENE			
2-CHLORONAPHTHALENE			
2-CHLOROPHENOL			
2-METHYLNAPHTHALENE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB047 19SS0470002 NORMAL 0 - 2 1/20/2005	19SB049 19SS0490002 NORMAL 0 - 2 1/20/2005	19SB061 19SS0610002 NORMAL 0 - 2 1/20/2005
2-METHYLPHENOL			
2-NAPHTHYLAMINE			
2-NITROANILINE			
2-NITROPHENOL			
2-PICOLINE			
3&4-METHYLPHENOL			
3,3'-DICHLOROBENZIDINE			
3,3'-DIMETHYLBENZIDINE			
3-METHYLCHOLANTHRENE			
3-NITROANILINE			
4,6-DINITRO-2-METHYLPHENOL			
4-AMINOBIPHENYL			
4-BROMOPHENYL PHENYL ETHER			
4-CHLORO-3-METHYLPHENOL			
4-CHLOROANILINE			
4-CHLOROPHENYL PHENYL ETHER			
4-NITROANILINE			
4-NITROPHENOL			
4-NITROQUINOLINE-1-OXIDE			
5-NITRO-O-TOLUIDINE			
7,12-DIMETHYLBENZ(A)ANTHRACENE			
A,A-DIMETHYLPHENETHYLAMINE			
ACENAPHTHENE			
ACENAPHTHYLENE			
ACETOPHENONE			
ANILINE			
ANTHRACENE			
ARAMITE			
BENZO(A)ANTHRACENE			
BENZO(A)PYRENE			
BENZO(B)FLUORANTHENE			
BENZO(G,H,I)PERYLENE			
BENZO(K)FLUORANTHENE			
BENZYL ALCOHOL			
BIS(2-CHLOROETHOXY)METHANE			
BIS(2-CHLOROETHYL)ETHER			
BIS(2-ETHYLHEXYL)PHTHALATE			
BUTYL BENZYL PHTHALATE			
CHLOROBENZILATE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB047 19SS0470002 NORMAL 0 - 2 1/20/2005	19SB049 19SS0490002 NORMAL 0 - 2 1/20/2005	19SB061 19SS0610002 NORMAL 0 - 2 1/20/2005
CHRYSENE			
DI-N-BUTYL PHTHALATE			
DI-N-OCTYL PHTHALATE			
DIALLATE			
DIBENZO(A,H)ANTHRACENE			
DIBENZOFURAN			
DIETHYL PHTHALATE			
DIMETHYL PHTHALATE			
DIPHENYLAMINE			
ETHYL METHANE SULFONATE			
FLUORANTHENE			
FLUORENE			
HEXACHLOROBENZENE			
HEXACHLOROBUTADIENE			
HEXACHLOROCYCLOPENTADIENE			
HEXACHLOROETHANE			
HEXACHLOROPROPENE			
INDENO(1,2,3-CD)PYRENE			
ISODRIN			
ISOPHORONE			
ISOSAFROLE			
KEPONE			
METHAPYRILENE			
METHYL METHANE SULFONATE			
N-NITROSO-DI-N-BUTYLAMINE			
N-NITROSO-DI-N-PROPYLAMINE			
N-NITROSODIETHYLAMINE			
N-NITROSODIMETHYLAMINE			
N-NITROSODIPHENYLAMINE			
N-NITROSOMETHYLETHYLAMINE			
N-NITROSOMORPHOLINE			
N-NITROSOPIPERIDINE			
N-NITROSOPYRROLIDINE			
NAPHTHALENE			
O,O,O-TRIETHYL PHOSPHOROTHIOATE			
O-TOLUIDINE			
P-(DIMETHYLAMINO)AZOBENZENE			
PENTACHLOROBENZENE			
PENTACHLOROETHANE			

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB047 19SS0470002 NORMAL 0 - 2 1/20/2005	19SB049 19SS0490002 NORMAL 0 - 2 1/20/2005	19SB061 19SS0610002 NORMAL 0 - 2 1/20/2005
PENTACHLORONITROBENZENE			
PHENACETIN			
PHENANTHRENE			
PHENOL			
PRONAMIDE			
PYRENE			
PYRIDINE			
SAFROLE			
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	4210	4850	4430
ANTIMONY	0.47 U	1.5 U	0.26 U
ARSENIC	7.1 J	6.2 J	5.6 J
BARIUM	63.2 J	68 J	63.5 J
BERYLLIUM	0.67 J	0.75 J	0.58 J
CADMIUM	1.7 J	2.9 J	0.13 U
CALCIUM	9170 J	3630 J	3110 J
CHROMIUM	25.1 J	50.5 J	7.6 J
COBALT	10.7 J	13.8 J	8.9 J
COPPER	26.1 J	49.3 J	8.7 J
IRON	13600 J	13500 J	13000 J
LEAD	15.7 J	22.9 J	11.4 J
LITHIUM	10.6 J	9.4 J	4.6 J
MAGNESIUM	867 J	1550 J	819 J
MANGANESE	491 J	691 J	629 J

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB047	19SB049	19SB061
SAMPLE NUMBER	19SS0470002	19SS0490002	19SS0610002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005	1/20/2005
MERCURY	0.009 J	0.008 UJ	0.007 UJ
NICKEL	112 J	101 J	9.4 J
POTASSIUM	1050 J	974 J	1000 J
SELENIUM	0.38 J	0.35 J	0.39 J
SILVER	0.16 U	0.06 U	0.05 U
SODIUM	47.3 U	37.2 U	47.6 U
STRONTIUM	12.3 J	8.6 J	11.4 J
THALLIUM	0.22 U	0.32 J	0.25 U
TIN	0.35 U	0.34 U	0.21 U
VANADIUM	12 J	11.1 J	11.9 J
ZINC	59 J	87.3 J	36.7 J
Miscellaneous Parameter (mg/kg)			
PERCHLORATE	0.113 U	0.102 U	0.097 U

