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FINAL INTERIM MEASURES WORK PLAN FOR UNEXPLODED ORDNANCE SITE 7 (UXO 7) OLD RIFLE RANGE AND TRAP RANGES NSA CRANE IN

11/26/2013

TETRA TECH

NAVFAC Atlantic Biological Resource Services

Contract: N62470-08-D-1008; Task Order: F271

November 26, 2013

Final Interim Measures Work Plan for UXO 7 - Old Rifle Range and Trap Ranges at Naval Support Activity Crane, Indiana

Prepared for:
NAVFAC Midwest
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051308/P

FINAL
INTERIM MEASURES WORK PLAN
UXO 7 – OLD RIFLE RANGE AND TRAP RANGES

NAVAL SUPPORT ACTIVITY CRANE
CRANE, INDIANA

NAVFAC ATLANTIC
BIOLOGICAL RESOURCE SERVICES CONTRACT

Submitted to:
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NOVEMBER 2013

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ACRONYMS

amsl	above mean sea level
BaP	benzo(a)pyrene
BC/BC	Big Clifty/Beech Creek
bgs	below ground surface
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
cy	cubic yard
E&S	erosion and sediment
EMAC	Environmental Multiple Award Contract
ESA	Endangered Species Act
FBL	fixed-base laboratory
GIS	geographic information systems
HSWA	Hazardous and Solid Waste Amendments
IDEM	Indiana Department of Environmental Management
IM	Interim Measure
IMWP	Interim Measures Work Plan
LDPE	low-density polyethylene
MC	munitions constituents
MCG	media cleanup goal
MEC	munitions and explosives of concern
mg/kg	milligram per kilogram
MSDS	Material Safety Data Sheet
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NFA	no further action
NSA	Naval Support Activity
OB	open burning
OICC	Officer in Charge of Construction
ORR	Old Rifle Range
PAH	polynuclear aromatic hydrocarbon
ppm	parts per million
PRG	preliminary remediation goal

QA	Quality Assurance
RBSL	risk-based screening level
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SOP	Standard Operating Procedure
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
Tetra Tech	Tetra Tech, Inc.
UCL	upper confidence limit
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
XRF	X-Ray Fluorescence

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this document is to present the Interim Measures Work Plan (IMWP) for the Old Rifle Range and Trap Ranges, also known as UXO 7, at Naval Support Activity (NSA) Crane located in Crane, Indiana. The IMWP includes the excavation and off-site disposal of contaminated soils within UXO 7. The final IMWP was prepared for the United States Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Midwest by Tetra Tech, Inc. (Tetra Tech) under Contract Task Order (CTO) F271 of the NAVFAC Atlantic Biological Resource Services Contract Number N62470-08-D-1008.

1.2 FACILITY DESCRIPTION AND LAND USE

NSA Crane is located in the southern portion of Indiana, approximately 75 miles southwest of Indianapolis and 71 miles northwest of Louisville, Kentucky, immediately east of Crane Village and Burns City (Figure 1-1). The facility encompasses 62,463 acres (approximately 98 square miles), most of which are located in the northern portion of Martin County. Smaller portions of NSA Crane are located in Greene and Lawrence Counties. NSA Crane is located in a rural, sparsely populated area. Most of NSA Crane is wooded, and the surrounding area is wooded or farmed land.

NSA Crane provides material, technical, and logistical support to the Navy for equipment, shipboard weapons systems, and nonexpendable ordnance items. In addition, NSA Crane supports the Crane Army Ammunition Activity with production, renovation, storage, shipment, demilitarization, and disposal of conventional ammunition.

The rural area communities that surround NSA Crane in south-central Indiana are in a period of transition from an economic base of agriculture, mining, and quarrying to an economy built on manufacturing and service industries. The patterns of settlement, population statistics, and median income are similar throughout the region.

There is no state or local planning within the vicinity of NSA Crane. The only zoning and land use regulations are found in the municipalities within the region. None of these municipalities are close enough to have an impact on NSA Crane. None of the areas adjacent to NSA Crane are zoned, and zoning is not anticipated in the future. UXO 7 is approximately 3 miles east of the nearest NSA Crane property boundary. There are no known current or likely future land use or community actions under consideration or proposed at this time for off-base land near UXO 7. UXO 7 is contained completely

within NSA Crane, and likely future land use at areas surrounding the UXO 7 site is expected to be limited to military and industrial uses.

1.3 REGULATORY SUMMARY

1.3.1 NSA Crane

Following promulgation of the Resource Conservation and Recovery Act (RCRA) hazardous waste regulatory program, NSA Crane filed notification and application to operate as a RCRA hazardous waste treatment, storage, or disposal facility in October 1980. USEPA granted interim status to the NSA Crane RCRA units, subject to operating requirements and applicable technical standards found in Title 40 of the Code of Federal Regulations (CFR), Part 265.

Corrective action programs established as part of the 1984 RCRA Hazardous and Solid Waste Amendments (HSWA) required NSA Crane to address past releases of hazardous waste or hazardous constituents at Solid Waste Management Units (SWMUs). Accordingly, NSA Crane submitted a Hazardous Waste Management Report, and a RCRA Facility Investigation (RFI) was conducted to characterize the potential for releases of hazardous waste or constituents from approximately 100 SWMUs identified during the RCRA Facility Assessment (RFA).

On December 23, 1989, the United States Environmental Protection Agency (USEPA) issued the federal portion of the final RCRA Part B Permit for NSA Crane to the Navy. USEPA renewed the permit in 1995. The Indiana Department of Environmental Management (IDEM) now has responsibility for the Federal Corrective Action Permit. IDEM renewed the Corrective Action Permit on October 18, 2001. However, certain ongoing corrective actions, including corrective actions at UXO 7, will continue under the USEPA/IDEM Work Sharing Agreement for Corrective Action Activities at NSA Crane.

1.3.2 UXO 7 – Old Rifle Range and Trap Ranges

UXO 7, which currently includes the former West Trap Range, former East Trap Range, former South Pistol Range, and the former Old Rifle Range (ORR), encompasses approximately 20 acres at NSA Crane. UXO 7 is located immediately west of NSA Crane Highway 8 in the floodplain of Turkey Creek (Figure 1-2). The site consists of a flat grass-covered area bisected from north to south by an unnamed but maintained gravel road. This road provides access to various groundwater monitoring wells at the site to monitor an active powder burning area that is a RCRA-permitted open burning (OB) facility known as SWMU 7 (Figure 1-2). Two small arms pistol ranges along the northern margin of UXO 7 have been remediated (Figure 1-3) and approved for no further action (NFA). The four other closed ranges (West

Trap Range, East Trap Range, South Pistol Range, and ORR) were identified during previous RFI activities conducted at UXO 7. Site features and approximate boundaries for the individual ranges that make up UXO 7 are presented on Figure 1-2.

Munitions used at all of these closed ranges consisted of small arms. Based on the type of ranges at UXO 7, munitions and explosives of concern (MEC) was not suspected to be present at the site. During preliminary site visits, Tetra Tech personnel did not observe MEC at UXO 7. Munitions constituents (MCs) known to be present in the soils at UXO 7 consist of metals (primarily lead and to a lesser extent antimony, arsenic, copper, and zinc) from expended small arms ammunition and polynuclear aromatic hydrocarbons (PAHs) from clay targets (skeet) used at the two former trap ranges. Contamination present at the site was suspected to be located primarily in surface soil

The ORR was originally used as the Marine Rifle Range at NSA Crane and consisted of a Main Target Area on which targets were raised to the top of the berm. Bullets striking the targets or overshooting above or to the sides of the targets would impact the hillside south of the Main Target Area. Bullets undershooting the targets would impact the Main Target Area berm. Personnel fired at the targets from 100-, 200-, 300-, 400-, and 500-yard berms to the north of the Main Target Area (Figure 1-2). Lead contamination in firing position berm soils would be expected from spent casings, unused ammunition, or lead residue from the firing process.

An aerial photograph of NSA Crane that included UXO 7 dated September 23, 1974, shows a soil disturbance in the vicinity of the 400-yard firing berm (Appendix A). Expended bullet casings have been identified on the ground surface near this ground disturbance and soil in the southern (downrange) face of the 400-yard firing berm had elevated lead concentrations. It is suspected that the soil disturbance visible on the aerial photograph may have been a focused short-range small arms firing activity that impacted the southern face of the 400-yard earthen berm. This firing activity might explain how large volumes of lead-contaminated soil came to be located along the southern (downrange) face of the 400-yard berm. Currently, a large dirt mound is located between the 300- and 400-yard firing berms and it is presumed that this dirt mound was placed in this area after the ORR had been closed because it blocks a large portion of the view from the 400- and 500-yard firing berms to the Main Target Area on the ORR. It is believed that the Navy routinely removed portions of the earthen berms at the target areas within UXO 7 small arms (rifle and pistol) ranges to remove soil containing lead bullets\fragments and minimize ricochet hazards. These excavated areas were replaced with fresh soil to support continued range use.