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB064	19SB070
SAMPLE NUMBER	19SS0640002	19SS0700002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005
Volatile Organics (ug/kg)		
1,1,1,2-TETRACHLOROETHANE		
1,1,1-TRICHLOROETHANE		
1,1,2,2-TETRACHLOROETHANE		
1,1,2-TRICHLOROETHANE		
1,1-DICHLOROETHANE		
1,1-DICHLOROETHENE		
1,2,3-TRICHLOROPROPANE		
1,2-DIBROMO-3-CHLOROPROPANE		
1,2-DIBROMOETHANE		
1,2-DICHLOROETHANE		
1,2-DICHLOROPROPANE		
2-BUTANONE		
2-HEXANONE		
3-CHLOROPROPENE		
4-METHYL-2-PENTANONE		
ACETONE		
ACETONITRILE		
ACROLEIN		
ACRYLONITRILE		
BENZENE		
BROMODICHLOROMETHANE		
BROMOFORM		
BROMOMETHANE		
CARBON DISULFIDE		
CARBON TETRACHLORIDE		
CHLOROBENZENE		
CHLORODIBROMOMETHANE		
CHLOROETHANE		
CHLOROFORM		
CHLOROMETHANE		
CHLOROPRENE		
CIS-1,2-DICHLOROETHENE		
CIS-1,3-DICHLOROPROPENE		
DIBROMOMETHANE		
DICHLORODIFLUOROMETHANE		
ETHYL METHACRYLATE		
ETHYLBENZENE		
ISOBUTANOL		

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB064 19SS0640002 NORMAL 0 - 2 1/20/2005	19SB070 19SS0700002 NORMAL 0 - 2 1/20/2005
METHACRYLONITRILE		
METHYL IODIDE		
METHYL METHACRYLATE		
METHYL TERT-BUTYL ETHER		
METHYLENE CHLORIDE		
PROPIONITRILE		
STYRENE		
TETRACHLOROETHENE		
TOLUENE		
TOTAL XYLENES		
TRANS-1,2-DICHLOROETHENE		
TRANS-1,3-DICHLOROPROPENE		
TRANS-1,4-DICHLORO-2-BUTENE		
TRICHLOROETHENE		
TRICHLOROFLUOROMETHANE		
VINYL ACETATE		
VINYL CHLORIDE		
Semivolatile Organics (ug/kg)		
1,2,4,5-TETRACHLOROBENZENE		
1,2,4-TRICHLOROBENZENE		
1,2-DICHLOROBENZENE		
1,3-DICHLOROBENZENE		
1,4-DICHLOROBENZENE		
1,4-DIOXANE		
1,4-NAPHTHOQUINONE		
1,4-PHENYLENEDIAMINE		
1-NAPHTHYLAMINE		
2,2'-OXYBIS(1-CHLOROPROPANE)		
2,3,4,6-TETRACHLOROPHENOL		
2,4,5-TRICHLOROPHENOL		
2,4,6-TRICHLOROPHENOL		
2,4-DICHLOROPHENOL		
2,4-DIMETHYLPHENOL		
2,4-DINITROPHENOL		
2,6-DICHLOROPHENOL		
2-ACETYLAMINOFLUORENE		
2-CHLORONAPHTHALENE		
2-CHLOROPHENOL		
2-METHYLNAPHTHALENE		

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB064 19SS0640002 NORMAL 0 - 2 1/20/2005	19SB070 19SS0700002 NORMAL 0 - 2 1/20/2005
2-METHYLPHENOL		
2-NAPHTHYLAMINE		
2-NITROANILINE		
2-NITROPHENOL		
2-PICOLINE		
3&4-METHYLPHENOL		
3,3'-DICHLOROBENZIDINE		
3,3'-DIMETHYLBENZIDINE		
3-METHYLCHOLANTHRENE		
3-NITROANILINE		
4,6-DINITRO-2-METHYLPHENOL		
4-AMINOBIPHENYL		
4-BROMOPHENYL PHENYL ETHER		
4-CHLORO-3-METHYLPHENOL		
4-CHLOROANILINE		
4-CHLOROPHENYL PHENYL ETHER		
4-NITROANILINE		
4-NITROPHENOL		
4-NITROQUINOLINE-1-OXIDE		
5-NITRO-O-TOLUIDINE		
7,12-DIMETHYLBENZ(A)ANTHRACENE		
A,A-DIMETHYLPHENETHYLAMINE		
ACENAPHTHENE		
ACENAPHTHYLENE		
ACETOPHENONE		
ANILINE		
ANTHRACENE		
ARAMITE		
BENZO(A)ANTHRACENE		
BENZO(A)PYRENE		
BENZO(B)FLUORANTHENE		
BENZO(G,H,I)PERYLENE		
BENZO(K)FLUORANTHENE		
BENZYL ALCOHOL		
BIS(2-CHLOROETHOXY)METHANE		
BIS(2-CHLOROETHYL)ETHER		
BIS(2-ETHYLHEXYL)PHTHALATE		
BUTYL BENZYL PHTHALATE		
CHLOROBENZILATE		

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB064 19SS0640002 NORMAL 0 - 2 1/20/2005	19SB070 19SS0700002 NORMAL 0 - 2 1/20/2005
CHRYSENE		
DI-N-BUTYL PHTHALATE		
DI-N-OCTYL PHTHALATE		
DIALLATE		
DIBENZO(A,H)ANTHRACENE		
DIBENZOFURAN		
DIETHYL PHTHALATE		
DIMETHYL PHTHALATE		
DIPHENYLAMINE		
ETHYL METHANE SULFONATE		
FLUORANTHENE		
FLUORENE		
HEXACHLOROBENZENE		
HEXACHLOROBUTADIENE		
HEXACHLOROCYCLOPENTADIENE		
HEXACHLOROETHANE		
HEXACHLOROPROPENE		
INDENO(1,2,3-CD)PYRENE		
ISODRIN		
ISOPHORONE		
ISOSAFROLE		
KEPONE		
METHAPYRILENE		
METHYL METHANE SULFONATE		
N-NITROSO-DI-N-BUTYLAMINE		
N-NITROSO-DI-N-PROPYLAMINE		
N-NITROSODIETHYLAMINE		
N-NITROSODIMETHYLAMINE		
N-NITROSODIPHENYLAMINE		
N-NITROSOMETHYLETHYLAMINE		
N-NITROSOMORPHOLINE		
N-NITROSOPIPERIDINE		
N-NITROSOPYRROLIDINE		
NAPHTHALENE		
O,O,O-TRIETHYL PHOSPHOROTHIOATE		
O-TOLUIDINE		
P-(DIMETHYLAMINO)AZOBENZENE		
PENTACHLOROBENZENE		
PENTACHLOROETHANE		

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	19SB064 19SS0640002 NORMAL 0 - 2 1/20/2005	19SB070 19SS0700002 NORMAL 0 - 2 1/20/2005
PENTACHLORONITROBENZENE		
PHENACETIN		
PHENANTHRENE		
PHENOL		
PRONAMIDE		
PYRENE		
PYRIDINE		
SAFROLE		
Energetics (mg/kg)		
1,3,5-TRINITROBENZENE	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U
HMX	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U
RDX	1.8	0.25 U
TETRYL	0.25 U	0.25 U
Inorganics (mg/kg)		
ALUMINUM	4370	4720
ANTIMONY	1.6 U	1.2 U
ARSENIC	6.1 J	5.5 U
BARIUM	81.1 J	122 J
BERYLLIUM	0.78 J	0.72 J
CADMIUM	0.67 J	1.8 J
CALCIUM	1200 J	1540 J
CHROMIUM	9.9 J	20.6 J
COBALT	7.3 J	7.4 J
COPPER	13 J	14.5 J
IRON	12400 J	11800 J
LEAD	64.8 J	15.2 J
LITHIUM	4.1 J	6.4 J
MAGNESIUM	618 J	783 J
MANGANESE	496 J	330 J

Table C-2

Summary of Analytic Results - Surface Soil
SWMU 19 - Pyrotechnic Test Area
NSWC Crane
Crane, Indiana

LOCATION	19SB064	19SB070
SAMPLE NUMBER	19SS0640002	19SS0700002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/20/2005	1/20/2005
MERCURY	0.008 UJ	0.014 J
NICKEL	8.7 J	18.2 J
POTASSIUM	926 J	1090 J
SELENIUM	0.5 J	0.29 U
SILVER	4.8 J	0.06 U
SODIUM	58.3 U	41.5 U
STRONTIUM	6.3 J	8.7 J
THALLIUM	0.28 U	0.28 U
TIN	0.22 U	0.62 U
VANADIUM	13.1 J	11.4 J
ZINC	63.6 J	55.5 J
Miscellaneous Parameter (mg/kg)		
PERCHLORATE	0.104 U	0.101 UJ

SUMMARY OF ANALYTICAL RESULTS
SWMU 20 – CRANE ARMY AMMUNITION ACTIVITY
QUALITY ASSURANCE/QUALITY CONTROL TEST AREA

Table C-3

Summary of Analytic Results - Surface Soil
SWMU 20 - Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area
NSWC Crane
Crane, Indiana

LOCATION	20SB001	20SB002	20SB003
SAMPLE NUMBER	20SS0010002	20SS0020002	20SS0030002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005
Energetics (mg/kg)			
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U
Inorganics (mg/kg)			
ALUMINUM	6580 J	21700 J	19600 J
ANTIMONY	0.63 U	0.45 U	0.36 U
ARSENIC	4.5 J	8.6 J	7.2 J
BARIUM	78 J	132 J	140 J
BERYLLIUM	0.34 U	0.83 J	1.1 J
CADMIUM	0.95 J	2.6 J	0.36 U
CALCIUM	278000 J	14800 J	6340 J
CHROMIUM	12.5 J	22.1 J	18.3 J
COBALT	4.2 J	8.8 J	16.3 J
COPPER	18.6 J	43.9 J	9.2 J
IRON	7500 J	19800 J	14800 J
LEAD	19.2 J	38.1 J	19 J
MAGNESIUM	3550 J	2470 J	3250 J
MANGANESE	660 J	609 J	1430 J
MERCURY	0.007 UJ	0.007 UJ	0.007 UJ
NICKEL	6.8 J	15.1 J	17.5 J
POTASSIUM	762 J	1590 J	1390 J
SELENIUM	0.24 U	0.53 U	0.72 J
SILVER	0.36 U	0.24 U	0.07 U
SODIUM	94.1 J	54.3 U	72.8 U
THALLIUM	0.14 U	0.27 U	0.34 U
TIN	0.64 U	0.42 U	0.24 U
VANADIUM	14.1 J	36.8 J	34.3 J

Table C-3

Summary of Analytic Results - Surface Soil
SWMU 20 - Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area
NSWC Crane
Crane, Indiana

LOCATION	20SB001	20SB002	20SB003
SAMPLE NUMBER	20SS0010002	20SS0020002	20SS0030002
SAMPLE CODE	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005	1/21/2005
ZINC	44 J	114 J	61.2 J
Miscellaneous Parameter (mg/kg)			
PERCHLORATE	0.047 U	0.048 U	0.048 U