The West Trap Range was constructed in the south-central area of the Central Zone at UXO 7 and consisted of a former range where trap clays (skeet targets) were launched from a central trap house to

the west (Figure 1-2). Personnel would stand on the West Trap Range behind the trap house and fire shotguns toward the west at the flying trap targets.

The East Trap Range was constructed in the east-central portion of the Central Zone at UXO 7 and consisted of a former range where trap clays (skeet targets) were launched from a central trap house to the north (Figure 1-2). Personnel would stand on the East Trap Range behind the trap house and fire shotguns to the north at the flying trap targets.

The soil at UXO 7 has been investigated extensively, first as part of SWMU 7, and later as UXO 7. The following is a listing of the investigations relevant to SWMU 7/UXO 7:

- RFI Phase II (Contaminant Verification) Soils Report, (USACE Waterways Experiment Station, 1991)
- Current Conditions Risk Assessment Report (Tetra Tech NUS, Inc., 1999)
- Final Basewide Background Soil Investigation Report (Tetra Tech NUS, Inc., 2001)
- RFI Phase III Soils Reports, (Tetra Tech NUS, Inc., 2005a and 2005b)
- Interim Measures Report SWMU 7 - Old Rifle Range/Old Pistol Range (Tetra Tech NUS, Inc., 2007)
- RFI for UXO 7 Ranges (Tetra Tech NUS, Inc., 2009)
- RFI Report Addendum for UXO 7 Ranges (Tetra Tech, 2012)

A summary of the environmental investigations and previous Interim Measures (IMs) conducted at UXO 7 is provided in Section 2.0.

1.4 REPORT ORGANIZATION

The following highlights the information contained in the remainder of this document:

- Section 2.0 summarizes site characteristics, including site description, summary of environmental investigations conducted at UXO 7, and nature and extent of contamination.

- Section 3.0 presents the IMWP.

- Section 4.0 presents erosion and sediment (E&S) control features proposed for the IMWP described in Section 3.0.

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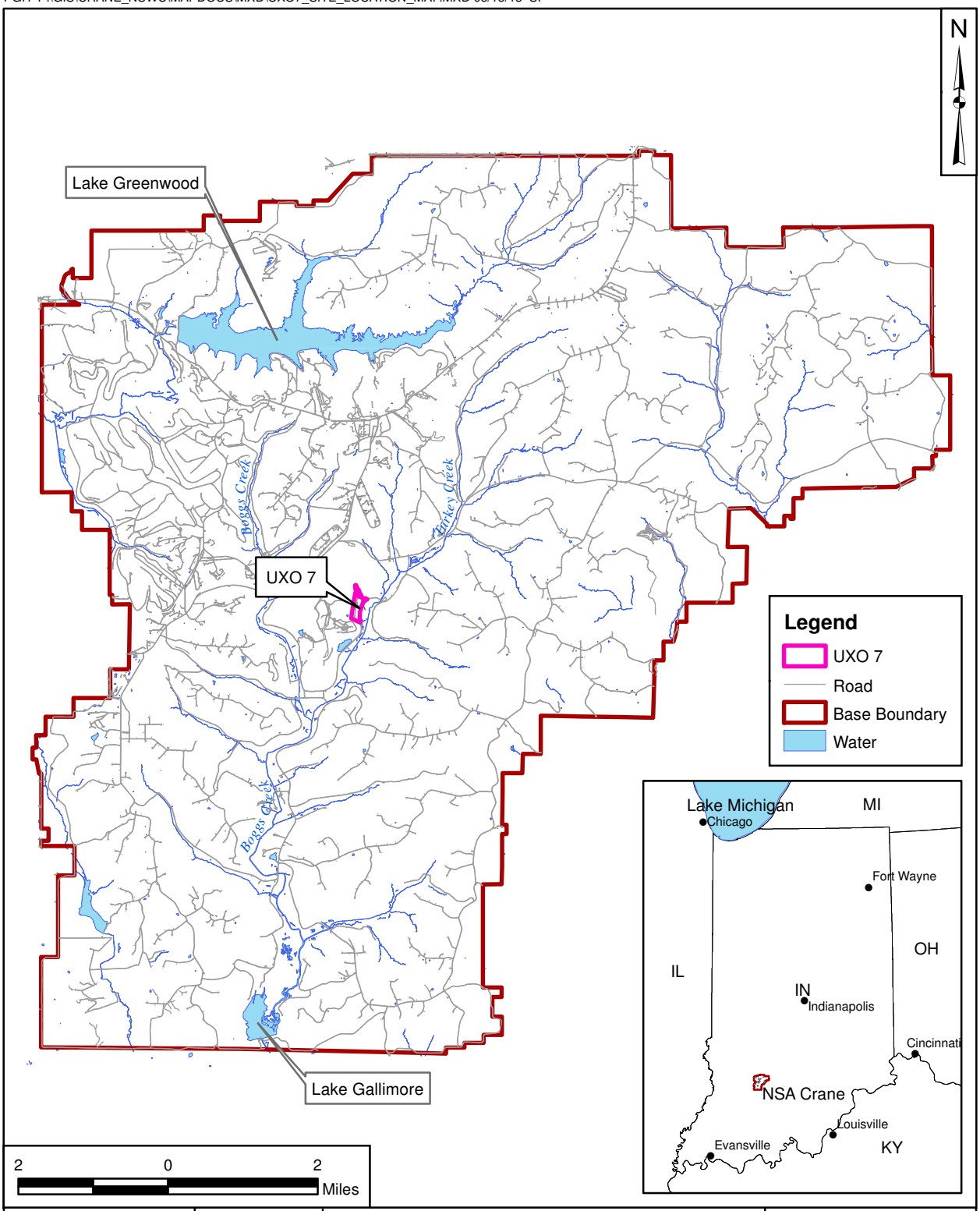

DRAWN BY T. WHEATON	DATE 05/12/10	BASE AND SITE LOCATION MAP UXO 7 - IMWP NSA CRANE CRANE, INDIANA	CONTRACT NUMBER CTO F272
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REVISED BY S. PAXTON	DATE 05/15/13		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. 1 - 1 / REV 0

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R. BARRINGER	05/17/13
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S. PAXTON	05/17/13
SCALE	
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NAVFAC

RANGE DETAIL LAYOUT
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

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FIGURE NO. 1 - 2	REV 0

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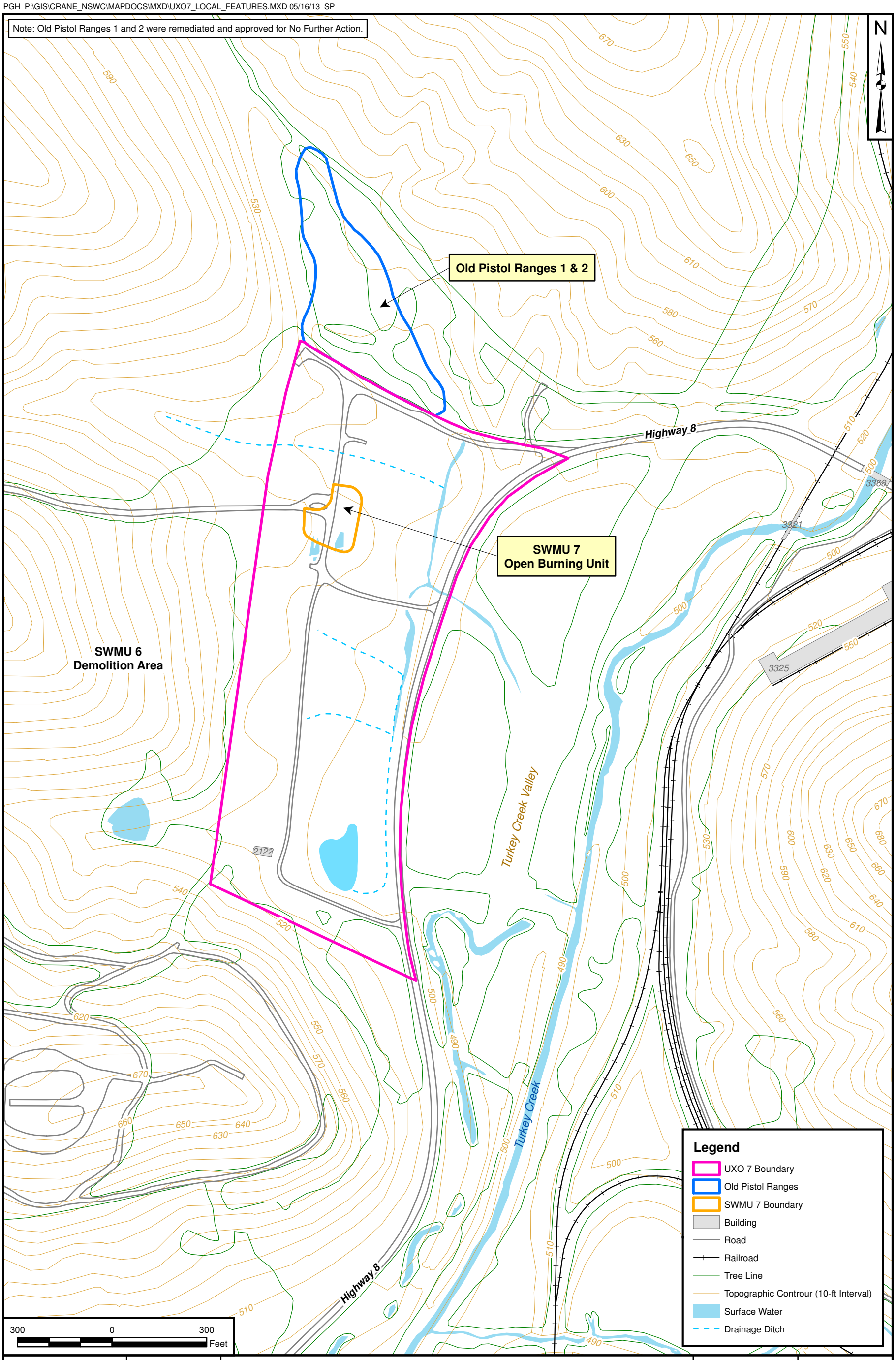