Table C-3

Summary of Analytic Results - Surface Soil
SWMU 20 - Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area
NSWC Crane
Crane, Indiana

LOCATION	20SB004	20SB005
SAMPLE NUMBER	20SS0040002	20SS0050002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005
Energetics (mg/kg)		
1,3,5-TRINITROBENZENE	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U
HMX	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U
RDX	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U
Inorganics (mg/kg)		
ALUMINUM	17200 J	17400 J
ANTIMONY	0.34 U	0.38 U
ARSENIC	10 J	8 J
BARIUM	164 J	161 J
BERYLLIUM	0.72 U	0.7 U
CADMIUM	0.62 U	0.75 U
CALCIUM	70600 J	80300 J
CHROMIUM	27.8 J	20.7 J
COBALT	8.3 J	9 J
COPPER	15.7 J	22.9 J
IRON	29300 J	17900 J
LEAD	24 J	19.6 J
MAGNESIUM	3170 J	3070 J
MANGANESE	556 J	611 J
MERCURY	0.007 UJ	0.007 UJ
NICKEL	14.4 J	13.7 J
POTASSIUM	1550 J	1460 J
SELENIUM	0.48 U	0.49 U
SILVER	0.07 U	0.09 U
SODIUM	66.1 U	55.2 U
THALLIUM	0.23 U	0.25 U
TIN	0.26 U	0.32 U
VANADIUM	39.8 J	32.1 J

Table C-3

Summary of Analytic Results - Surface Soil
SWMU 20 - Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area
NSWC Crane
Crane, Indiana

LOCATION	20SB004	20SB005
SAMPLE NUMBER	20SS0040002	20SS0050002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/21/2005	1/21/2005
ZINC	60.7 J	70.4 J
Miscellaneous Parameter (mg/kg		
PERCHLORATE	0.046 U	0.049 U

SUMMARY OF ANALYTICAL RESULTS
OLD GUN TUB STORAGE LOT

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION	OGSTLSB001	OGSTLSB002
SAMPLE NUMBER	OGTSLSS0010002	OGTSLSS0020002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005
Semivolatile Organics (ug/kg)		
1,2,4,5-TETRACHLOROBENZENE	74.4 U	81.7 U
1,2,4-TRICHLOROBENZENE	74.4 U	81.7 U
1,2-DICHLOROBENZENE	74.4 U	81.7 U
1,3-DICHLOROBENZENE	74.4 U	81.7 U
1,4-DICHLOROBENZENE	74.4 U	81.7 U
1,4-DIOXANE	111 U	122 U
1,4-NAPHTHOQUINONE	74.4 U	81.7 U
1,4-PHENYLENEDIAMINE	74.4 U	81.7 U
1-NAPHTHYLAMINE	74.4 U	81.7 U
2,2'-OXYBIS(1-CHLOROPROPANE)	74.4 U	81.7 U
2,3,4,6-TETRACHLOROPHENOL	74.4 U	81.7 U
2,4,5-TRICHLOROPHENOL	74.4 U	81.7 U
2,4,6-TRICHLOROPHENOL	74.4 U	81.7 U
2,4-DICHLOROPHENOL	74.4 U	81.7 U
2,4-DIMETHYLPHENOL	74.4 U	81.7 U
2,4-DINITROPHENOL	74.4 U	81.7 U
2,6-DICHLOROPHENOL	74.4 U	81.7 U
2-ACETYLAMINOFLUORENE	74.4 UJ	81.7 UJ
2-CHLORONAPHTHALENE	74.4 U	81.7 U
2-CHLOROPHENOL	74.4 U	81.7 U
2-METHYLNAPHTHALENE	3.67 U	4.02 U
2-METHYLPHENOL	74.4 U	81.7 U
2-NAPHTHYLAMINE	74.4 U	81.7 U
2-NITROANILINE	74.4 U	81.7 U
2-NITROPHENOL	74.4 U	81.7 U
2-PICOLINE	74.4 U	81.7 U
3&4-METHYLPHENOL	74.4 U	81.7 U
3,3'-DICHLOROBENZIDINE	74.4 U	81.7 U
3,3'-DIMETHYLBENZIDINE	74.4 UJ	81.7 UJ
3-METHYLCHOLANTHRENE	74.4 U	81.7 U
3-NITROANILINE	74.4 U	81.7 U
4,6-DINITRO-2-METHYLPHENOL	74.4 U	81.7 U
4-AMINOBIPHENYL	74.4 U	81.7 U
4-BROMOPHENYL PHENYL ETHER	74.4 U	81.7 U
4-CHLORO-3-METHYLPHENOL	74.4 U	81.7 U
4-CHLOROANILINE	74.4 U	81.7 U
4-CHLOROPHENYL PHENYL ETHER	74.4 U	81.7 U
4-NITROANILINE	74.4 U	81.7 U

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB001 OGTSLSS0010002 NORMAL 0 - 2 1/24/2005	OGSTLSB002 OGTSLSS0020002 NORMAL 0 - 2 1/24/2005
4-NITROPHENOL	74.4 UJ	81.7 UJ
4-NITROQUINOLINE-1-OXIDE	74.4 UR	81.7 UR
5-NITRO-O-TOLUIDINE	74.4 U	81.7 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	74.4 U	81.7 U
A,A-DIMETHYLPHENETHYLAMINE	74.4 U	81.7 U
ACENAPHTHENE	3.67 U	4.02 U
ACENAPHTHYLENE	28	4.02 U
ACETOPHENONE	74.4 U	81.7 U
ANILINE	74.4 U	81.7 U
ANTHRACENE	24	4.02 U
ARAMITE	74.4 U	81.7 U
BENZO(A)ANTHRACENE	140	18
BENZO(A)PYRENE	140	15
BENZO(B)FLUORANTHENE	390	25
BENZO(G,H,I)PERYLENE	140	23
BENZO(K)FLUORANTHENE	180	21
BENZYL ALCOHOL	74.4 U	81.7 U
BIS(2-CHLOROETHOXY)METHANE	74.4 U	81.7 U
BIS(2-CHLOROETHYL)ETHER	74.4 U	81.7 U
BIS(2-ETHYLHEXYL)PHTHALATE	1500 J	81.7 UJ
BUTYL BENZYL PHTHALATE	74.4 U	81.7 U
CHLOROBENZILATE	74.4 U	81.7 U
CHRYSENE	260	22
DI-N-BUTYL PHTHALATE	74.4 U	81.7 U
DI-N-OCTYL PHTHALATE	74.4 U	81.7 U
DIALLATE	74.4 U	81.7 U
DIBENZO(A,H)ANTHRACENE	38	4.02 U
DIBENZOFURAN	74.4 U	81.7 U
DIETHYL PHTHALATE	74.4 U	81.7 U
DIMETHYL PHTHALATE	74.4 U	81.7 U
DIPHENYLAMINE	74.4 U	81.7 U
ETHYL METHANE SULFONATE	74.4 U	81.7 U
FLUORANTHENE	310	35
FLUORENE	3.67 U	4.02 U
HEXACHLOROBENZENE	74.4 U	81.7 U
HEXACHLOROBUTADIENE	74.4 U	81.7 U
HEXACHLOROCYCLOPENTADIENE	74.4 UJ	81.7 UJ
HEXACHLOROETHANE	74.4 U	81.7 U
HEXACHLOROPROPENE	74.4 U	81.7 U

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB001 OGTSLSS0010002 NORMAL 0 - 2 1/24/2005	OGSTLSB002 OGTSLSS0020002 NORMAL 0 - 2 1/24/2005
INDENO(1,2,3-CD)PYRENE	130	21
ISODRIN	74.4 U	81.7 U
ISOPHORONE	74.4 U	81.7 U
ISOSAFROLE	74.4 U	81.7 U
KEPONE	74.4 UJ	81.7 UJ
METHAPYRILENE	74.4 UJ	81.7 UJ
METHYL METHANE SULFONATE	74.4 U	81.7 U
N-NITROSO-DI-N-BUTYLAMINE	74.4 U	81.7 U
N-NITROSO-DI-N-PROPYLAMINE	74.4 UJ	81.7 UJ
N-NITROSODIETHYLAMINE	74.4 U	81.7 U
N-NITROSODIMETHYLAMINE	74.4 UJ	81.7 UJ
N-NITROSODIPHENYLAMINE	74.4 U	81.7 U
N-NITROSOMETHYLETHYLAMINE	74.4 U	81.7 U
N-NITROSOMORPHOLINE	74.4 U	81.7 U
N-NITROSOPIPERIDINE	74.4 U	81.7 U
N-NITROSOPYRROLIDINE	74.4 U	81.7 U
NAPHTHALENE	9	4.02 J
O,O,O-TRIETHYL PHOSPHOROTHIOATE	74.4 U	81.7 U
O-TOLUIDINE	74.4 U	81.7 U
P-(DIMETHYLAMINO)AZOBENZENE	74.4 U	81.7 U
PENTACHLOROBENZENE	74.4 U	81.7 U
PENTACHLOROETHANE	74.4 U	81.7 U
PENTACHLORONITROBENZENE	74.4 U	81.7 U
PHENACETIN	74.4 U	81.7 U
PHENANTHRENE	41	10
PHENOL	74.4 U	81.7 U
PRONAMIDE	74.4 U	81.7 U
PYRENE	310	40
PYRIDINE	74.4 U	81.7 U
SAFROLE	74.4 U	81.7 U
Pesticides PCBs (ug/kg)		
AROCLOR-1016	10 U	11 U
AROCLOR-1221	10 U	11 U
AROCLOR-1232	10 U	11 U
AROCLOR-1242	10 U	11 U
AROCLOR-1248	10 U	11 U
AROCLOR-1254	10 U	11 U
AROCLOR-1260	390	130
Inorganics (mg/kg)		

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION	OGSTLSB001	OGSTLSB002
SAMPLE NUMBER	OGTSLSS0010002	OGTSLSS0020002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005
ALUMINUM	587	24200
ANTIMONY	28 J	6.9 J
ARSENIC	5.6 J	8.1 J
BARIUM	15.1 J	43 J
BERYLLIUM	0.07 U	0.32 J
CADMIUM	12.2 J	3.6 J
CALCIUM	339000 J	82900 J
CHROMIUM	573 J	34.9 J
COBALT	11.1 J	4.9 J
COPPER	99.5 J	76.6 J
IRON	29500 J	31400 J
LEAD	543 J	467 J
MAGNESIUM	16400 J	16800 J
MANGANESE	765 J	209 J
MERCURY	0.038 J	0.026 J
NICKEL	442 J	23.8 J
POTASSIUM	873 J	974 J
SELENIUM	0.22 J	0.36 J
SILVER	0.07 U	0.12 U
SODIUM	178 J	178 J
THALLIUM	0.03 U	0.3 U
TIN	3.8 J	6 J
VANADIUM	8.3 J	22.9 J
ZINC	1650 J	279 J