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S. PAXTON	05/16/13
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NAVFAC

LOCAL FEATURES AND TOPOGRAPHY
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
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FIGURE NO. FIGURE 1-3	REV 0

2.0 UXO 7 SITE SUMMARY

2.1 SITE SUMMARY

A general description of UXO 7 is provided in Section 1.0. The following sections describe the physical conditions of areas to be addressed in the IMWP. These descriptions are excerpts from the UXO 7 RFI Report (Tetra Tech NUS, 2009) and the RFI Report Addendum for UXO 7 Ranges (Tetra Tech, 2012).

2.1.1 Topography

The general UXO 7 area gently slopes downhill to the east toward Highway 8, which runs along the eastern edge of UXO 7, between the former ranges and Turkey Creek. Maximum ground surface elevations within UXO 7 are approximately 530 feet above mean sea level (amsl) and the minimum elevation is approximately 500 feet amsl (near Highway 8), for a total relief of about 30 feet within UXO 7 (Figure 1-3). The area east of UXO 7 slopes downhill toward Turkey Creek, where the minimum elevation is approximately 485 feet amsl.

To the west and southwest of UXO 7, the ground surface rises steeply to a ridge top that has a maximum elevation of 710 feet amsl. The total relief from the top of the ridge (west of UXO 7) to Turkey Creek (east of UXO 7) is about 225 feet.

2.1.2 Surface Drainage

UXO 7 generally slopes toward Turkey Creek, where the minimum elevation is approximately 485 feet amsl. Runoff from UXO 7 either indirectly or directly discharges to Turkey Creek. A series of drainage ditches and culverts were constructed at UXO 7 to promote local surface drainage and control surface flow. The drainage ditches are usually dry and are typically only wet during and immediately after rainfall. Culverts were constructed beneath Highway 8 to convey surface drainage from UXO 7 to unnamed creeks and streams that flow eastward for approximately 500 feet to Turkey Creek. A large portion of UXO 7 drains directly into Turkey Creek. The northern portion of UXO 7 drains into an unnamed perennial stream that drains into Turkey Creek (Figure 1-3). Some parts of the southern portion of UXO 7 drain into another unnamed tributary that also drains to Turkey Creek (Figure 1-3). The tributary in the southern portion of UXO 7 also drains some of the ridge top area occupied by the SWMU 6 Demolition Range.

2.1.3 Site Geology and Soil

Bedrock underlying the NSA Crane facility, including UXO 7, consists of sedimentary rocks from the Lower Pennsylvanian age Mansfield Formation (Raccoon Creek Group) and the Upper Mississippian age Stephensport and West Baden Groups. Due to erosion and moderate relief in the area, the Lower Pennsylvanian and Upper Mississippian sandstones, limestones, and shales crop out on ridge tops and underlie all of the streams and creeks at NSA Crane. The rock formations have been deformed to yield a gentle dip of 50 feet per mile in a west-southwest direction, toward the center of the Illinois structural basin.

The upper portions of bedrock in UXO 7 area hillsides and ridge tops are composed of Pennsylvanian-age Mansfield Formation. The Pennsylvanian-age sandstones, siltstones, shales, and coal beds are separated from the Mississippian-age rocks by the pre-Pennsylvanian erosional unconformity at an elevation of about 535 to 540 feet amsl. In nearly all of the UXO 7 area, the Big Clifty Sandstone is the uppermost rock unit encountered near the ground surface. This sandstone is relatively uniform at 40 feet thick, except where the thickness has been reduced by post-Pennsylvanian erosion. Significant erosion has reduced the thickness of the Big Clifty Sandstone on the eastern side of UXO 7. The Big Clifty Sandstone is characterized as a massive to thick-bedded, fine- to very fine-grained, well-sorted, friable sandstone with occasional shaly partings (USACE WES, 1998).

Unconsolidated alluvium, colluvium, and residual soils, which are typically clay and silty gravel, overlie bedrock across UXO 7. A thin layer (less than 10 feet) of residual soil is present on the southwestern and the northeastern sides of UXO 7, although soil was up to 30 feet thick in other areas of UXO 7.

2.1.4 Site Hydrogeology

Groundwater is present beneath NSA Crane in both the natural unconsolidated materials and bedrock. The depth to groundwater ranges from less than 5 feet below ground surface (bgs) in topographic low areas near surface water bodies to almost 25 feet bgs at higher elevations. The majority of the monitoring wells associated with the SWMU 7 OB unit and the 20-acre UXO 7 area were completed within the first groundwater-yielding unit encountered during drilling, which was typically either the natural unconsolidated material or shallow bedrock.

Directly beneath the Pennsylvanian rocks lie the Golconda-Haney Limestone and the Indian Springs Shale (Upper Mississippian age). These rock units only exist in the ridge to the west of the UXO 7 at elevations ranging from approximately 500 to 535 feet amsl. The Golconda-Haney Limestone is

considered to be a minor aquifer at NSA Crane. It is hydraulically separated from the underlying Big Clifty/Beech Creek aquifer by the Indian Springs Shale. Because this limestone aquifer and the shale aquitard are located upgradient of UXO 7 and at a higher elevation, groundwater in these units is not expected to be affected by any activities that have occurred at UXO 7.

The Beech Creek Limestone lies beneath the Big Clifty Sandstone. This limestone ranged from 15 to 22 feet thick in the UXO 7 area. This formation consists of hard, dense, fossiliferous limestone. Together, the Big Clifty Sandstone and the Beech Creek Limestone form the Big Clifty/Beech Creek (BC/BC) aquifer. Because both units are permeable and the Big Clifty lies directly above the Beech Creek in direct hydraulic connection, they are considered one aquifer. The combined thickness ranges from 50 to 60 feet on the western side of UXO 7 to 30 feet on the eastern side of UXO 7, where part of the aquifer has been removed by post-Pennsylvanian erosion in the Turkey Creek valley. The thick alluvial soils that occur over much of UXO 7 constitute part of the uppermost aquifer. The similarity in water levels in wells installed solely in the soil column and wells installed in the upper Big Clifty Sandstone indicate that UXO 7 soils are hydraulically connected with the BC/BC aquifer.

The groundwater flow direction in the overburden/upper Big Clifty zone is generally from northwest to southeast. Groundwater levels measured in the Beech Creek Limestone and the base of the Big Clifty Sandstone indicate groundwater flows generally to the east and southeast. According to the conceptual hydrologic model for UXO 7, groundwater flows from high topographic elevations west of UXO 7 toward the Turkey Creek valley on the eastern side of UXO 7 (see Figure 1-3). Most of the groundwater flow discharges to Turkey Creek.

2.1.5 Water Supply

Groundwater at UXO 7 is not currently used and there are no future use plans for groundwater. Lake Greenwood, an 800-acre, man-made, spring-fed lake in the northern portion of NSA Crane (Figure 1-1) is the main source of drinking water at NSA Crane and is expected to remain as such in the future. Lake Greenwood is located approximately three miles north of UXO 7.

2.2 PREVIOUS INVESTIGATIONS AND INTERIM MEASURES

Several investigations and interim measures have been conducted at UXO 7, including the SWMU 7 OB Unit, and are summarized below.

2.2.1 Previous Investigations

This section presents a summary of the current contamination conditions at UXO 7 based upon the following (only key documents relevant to current conditions in UXO 7 soil are described):

- RFI Phase II (Contaminant Verification) Soils Report (USACE Waterways Experiment Station, 1991)
- Current Conditions Risk Assessment Report (Tetra Tech NUS, Inc., 1999)
- Final Basewide Background Soil Investigation Report (Tetra Tech NUS, Inc., 2001)
- Phase III Soils RFI (Tetra Tech NUS, 2005a)
- Phase III Soils RFI Addendum 1 (Tetra Tech NUS, 2005b)
- CMP (Tetra Tech NUS, 2006)
- Interim Measures Report SWMU 7 - Old Rifle Range/Old Pistol Range (Tetra Tech NUS, 2007)
- RFI for UXO 7 Ranges (Tetra Tech NUS, 2009)
- RFI Report Addendum for UXO 7 Ranges (Tetra Tech, 2012)

The RFI Phase II and Phase III soil studies were performed to further characterize previously identified potential chemical releases to soil at UXO 7. The Phase III RFI concluded that further investigation was required to define potential metal (primarily lead) contamination at the ORR, that arsenic contamination would be addressed during RCRA closure of the OB Unit, and NFA was required for PAH contamination (Tetra Tech, 2005a).

2.2.2 UXO 7 RCRA Facility Investigation

The former small arms ranges at UXO 7 have been the subject of pre-RFI field investigations for contaminants commonly associated with rifle and pistol range ammunition, primarily lead and copper, and trap range contaminants, primarily PAHs and lead. The small arms ranges sites at UXO 7 were investigated as part of an RFI field sampling program performed in October 2007; additional information regarding site history can be found in the UXO 7 RFI Report (Tetra Tech NUS, 2009). The two main concerns at UXO 7 include metals (specifically lead) from bullets at the ORR and the Old Pistol Range, and lead shot and PAHs from clay targets at the West and East Trap Ranges.

UXO 7 is approximately 20 acres and is comprised of the South Pistol Range, West Trap Range, and East Trap Range. Also included in this investigation was the ORR, which includes the Main Target Area and the associated firing berms at distances of 100-, 200-, 300-, 400-, and 500-yards from the Main Target Area. One hundred and eighty-nine soil samples were collected to determine lead concentrations

in soil at the sites (Figure 2-1). The areas between the ORR firing berms and a dirt mound located between the 300- and 400-yard firing berms were also sampled during this RFI.

All samples were initially collected at depths of 0 to 2 feet bgs and subjected to field analysis for lead utilizing a portable X-Ray Fluorescence (XRF) analyzer. A subset of the 189 soil samples where the lead XRF concentration was near the field decision criterion of 200 milligrams per kilogram (mg/kg) were selected for analysis at a fixed-base laboratory (FBL) for Target Analyte List (TAL) metals. Additionally, samples at the former East and West Trap Ranges where maximum outfall of clay pigeons was suspected were analyzed for PAHs. Figure 2-1 shows the locations of all RFI soil samples collected at UXO 7. Figure 2-2 presents all field XRF concentrations that exceeded 400 mg/kg for lead. Site photographs of UXO 7 are presented in Appendix A. Because lead concentrations varied significantly across the site, the UXO 7 former small arms ranges was subdivided into three exposure units (Northern Zone, Central Zone, and Southern Zone) to evaluate the risks for lead, as indicated on Figure 2-2. Those soil samples with contaminant concentrations above human health or ecological screening levels are presented on Figure 2-3 (inorganics) and Figure 2-4 (PAHs).

Soil samples collected from the pistol range area generally had low-level detections of lead observed by XRF in the field, which were likely influenced by the lead-containing small arms ammunition fired on the pistol range. A minor subset (three) of the pistol range soil samples had XRF lead detections above 150 parts per million (ppm), including the hillside (range backstop) samples from behind the former pistol range target locations. The human health and ecological receptor risk assessments for the Southern Zone indicated no significant risks and no additional sampling activities were recommended or performed for this zone. Based on the RFI sample data, PAH-contaminated soil presents excess risk to human health in areas of the former trap ranges and lead-contaminated soil presents excess risk to ecological receptors on the 500-yard Rifle Range (Tetra Tech NUS, 2009).

The human health risk evaluation estimates developed for construction workers, maintenance workers, occupational workers, adolescent trespassers, child and adult recreational users, and child and adult future residents hypothetically exposed to surface soil within any of the three zones at UXO 7 did not exceed the USEPA benchmarks typically used to determine the need for environmental remediation. PAH concentrations in the Central Zone at sample locations X7SB121 and S7SB123 were found to pose unacceptable risks to the future adult/child residents (Figure 2-4).

The ecological risk evaluation for terrestrial plants and invertebrates, and mammals and birds determined risks to be acceptable in the Central and Southern Zones. Ecological risk to mammals and birds was found to be unacceptable due to lead concentrations at certain locations within the Northern Zone. The

Navy recommended spot removal of soil within the area of sample locations X7SS0390002, X7SS0460002, X7SS0550002, and X7SS1740002 (Northern Zone) where lead concentrations exceeded 400 mg/kg and spot removal of soil in the area of sample locations X7SS1210002 and X7SS1230002 (Central Zone) where PAH concentrations were found to be unacceptable.

2.2.3 Post–RFI Supplemental Soil Sampling Investigation

Based on the RFI findings, the Navy determined that supplemental sampling was required to more fully delineate soil lead contamination on the ORR and the soil PAH contamination on the former trap ranges and support an interim measures soil removal action to reduce the human health and ecological risks associated with the contamination. Efficient implementation of the IM required a more precise delineation of the extent of soil contamination at UXO 7.

PAHs (as benzo(a)pyrene (BaP) Equivalents) in UXO 7 Former Trap Range Soil

Both the East and West Trap Ranges inside UXO 7 were initially investigated as part of an RFI in 2007. The source of PAHs detected in soil from the former trap ranges is the tar pitch/bitumen binder materials used in the manufacturing of the clay pigeon targets.

During the UXO 7 RFI sampling event, samples were collected and analyzed for both PAHs and metals. The analytical results from the RFI indicated an excess human health residential exposure risk from the PAHs. For purposes of designing remedial measures, a sampling program was developed during 2011 to perform supplemental soil sampling at the two former trap ranges in the Central Zone to more clearly delineate and assess the relative exposure risks for PAHs (as BaP equivalents) in soil. Post-RFI soil sampling adequately delineated the volume of soil containing elevated concentrations of PAHs (as BaP equivalents) within the former trap ranges requiring removal to reduce potential exposure cancer risk hazards for future residential human receptors to acceptable levels.

Supplemental soil sampling was completed during November 2011 (Sampling Round 1) and September/October 2012 (Rounds 2A and 2B, respectively) to more fully delineate the extent of PAH contamination within the soil of the former trap ranges at UXO 7. The soil samples collected during the RFI supplemental soil sampling were in accordance with the Standard Operating Procedures (SOPs) and Quality Assurance (QA) procedures presented in the approved Technical Memorandum for RCRA Facility Investigation Supplemental Sampling at UXO 7 (approved October 21, 2011). The area of greatest skeet fragment accumulation on these trap ranges was defined as beginning at a distance of approximately 75 feet from the range firing area and continuing downrange for another 125 feet from that 75-foot line

(extending a total distance of approximately 200 feet from the range firing area). The blue trapezoids shown on Figures 2-5 and 2-6 enclose the suspected area of maximum skeet fragment accumulation. The supplemental sampling program focused on defining the nature and extent of PAHs in soil within those areas, but when necessary continued beyond those boundaries to more fully assess the distribution and extent of PAHs (as BaP equivalents) within the former trap range soil.

During all of the UXO 7 trap range soil sampling and investigation events (2007 through 2012), PAHs were detected in multiple range soil samples and, based on the magnitude of detected concentrations, presented excess human health cancer risks to future residential receptors in the Central Zone of UXO 7. The skeet-derived PAH contamination in the former trap range soil was expected to be confined to the surficial 2 feet of soil. However, the supplemental sampling approach extended down to a depth of 6 feet bgs and was appropriate to provide confirmation of the specific depth intervals where PAH contamination had accumulated in the vertical soil profile. There were isolated instances where PAH contamination (as BaP equivalents) was present in trap range soil at concentrations above human health risk based screening levels at depths of more than two feet bgs.

Nearly 400 soil samples were collected and shipped to the FBL; however, not all collected samples were analyzed. Only the sample locations and associated sample depths adjacent to former locations exhibiting BaP equivalent contamination were initially authorized for analysis by the FBL. The remaining collected samples were processed and extracted by the FBL, but were only approved for analysis when authorized by Tetra Tech to fill data gaps on nature and extent of BaP equivalent contamination. A total of approximately 300 soil samples were eventually approved for analysis (inclusive of RFI PAH samples and supplemental rounds) for the West and East Trap Ranges and are summarized on Figure 2-5 and Figure 2-6, respectively. Appendix B includes the analytical data.

PAH Risk Reduction and Mitigation in UXO 7 Former Trap Range Soil

This section presents an evaluation of the steps necessary to reduce human health and ecological risk to acceptable levels. PAH concentrations in soil at UXO 7 present human health risk in excess of 1×10^{-4}. Total risk is presented as BaP equivalent concentrations and acceptable risk is within the risk range of 1×10^{-6} to 1×10^{-4}, or 0.015 mg/kg to 1.5 mg/kg BaP equivalent concentrations. The media cleanup goals (MCGs) for PAHs are reduction of contaminant concentrations so that the risk from residual contamination in surface and subsurface soil is within the acceptable risk range for residential receptors. The discrete areas where PAH contamination has been delineated in soil are located in different zones within UXO 7.