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION	OGSTLSB003	OGSTLSB003
SAMPLE NUMBER	OGTSLSS0030002	OGTSLSS0030002-D
SAMPLE CODE	ORIG	DUP
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005
Semivolatile Organics (ug/kg)		
1,2,4,5-TETRACHLOROBENZENE	86.5 U	
1,2,4-TRICHLOROBENZENE	86.5 U	
1,2-DICHLOROBENZENE	86.5 U	
1,3-DICHLOROBENZENE	86.5 U	
1,4-DICHLOROBENZENE	86.5 U	
1,4-DIOXANE	129 U	
1,4-NAPHTHOQUINONE	86.5 U	
1,4-PHENYLENEDIAMINE	86.5 U	
1-NAPHTHYLAMINE	86.5 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	86.5 U	
2,3,4,6-TETRACHLOROPHENOL	86.5 U	
2,4,5-TRICHLOROPHENOL	86.5 U	
2,4,6-TRICHLOROPHENOL	86.5 U	
2,4-DICHLOROPHENOL	86.5 U	
2,4-DIMETHYLPHENOL	86.5 U	
2,4-DINITROPHENOL	86.5 U	
2,6-DICHLOROPHENOL	86.5 U	
2-ACETYLAMINOFLUORENE	86.5 UJ	
2-CHLORONAPHTHALENE	86.5 U	
2-CHLOROPHENOL	86.5 U	
2-METHYLNAPHTHALENE	4.26 U	
2-METHYLPHENOL	86.5 U	
2-NAPHTHYLAMINE	86.5 U	
2-NITROANILINE	86.5 U	
2-NITROPHENOL	86.5 U	
2-PICOLINE	86.5 U	
3&4-METHYLPHENOL	86.5 U	
3,3'-DICHLOROBENZIDINE	86.5 U	
3,3'-DIMETHYLBENZIDINE	86.5 UJ	
3-METHYLCHOLANTHRENE	86.5 U	
3-NITROANILINE	86.5 U	
4,6-DINITRO-2-METHYLPHENOL	86.5 U	
4-AMINOBIPHENYL	86.5 U	
4-BROMOPHENYL PHENYL ETHER	86.5 U	
4-CHLORO-3-METHYLPHENOL	86.5 U	
4-CHLOROANILINE	86.5 U	
4-CHLOROPHENYL PHENYL ETHER	86.5 U	
4-NITROANILINE	86.5 U	

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB003 OGTSLSS0030002 ORIG 0 - 2 1/24/2005	OGSTLSB003 OGTSLSS0030002-D DUP 0 - 2 1/24/2005
4-NITROPHENOL	86.5 UJ	
4-NITROQUINOLINE-1-OXIDE	86.5 UR	
5-NITRO-O-TOLUIDINE	86.5 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	86.5 U	
A,A-DIMETHYLPHENETHYLAMINE	86.5 U	
ACENAPHTHENE	4.26 U	
ACENAPHTHYLENE	4.26 U	
ACETOPHENONE	86.5 U	
ANILINE	86.5 U	
ANTHRACENE	4.26 U	
ARAMITE	86.5 U	
BENZO(A)ANTHRACENE	27	
BENZO(A)PYRENE	21 J	
BENZO(B)FLUORANTHENE	30 J	
BENZO(G,H,I)PERYLENE	13 J	
BENZO(K)FLUORANTHENE	9 J	
BENZYL ALCOHOL	86.5 U	
BIS(2-CHLOROETHOXY)METHANE	86.5 U	
BIS(2-CHLOROETHYL)ETHER	86.5 U	
BIS(2-ETHYLHEXYL)PHTHALATE	86.5 UJ	
BUTYL BENZYL PHTHALATE	86.5 U	
CHLOROBENZILATE	86.5 U	
CHRYSENE	21	
DI-N-BUTYL PHTHALATE	86.5 U	
DI-N-OCTYL PHTHALATE	86.5 U	
DIALLATE	86.5 U	
DIBENZO(A,H)ANTHRACENE	4.26 UJ	
DIBENZOFURAN	86.5 U	
DIETHYL PHTHALATE	86.5 U	
DIMETHYL PHTHALATE	86.5 U	
DIPHENYLAMINE	86.5 U	
ETHYL METHANE SULFONATE	86.5 U	
FLUORANTHENE	44	
FLUORENE	4.26 U	
HEXACHLOROBENZENE	86.5 U	
HEXACHLOROBUTADIENE	86.5 U	
HEXACHLOROCYCLOPENTADIENE	86.5 UJ	
HEXACHLOROETHANE	86.5 U	
HEXACHLOROPROPENE	86.5 U	

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB003 OGTSLSS0030002 ORIG 0 - 2 1/24/2005	OGSTLSB003 OGTSLSS0030002-D DUP 0 - 2 1/24/2005
INDENO(1,2,3-CD)PYRENE	10 J	
ISODRIN	86.5 U	
ISOPHORONE	86.5 U	
ISOSAFROLE	86.5 U	
KEPONE	86.5 UJ	
METHAPYRILENE	86.5 UJ	
METHYL METHANE SULFONATE	86.5 U	
N-NITROSO-DI-N-BUTYLAMINE	86.5 U	
N-NITROSO-DI-N-PROPYLAMINE	86.5 UJ	
N-NITROSODIETHYLAMINE	86.5 U	
N-NITROSODIMETHYLAMINE	86.5 UJ	
N-NITROSODIPHENYLAMINE	86.5 U	
N-NITROSOMETHYLETHYLAMINE	86.5 U	
N-NITROSOMORPHOLINE	86.5 U	
N-NITROSOPIPERIDINE	86.5 U	
N-NITROSOPYRROLIDINE	86.5 U	
NAPHTHALENE	4.26 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	86.5 U	
O-TOLUIDINE	86.5 U	
P-(DIMETHYLAMINO)AZOBENZENE	86.5 U	
PENTACHLOROBENZENE	86.5 U	
PENTACHLOROETHANE	86.5 U	
PENTACHLORONITROBENZENE	86.5 U	
PHENACETIN	86.5 U	
PHENANTHRENE	4.26 U	
PHENOL	86.5 U	
PRONAMIDE	86.5 U	
PYRENE	44	
PYRIDINE	86.5 U	
SAFROLE	86.5 U	
Pesticides PCBs (ug/kg)		
AROCLOR-1016	11.6 U	11 U
AROCLOR-1221	11.6 U	11 U
AROCLOR-1232	11.6 U	11 U
AROCLOR-1242	11.6 U	11 U
AROCLOR-1248	11.6 U	11 U
AROCLOR-1254	11.6 U	11 U
AROCLOR-1260	11.6 U	11 U
Inorganics (mg/kg)		