The risk-based screening level (RBSL) of 1 X 10^{-4} for residential human health exposure is used as the point of departure for evaluating total cancer risks in this assessment. A RBSL corresponding to a risk level of 1 X 10^{-4}, or 1.5 mg/kg BaP equivalent concentration, was used to evaluate the total BaP equivalent concentrations for this project. Based on the collected soil samples from the UXO 7 trap ranges and the BaP equivalent concentrations calculated for those soil samples, there is PAH contamination present within the footprints of the former East and West Trap Ranges above the human health screening level of 0.015 mg/kg BaP equivalents. Because the primary screening level of 0.015 mg/kg BaP equivalents for the human health screening level of 1 X 10^{-6} is particularly low (15 parts per billion), many of the soil samples collected from the former trap ranges that contain detectable levels of PAHs exceeded this screening level established for the human health risk level of 1 X 10^{-6}.

However, if all or most of the soil areas with BaP equivalent concentrations greater than the screening level established for the human health risk level of 1 X 10^{-5} (0.15 mg/kg) were removed from the former trap range areas, then the majority of the remaining soil areas should fall somewhere between the projected residential cancer risk levels of 1 X 10^{-6} (0.015 mg/kg) and 1 X 10^{-5} (0.15 mg/kg) for BaP equivalents in the remaining trap range soil as shown in the table below.

BaP Equivalent Concentrations in Trap Range Soil Samples	Total Residential Cancer Risk Levels
< 0.015 mg/kg	< 1 X10^{-6}
0.015 mg/kg to 0.15 mg/kg	1 X 10^{-6} to 1 X 10^{-5}
0.15 mg/kg to 1.5 mg/kg	1 X 10^{-5} to 1 X 10^{-4}
> 1.5 mg/kg	> 1 X 10^{-4}

Based on this approach, soil areas with higher BaP equivalent concentrations and corresponding higher total residential cancer risks should be targeted for excavation and removal. Removal of soil with higher BaP equivalent concentrations would reduce the overall residential cancer risk in soil to levels between the residential cancer risk levels of 1 X 10^{-6} (0.015 mg/kg) and 1 X 10^{-5} (0.15 mg/kg).

West Trap Range

The initial RFI sampling at the West Trap Range included samples from locations SB116, SB121, SB122, SB123, SB129, and SB136 and PAHs were detected in the central sector of the suspected maximum skeet fragment area. Supplemental soil sampling for PAHs at the West Trap Range was performed in 2011 and 2012 in the north, south, east, and west portions of the suspected maximum skeet accumulation area to delineate the lateral and vertical extent of BaP equivalent concentrations in soil.

Figure 2-5 identifies the soil samples with exceedances of the BaP equivalent human health screening criteria for the West Trap Range using colors to identify the general magnitudes of the detections. The vast majority of the BaP equivalent contamination identified in soil from the West Trap Range was present in samples collected from the surficial 2 feet of soil. Six discrete subareas are proposed for excavation (Figure 2-7). The largest area (subarea 1) covers approximately 9,800 square feet within the suspected maximum skeet fragment area and extends to a depth of 1 foot bgs [approximately 363 cubic yards (cy) of soil for removal]. Five other smaller removal areas (subareas 2 through 6) are located inside the larger excavation and will extend down one additional foot to address deeper soil contamination. These smaller areas collectively cover 3,042 square feet (at a depth of 1 foot below the subarea 1 excavation, or 2 feet bgs) and generate an additional 113 cy of contaminated soil for removal. The excavation subareas are presented on Figure 2-7.

The volume of range soil to be removed from the West Trap Range totals approximately 476 cy. Subareas of soil with cancer risk levels in excess of 1×10^{-4} and areas of soil with cancer risk levels between 1×10^{-5} to 1×10^{-4} are proposed for removal. Appendix B includes the analytical data used in these evaluations. Before removal, the 95 percent upper confidence limit (UCL) for the BaP equivalent concentrations in the West Trap Range soil is 5.42 mg/kg (1.5 mg/kg BaP concentration for residential human receptor is equivalent to a cancer risk level of 1×10^{-4}). After removal of the soil identified in the six subareas, the 95 percent UCL for the BaP equivalent concentrations in the West Trap Range soil is reduced to 0.02 mg/kg, which is well within the acceptable risk range.

East Trap Range

The initial RFI sampling at the East Trap Range included samples SB071 and SB075 where PAHs were detected in the south central and northwestern sectors of the maximum suspected skeet fragment area. Additional supplemental soil sampling for PAHs at the East Trap Range was performed during 2011 and 2012 in the north, south, east, and west portions of the suspected maximum skeet accumulation area to delineate the lateral and vertical extent of BaP equivalent concentrations in soil.

Figure 2-6 identifies the soil samples with exceedances of the BaP equivalent human health screening criteria for the East Trap Range using colors to identify the general magnitudes of the detections. With only limited exceptions, the majority of the BaP equivalent contamination identified in soil from the East Trap Range was present in samples collected from the surficial 2 feet of soil. Seven discrete excavation subareas are proposed to address excess cancer risk to future residential human health receptors (Figure 2-8). The largest area (subarea 6) covers approximately 2,900 square feet within the suspected

maximum skeet fragment area and extends to a depth of 2 feet bgs (approximately 212 cy of soil for removal). One other smaller removal area (subarea 7) is physically located inside this larger excavation and will extend down an additional 4 feet to address deeper soil contamination (at a total depth of 6 feet bgs). This smaller area (subarea 7) collectively covers 400 square feet (at a depth of 4 feet below the subarea 6 excavation, or 6 feet bgs) and generates an additional 60 cy of contaminated soil for removal. Subareas 1, 2, 3, 4, and 5 in the north central area of the East Trap Range cover approximately 4,563 square feet, each with varying depths, and will produce an estimated 367 cy of excavated soil. These excavation areas are presented on Figure 2-8.

The volume of range soil to be removed from the East Trap Range totals approximately 640 cy. Areas of soil with cancer risk levels in excess of 1×10^{-4} and areas of soil with cancer risk levels between 1×10^{-5} to 1×10^{-4} are proposed for removal.

Before removal, the 95 percent UCL for the BaP equivalent concentrations in the East Trap Range soil is 1.96 mg/kg (1.5 mg/kg BaP concentration for residential human receptor is equivalent to a cancer risk level of 1×10^{-4}). After removal of the soil identified in the seven subareas, the 95 percent UCL for the BaP equivalent concentrations in the East Trap Range soil is reduced to 0.025 mg/kg, and is closer to the 0.015 mg/kg concentration, which correlates to the residential human receptor cancer risk of 1×10^{-6}.

Lead Risk Reduction and Mitigation in UXO 7 Former Old Rifle Range Soil

This section presents an evaluation of the steps necessary to reduce human health and ecological risk from soil lead concentrations to acceptable levels (within the risk range 1×10^{-6} to 1×10^{-4}). The MCGs of 192 mg/kg and 652 mg/kg for lead were developed using site specific toxicity/bioaccumulation testing at SWMU 16 at NSA Crane. The 192 mg/kg value is protective of invertivorous birds and the 652 mg/kg value is protective of plants. Although the likely source of metals at SWMU 16 was ash from the incinerator, the PRG is appropriate for use at UXO 7 because the bioavailability of lead from the bullets/shot is not expected to be greater than the bioavailability of lead from the ash. Ecological risks from lead were found to be unacceptable in the screening risk assessment. The MCGs for lead are reduction of lead concentrations to below an average of 192 mg/kg, with no soil remaining with a lead concentration greater than 652 mg/kg. The discrete areas where lead contamination has been delineated in soil are located in different zones within UXO 7. Risk reduction strategies for lead are discussed in this section.

The Drainage Area, 400-yard Berm Area, and Dirt Mound Area within the Northern Zone of the ORR at UXO 7 were initially investigated as part of an RFI in 2007. Additional samples were collected to

delineate lead contamination. Average lead concentrations were 401 mg/kg with some concentrations as high as 4,000 mg/kg. The source of lead contamination detected in soil from these areas is a result of lead bullets fired at the range.

For purposes of designing remedial measures, a sampling program was developed during 2011 to perform supplemental soil sampling at the three areas within the Northern Zone of UXO 7 to more clearly delineate and assess the relative exposure risks for lead in soil. Post-RFI soil sampling adequately delineated the volume of soil containing elevated lead concentrations within these three areas requiring removal to reduce potential ecological and human health risks to acceptable levels.