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB003 OGTSLSS0030002 ORIG 0 - 2 1/24/2005	OGSTLSB003 OGTSLSS0030002-D DUP 0 - 2 1/24/2005
ALUMINUM	19100	
ANTIMONY	0.65 U	
ARSENIC	9.2 J	
BARIUM	62.7 J	
BERYLLIUM	0.53 J	
CADMIUM	0.46 J	
CALCIUM	47000 J	
CHROMIUM	12.4 J	
COBALT	6.1 J	
COPPER	13.5 J	
IRON	20800 J	
LEAD	22 J	
MAGNESIUM	6080 J	
MANGANESE	562 J	
MERCURY	0.007 U	
NICKEL	10.4 J	
POTASSIUM	1300 J	
SELENIUM	0.43 J	
SILVER	0.051 U	
SODIUM	76.2 U	
THALLIUM	0.28 U	
TIN	0.4 U	
VANADIUM	22.7 J	
ZINC	53.9 J	

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION	OGSTLSB004	OGSTLSB005
SAMPLE NUMBER	OGTSLSS0040002	OGTSLSS0050002
SAMPLE CODE	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2
SAMPLE DATE	1/24/2005	1/24/2005
Semivolatile Organics (ug/kg)		
1,2,4,5-TETRACHLOROBENZENE	78.9 U	74.2 U
1,2,4-TRICHLOROBENZENE	78.9 U	74.2 U
1,2-DICHLOROBENZENE	78.9 U	74.2 U
1,3-DICHLOROBENZENE	78.9 U	74.2 U
1,4-DICHLOROBENZENE	78.9 U	74.2 U
1,4-DIOXANE	118 U	111 U
1,4-NAPHTHOQUINONE	78.9 U	74.2 U
1,4-PHENYLENEDIAMINE	78.9 U	74.2 U
1-NAPHTHYLAMINE	78.9 U	74.2 U
2,2'-OXYBIS(1-CHLOROPROPANE)	78.9 U	74.2 U
2,3,4,6-TETRACHLOROPHENOL	78.9 U	74.2 U
2,4,5-TRICHLOROPHENOL	78.9 U	74.2 U
2,4,6-TRICHLOROPHENOL	78.9 U	74.2 U
2,4-DICHLOROPHENOL	78.9 U	74.2 U
2,4-DIMETHYLPHENOL	78.9 U	74.2 U
2,4-DINITROPHENOL	78.9 U	74.2 U
2,6-DICHLOROPHENOL	78.9 U	74.2 U
2-ACETYLAMINOFLUORENE	78.9 UJ	74.2 UJ
2-CHLORONAPHTHALENE	78.9 U	74.2 U
2-CHLOROPHENOL	78.9 U	74.2 U
2-METHYLNAPHTHALENE	3.89 U	3.65 U
2-METHYLPHENOL	78.9 U	74.2 U
2-NAPHTHYLAMINE	78.9 U	74.2 U
2-NITROANILINE	78.9 U	74.2 U
2-NITROPHENOL	78.9 U	74.2 U
2-PICOLINE	78.9 U	74.2 U
3&4-METHYLPHENOL	78.9 U	74.2 U
3,3'-DICHLOROBENZIDINE	78.9 U	74.2 U
3,3'-DIMETHYLBENZIDINE	78.9 UJ	74.2 UJ
3-METHYLCHOLANTHRENE	78.9 U	74.2 U
3-NITROANILINE	78.9 U	74.2 U
4,6-DINITRO-2-METHYLPHENOL	78.9 U	74.2 U
4-AMINOBIPHENYL	78.9 U	74.2 U
4-BROMOPHENYL PHENYL ETHER	78.9 U	74.2 U
4-CHLORO-3-METHYLPHENOL	78.9 U	74.2 U
4-CHLOROANILINE	78.9 U	74.2 U
4-CHLOROPHENYL PHENYL ETHER	78.9 U	74.2 U
4-NITROANILINE	78.9 U	74.2 U