Supplemental soil sampling was completed during November 2011 (Sampling Round 1) and September/October 2012 (Rounds 2A and 2B, respectively) to more fully delineate the extent of lead contamination within the soil of the three identified areas at UXO 7. The soil samples were collected in accordance with the SOPs and QA procedures presented in the approved Technical Memorandum for RCRA Facility Investigation Supplemental Sampling at UXO 7 (Tetra Tech, 2011). The supplemental sampling program focused on defining the nature and extent of lead in soil on the ORR within the Drainage Area, 400-Yard Berm Area, and Dirt Mound Area in the Northern Zone of UXO 7

During all of the UXO 7 ORR soil sampling and investigation events (2007 through 2012), lead was detected in multiple range soil samples and, based on the magnitude of detected concentrations, presented excess human health and ecological risks. The supplemental sampling approach extended down to a depth of 8 feet bgs in some locations to provide the specific depth intervals where lead contamination had accumulated in the vertical soil profile.

Over 1,000 soil samples were collected from the three areas of the ORR, with the majority of these samples undergoing field XRF analysis for lead. Representative soil samples evaluated by the field XRF approach were also submitted for FBL analysis to determine the overall accuracy of the XRF field screening process and to add greater credibility to the XRF data through a correlation analysis of the FBL and field data. A correlation study comparing XRF and FBL analytical lead data was completed to establish laboratory equivalent (calculated) lead concentrations based on the field measurements. Information regarding the correlation between XRF lead field samples and FBL lead analyzed samples.

Per an e-mail from Mr. Peter Ramanauskas, dated June 24, 2011, the USEPA agreed upon a MCG of a concentration of 192 mg/kg as an acceptable ecological benchmark to be applied as a site-wide arithmetic average soil lead concentration in the surface soil (0 to 2 feet bgs) for UXO 7. Additionally, a sample-specific lead concentration of 652 mg/kg was determined to be the maximum allowable lead

concentration that could remain within the surface soil at the site while still meeting the 192 mg/kg lead concentration benchmark. Lead concentrations greater than the Navy/USEPA agreed upon average concentration of 192 mg/kg, and the sample-specific lead concentration of 652 mg/kg in the surface soil, remain in soil in the Northern Zone of UXO 7. Specifically, these areas include the Drainage Area, the 400-Yard Berm Area, and the Dirt Mound Area, as presented on Figure 2-9, Figure 2-10, and Figure 2-11, respectively. Lead concentrations in deeper soil (greater than 2 feet bgs) are not biologically available to ecological receptors, but could serve as potential exposure source to future human receptors (i.e., construction workers). Consequently, deeper subsurface soil samples (below 2 feet bgs) were compared against the direct contact human health lead criteria of 400 mg/kg.

Drainage Area within the Northern Zone

The initial RFI sampling within the Drainage Area of the Northern Zone, which is located between the 400- and 500-yard firing berms, included samples from seven locations at a depth of 2 feet bgs. Of the initial seven samples, one location (SB055) presented a lead detection greater than 652 mg/kg. This sample location, along with location SB174, presented lead concentrations in excess of the residential direct-contact screening criteria of 400 mg/kg. In an attempt to define the horizontal and vertical extent of lead contamination, supplemental soil sampling was performed in 2011 and 2012. The overall average concentration of lead in the Drainage Area prior to any proposed soil excavation is 151 mg/kg, with only three samples exceeding the sample-specific soil lead concentration of 652 mg/kg.

Lead contamination within the Drainage Area is mostly confined to the southwest portion of the site, with contamination limited to the upper 2 feet of soil. Two discrete excavation subareas are proposed to address the main risks to ecological receptors. Subarea 1 covers approximately 251 square feet to a depth of 2 feet bgs (approximately 19 cy of soil). The excavation subarea is presented on Figure 2-12. Subarea 2 covers approximately 100 square feet to a depth of 1 foot bgs (approximately 4 cy). This subarea, as shown on Figure 2-12, includes sample location SB569, which exhibited a lead concentration of 661 mg/kg at the 0- to 1-foot depth bgs.

The volume of range soil to be removed from the Drainage Area to achieve reductions in risk to ecological receptors totals approximately 23 cy. Upon removal of the two proposed excavation subareas and backfilling with clean soil, the overall average lead concentration within the Drainage Area will drop from 151 mg/kg to 80 mg/kg, as presented in RFI Addendum (Tetra Tech, 2012). Additionally, no sample-specific lead concentrations greater than 652 mg/kg would remain at the site.

400-Yard Berm Area

The initial RFI sampling within the 400-Yard Berm Area of the Northern Zone, which consists of the 400 yard firing berm and surrounding area, included samples from 12 locations at a depth of 2 feet bgs. Of the initial 12 samples, one location (SB046) presented a lead detection greater than 652 mg/kg. This sample location was the only original RFI soil location in the 400-Yard Berm Area which exhibited a lead concentration in excess of the residential direct-contact screening criteria of 400 mg/kg. In an attempt to define the horizontal and vertical extent of the lead contamination, supplemental soil sampling was performed in 2011 and 2012. The overall average concentration of lead in the 400-Yard Berm Area prior to any proposed soil excavation is 401 mg/kg. Numerous samples within the 400-Yard Berm Area exhibited sample-specific soil lead concentrations greater than 652 mg/kg.

Lead contamination within the 400-Yard Berm Area is mostly located on the southern face of the 400-yard firing berm, as well as in the area located just to the west and southwest of the berm where numerous bullets and bullet fragments were observed. Lead contamination was found at various depths throughout the site. Ten discrete excavation subareas are proposed to address unacceptable risks to ecological receptors (as shown on Figure 2-13). Following is a discussion of each of these subareas:

- The largest area is subarea 1, which covers the majority of the southern face of the 400-yard firing berm. Subarea 1 covers approximately 6,141 square feet to a depth of 6 feet bgs (approximately 1,365 cy of soil). The excavation subarea is presented on Figure 2-13. Numerous site-specific samples in subarea 1 contained a concentration of lead that exceeded 652 mg/kg at various depths.

- Subareas 2 and 3 each cover approximately 100 square feet to a depth of 2 feet bgs (approximately 7 cy per subarea). These subareas, as shown on Figure 2-13, are located just to the south and southeast of the firing berm and include sample locations SB662 and SB660, respectively, which both exhibited sample-specific lead concentrations greater than 652 mg/kg. Sample location SB662 had a lead concentration of 779 mg/kg at the 0- to 1-foot depth bgs, while sample location SB660 had a lead concentration of 1,921 mg/kg at the 1- to 2-foot depth bgs.

- Subarea 4 covers approximately 1,891 square feet to a depth of 4 feet bgs (approximately 280 cy). This subarea, as shown on Figure 2-13, is located along the southwest corner of the firing berm. Subarea 4 includes numerous site-specific samples that exceed a lead concentration of 652 mg/kg at various depths.

- Subarea 5 covers approximately 2,916 square feet to a depth of 5 feet bgs (approximately 540 cy). This subarea, as shown on Figure 2-13, is located to the west and southwest of the firing berm. Subarea 5 includes numerous site-specific samples that exceed a lead concentration of 652 mg/kg at various depths.

- Subarea 6 covers approximately 4,067 square feet to a depth of 2 feet bgs (approximately 301 cy). This subarea, as shown on Figure 2-13, is located to the west of the firing berm and includes the area where the majority of bullets and bullet fragments were observed in the surface soil. Subarea 6 includes seven sample locations of which five contained site-specific samples that exceeded 652 mg/kg at depths ranging from the ground surface down to 2 feet bgs.

- Subareas 7, 9, and 10 each cover approximately 100 square feet to depths of 2 feet bgs for subareas 7 and 10 (approximately 7 cy each) and 3 feet bgs for subarea 9 (approximately 11 cy). These subareas, as shown on Figure 2-13, are located to the north and northwest of the firing berm and include sample locations SB692 (subarea 7), SB44 (subarea 9), and SB696 (subarea 10). All three subareas exhibited a sample-specific lead concentration greater than 652 mg/kg. Sample location SB692 (subarea 7) had a lead concentration of 1,915 mg/kg at the 0- to 1-foot depth bgs, sample location SB644 (subarea 9) had a lead concentration of 950 mg/kg at the 2- to 3-foot depth bgs, and sample location SB696 (subarea 10) had a lead concentration of 853 mg/kg at the 1- to 2-foot depth bgs.

- Subarea 8 covers approximately 1,719 square feet to a depth of 3 feet bgs (approximately 191cy). This subarea, as shown on Figure 2-13, is located to the northwest of the firing berm. Subarea 8 includes five sample locations of which four contained site-specific samples that exceeded 652 mg/kg at depths ranging from the ground surface down to 3 feet bgs.

The volume of range soil to be removed from the 400-Yard Berm Area totals approximately 2,714 cy. Upon removal of the 10 excavation subareas and backfilled with clean soil, the overall average lead concentration within the 400-Yard Berm Area drops from 401 mg/kg to 49 mg/kg as presented in RFI Addendum (Tetra Tech, 2012). Additionally, no sample-specific lead concentrations greater than 652 mg/kg would remain at the site.

Dirt Mound Area

As previously described, the Dirt Mound Area within the UXO 7 Northern Zone consists of a dirt mound whose origin is currently unknown. However, it is believed that the dirt mound, which sits upon thick

plastic sheeting, was placed in its current location after the Rifle Range ceased operations since the dirt mound obstructs the view of the Rifle Ranges main target area from portions of the 400- and 500-yard firing berms.

The initial RFI sampling within the Dirt Mound Area of the Northern Zone of the ORR included samples from six locations along the top of the dirt mound at a depth of 2 feet bgs. Of the initial six samples, none exhibited a lead detection greater than 652 mg/kg, and only one sample (SB039) presented a lead concentration in excess of the residential direct-contact screening criteria of 400 mg/kg. In an attempt to define the horizontal and vertical extent of the lead contamination, supplemental soil sampling was performed in 2011 and 2012. To ensure the soil beneath the plastic sheeting was not contaminated, sample locations were placed around the perimeter of the dirt mound at the base and the samples were collected from the soil beneath the plastic layer on which the dirt mound is located. All samples collected from the soil underneath the plastic layer showed no signs of lead contamination. The overall average concentration of lead in the Dirt Mound Area prior to removal of the dirt mound is 117 mg/kg.

Lead contamination within the Dirt Mound Area was detected at a few locations along the top of the dirt mound with the contamination limited to the upper 3 feet of soil. Because the origin of the dirt mound is unknown and a few bullets were observed within the dirt mound, along with other metallic debris (i.e., nails, door hinges), the entire mound is proposed for removal (subarea 1). The dirt mound sits upon a layer of thick plastic sheeting covering approximately 1,776 square feet to an average height of 6 feet above the ground surface (approximately 395 cy of soil). The dirt mound is presented on Figure 2-14. Since the entire dirt mound is to be removed, all significant ecological risk will have been mitigated.

Pre-Excavation Toxicity Characteristic Leaching Procedure Results for Lead in UXO 7 Soil

The initial three composite soil samples collected at UXO 7 in 2011 were designed to present "average" lead concentrations for toxicity characteristic leaching procedure (TCLP) analysis based on the original RFI data set (Table 2-1). A single seven-point composite sample of surface soil was collected from each of the three primary soil areas (Drainage Area, 400-Yard Berm Area, and Dirt Mound Area) where soil lead contamination had been identified at UXO 7 during the RFI. The locations for the seven-point composite samples are presented on Figure 2-15. All three of the composited TCLP soil samples from 2011 exhibited results below the TCLP screening level of 5 milligrams/liter (mg/L). However, the supplemental RFI soil sampling performed during 2011-2102 provided an expanded soil data set (acquired during the soil lead delineation sampling effort) which identified discrete soil areas in the surface and at depth with elevated and more significant soil lead contamination. Eight grab (discrete) surface and subsurface soil samples were collected during 2013 from known elevated soil lead locations

for TCLP analysis (Figure 2-15). It was believed these soil samples would generate TCLP results more representative of UXO 7 soil with higher lead concentrations. Five of the eight soil samples produced TCLP lead concentrations above the screening level of 5 mg/L and therefore, failed the toxicity characteristic test requirement for lead. Soil that fails the TCLP test requires management as a hazardous solid waste. If lead-contaminated soil fails TCLP tests for lead, but experiences some type of onsite treatment to promote metal stabilization and inhibit potential metals leaching (primarily soil lead), and new TCLP tests are below 5 mg/L, then the soil could be managed as a non-hazardous solid waste.

TABLE 2-1

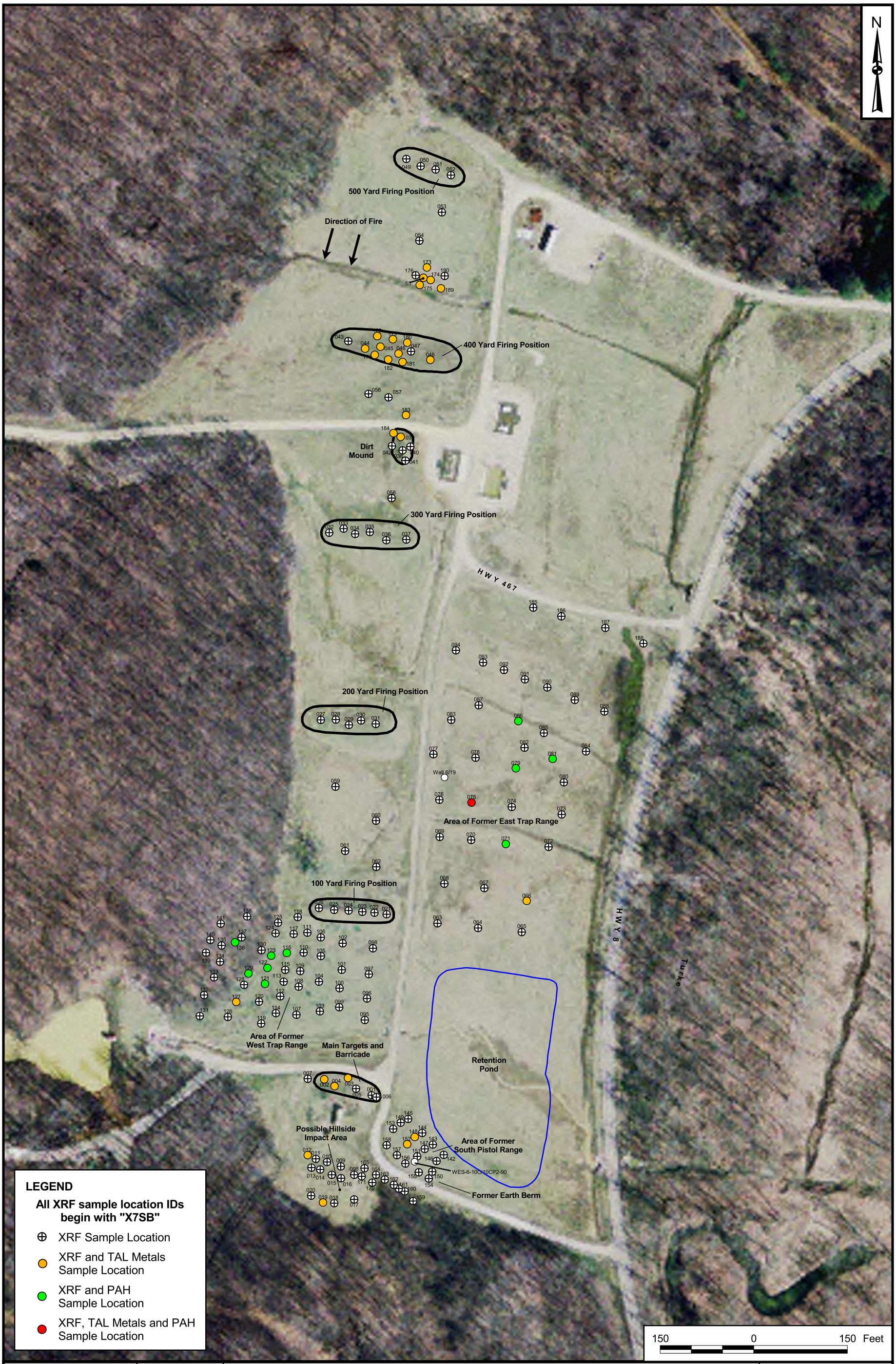
TCLP SOIL LEAD SAMPLE RESULTS
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE, INDIANA

Sample ID	Sample Date	Sample Depth (ft. bgs)	Sampled Soil Area within the former Old Rifle Range	TCLP Test Result (mg/L)
X7-TCLP01	11/13/11	0 - 2	Drainage Area	0.0282 J
X7-TCLP02	11/13/11	0 - 2	400-yd firing position (berm)	1.91
X7-TCLP03	11/13/11	0 - 2	Dirt Mound	0.165
X7-SB558-0304	5/18/13	3 - 4	400-yd firing position (berm)	**10.7**
X7-SB558-0506	5/18/13	5 - 6	400-yd firing position (berm)	0.754
X7-SB565-0001	5/18/13	0 - 1	400-yard firing position (flats)	**30.5**
X7-SB565-0203	5/18/13	2 - 3	400-yard firing position (flats)	**122**
X7-SB409-0001	5/18/13	0 - 1	400-yd firing position (berm)	0.047
X7-SB409-0203	5/18/13	2 - 3	400-yd firing position (berm)	**13.3**
X7-SB635-0102	5/18/13	1 - 2	400-yard firing position (flats)	**98.2**
X7-SB635-0405	5/18/13	4 - 5	400-yard firing position (flats)	0.152

Indicates an exceedance of the TCLP lead screening criteria of 5.0 mg/L

TCLP = Toxicity characteristic leaching procedure
bgs = below ground surface
ft = feet
mg/L = milligrams per liter
J = estimated

UXO 7 soil sample locations for TCLP testing are presented on Figure 2-15.