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB004 OGTSLSS0040002 NORMAL 0 - 2 1/24/2005	OGSTLSB005 OGTSLSS0050002 NORMAL 0 - 2 1/24/2005
4-NITROPHENOL	78.9 UJ	74.2 UJ
4-NITROQUINOLINE-1-OXIDE	78.9 UR	74.2 UR
5-NITRO-O-TOLUIDINE	78.9 U	74.2 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	78.9 U	74.2 U
A,A-DIMETHYLPHENETHYLAMINE	78.9 U	74.2 U
ACENAPHTHENE	3.89 U	3.65 U
ACENAPHTHYLENE	3.89 U	12
ACETOPHENONE	78.9 U	74.2 U
ANILINE	78.9 U	74.2 U
ANTHRACENE	3.89 U	9
ARAMITE	78.9 U	74.2 U
BENZO(A)ANTHRACENE	3.89 U	67
BENZO(A)PYRENE	3.89 U	67
BENZO(B)FLUORANTHENE	3.89 U	190
BENZO(G,H,I)PERYLENE	3.89 U	59
BENZO(K)FLUORANTHENE	3.89 U	100
BENZYL ALCOHOL	78.9 U	74.2 U
BIS(2-CHLOROETHOXY)METHANE	78.9 U	74.2 U
BIS(2-CHLOROETHYL)ETHER	78.9 U	74.2 U
BIS(2-ETHYLHEXYL)PHTHALATE	78.9 UJ	140 J
BUTYL BENZYL PHTHALATE	78.9 U	74.2 U
CHLOROBENZILATE	78.9 U	74.2 U
CHRYSENE	3.89 U	130
DI-N-BUTYL PHTHALATE	78.9 U	74.2 U
DI-N-OCTYL PHTHALATE	78.9 U	74.2 U
DIALLATE	78.9 U	74.2 U
DIBENZO(A,H)ANTHRACENE	3.89 U	19
DIBENZOFURAN	78.9 U	74.2 U
DIETHYL PHTHALATE	78.9 U	74.2 U
DIMETHYL PHTHALATE	78.9 U	74.2 U
DIPHENYLAMINE	78.9 U	74.2 U
ETHYL METHANE SULFONATE	78.9 U	74.2 U
FLUORANTHENE	3.89 U	210
FLUORENE	3.89 U	3.65 U
HEXACHLOROBENZENE	78.9 U	74.2 U
HEXACHLOROBUTADIENE	78.9 U	74.2 U
HEXACHLOROCYCLOPENTADIENE	78.9 UJ	74.2 UJ
HEXACHLOROETHANE	78.9 U	74.2 U
HEXACHLOROPROPENE	78.9 U	74.2 U

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB004 OGTSLSS0040002 NORMAL 0 - 2 1/24/2005	OGSTLSB005 OGTSLSS0050002 NORMAL 0 - 2 1/24/2005
INDENO(1,2,3-CD)PYRENE	3.89 U	62
ISODRIN	78.9 U	74.2 U
ISOPHORONE	78.9 U	74.2 U
ISOSAFROLE	78.9 U	74.2 U
KEPONE	78.9 UJ	74.2 UJ
METHAPYRILENE	78.9 UJ	74.2 UJ
METHYL METHANE SULFONATE	78.9 U	74.2 U
N-NITROSO-DI-N-BUTYLAMINE	78.9 U	74.2 U
N-NITROSO-DI-N-PROPYLAMINE	78.9 UJ	74.2 UJ
N-NITROSODIETHYLAMINE	78.9 U	74.2 U
N-NITROSODIMETHYLAMINE	78.9 UJ	74.2 UJ
N-NITROSODIPHENYLAMINE	78.9 U	74.2 U
N-NITROSOMETHYLETHYLAMINE	78.9 U	74.2 U
N-NITROSOMORPHOLINE	78.9 U	74.2 U
N-NITROSOPIPERIDINE	78.9 U	74.2 U
N-NITROSOPYRROLIDINE	78.9 U	74.2 U
NAPHTHALENE	3.89 U	4 J
O,O,O-TRIETHYL PHOSPHOROTHIOATE	78.9 U	74.2 U
O-TOLUIDINE	78.9 U	74.2 U
P-(DIMETHYLAMINO)AZOBENZENE	78.9 U	74.2 U
PENTACHLOROBENZENE	78.9 U	74.2 U
PENTACHLOROETHANE	78.9 U	74.2 U
PENTACHLORONITROBENZENE	78.9 U	74.2 U
PHENACETIN	78.9 U	74.2 U
PHENANTHRENE	3.89 U	26
PHENOL	78.9 U	74.2 U
PRONAMIDE	78.9 U	74.2 U
PYRENE	3.89 U	170
PYRIDINE	78.9 U	74.2 U
SAFROLE	78.9 U	74.2 U
Pesticides PCBs (ug/kg)		
AROCLOR-1016	10.6 U	9.97 U
AROCLOR-1221	10.6 U	9.97 U
AROCLOR-1232	10.6 U	9.97 U
AROCLOR-1242	10.6 U	9.97 U
AROCLOR-1248	10.6 U	9.97 U
AROCLOR-1254	10.6 U	9.97 U
AROCLOR-1260	10.6 U	110
Inorganics (mg/kg)		

Table C-4

Summary of Analytic Results - Surface Soil
Old Gun Tub Storage Lot
NSWC Crane
Crane, Indiana

LOCATION SAMPLE NUMBER SAMPLE CODE DEPTH RANGE SAMPLE DATE	OGSTLSB004 OGTSLSS0040002 NORMAL 0 - 2 1/24/2005	OGSTLSB005 OGTSLSS0050002 NORMAL 0 - 2 1/24/2005
ALUMINUM	7760	2780
ANTIMONY	0.59 U	3.6 J
ARSENIC	9.9 J	4.9 J
BARIUM	60.8 J	26.8 J
BERYLLIUM	0.5 J	0.15 U
CADMIUM	0.34 U	3.1 J
CALCIUM	38700 J	182000 J
CHROMIUM	13.8 J	32.8 J
COBALT	6 J	2.8 J
COPPER	11.3 J	17.5 J
IRON	17900 J	11100 J
LEAD	14.7 J	74.9 J
MAGNESIUM	3690 J	11000 J
MANGANESE	164 J	128 J
MERCURY	0.009 J	0.018 J
NICKEL	9.8 J	12.5 J
POTASSIUM	1020 J	997 J
SELENIUM	0.36 J	0.32 J
SILVER	0.044 U	0.042 U
SODIUM	68.4 U	123 U
THALLIUM	0.29 U	0.14 U
TIN	0.29 U	0.72 U
VANADIUM	23.5 J	11.4 J
ZINC	64.2 J	706 J