DRAWN BY	DATE
J. ENGLISH	10/22/07
CHECKED BY	DATE
R. BARRINGER	6/4/09
COST/SCHEDULE AREA	
SCALE	
AS NOTED	

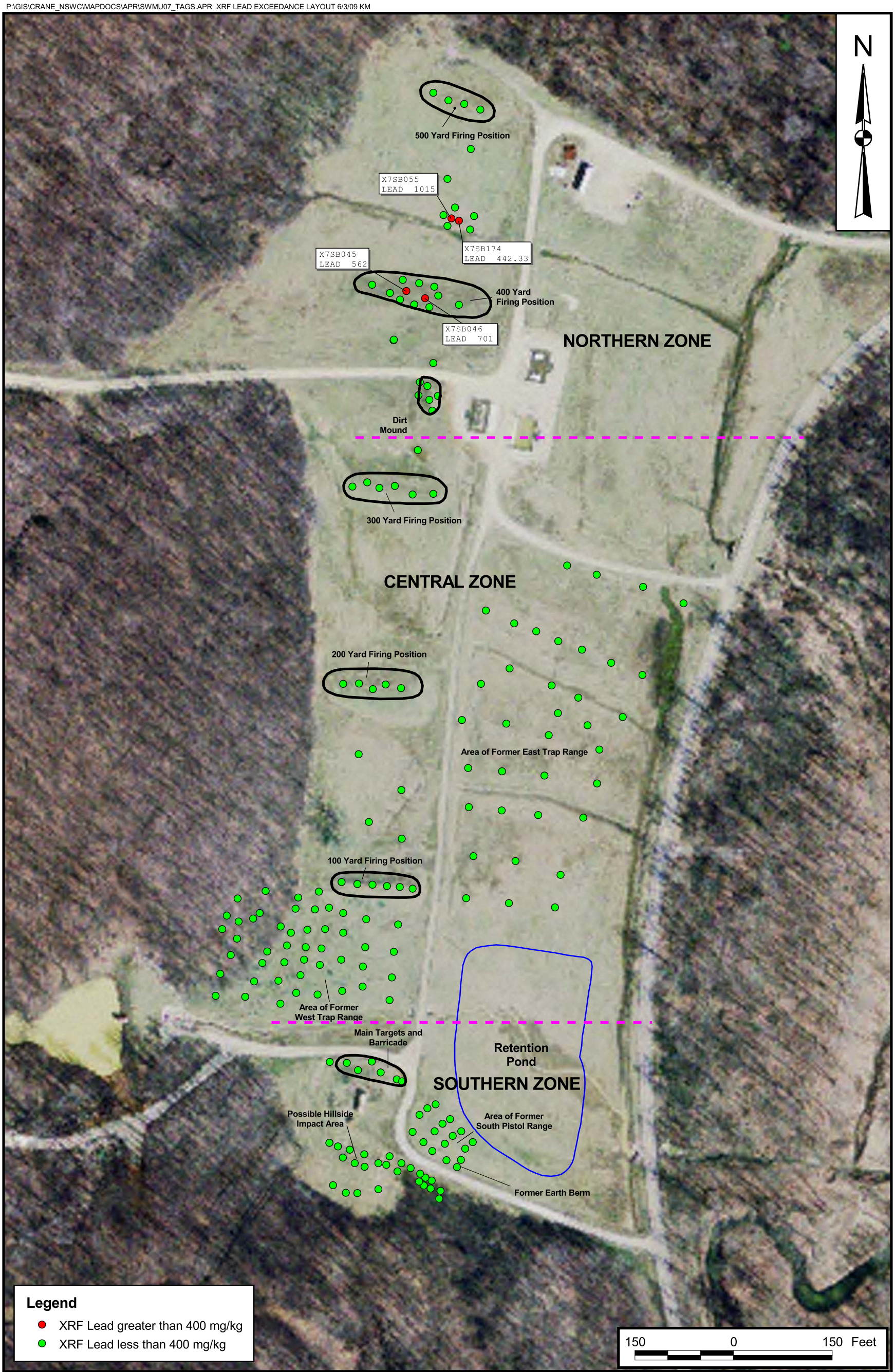
NAVFAC

UXO 7 SAMPLE LOCATIONS
UXO 7 - RFI REPORT
NSWC CRANE
CRANE, INDIANA

CONTRACT NO.	
F272	
OWNER NO.	
00447	
APPROVED BY	DATE
—	—
DRAWING NO.	REV.
FIGURE 2-1	0

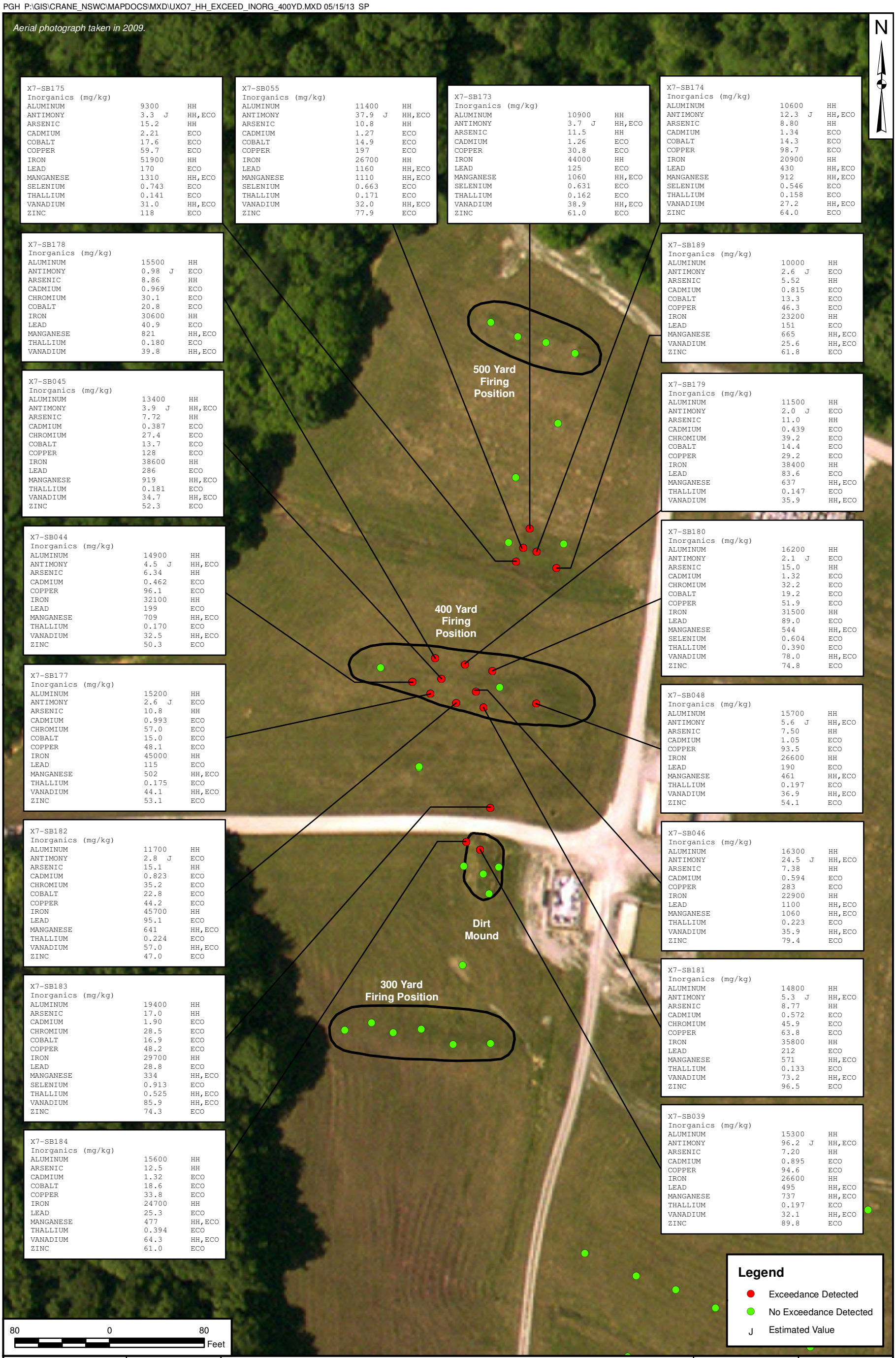
P:\GIS\CRANE_NSWC\MAPDOCS\UXO_SITES.APR UXO 7 GPS SAMPLE LOCATIONS LAYOUT C 6/4/09 KM

P:\GIS\CRANE_NSWC\MAPDOCS\APR\SWMU07_TAGS.APR XRF LEAD EXCEEDANCE LAYOUT 6/3/09 KM



DRAWN BY J. ENGLISH	DATE 07/03/08	FIELD XRF LEAD EXCEEDANCES UXO 7 - RFI REPORT NSWC CRANE CRANE, INDIANA	CONTRACT NUMBER CTO F272 / OWNER NUMBER —
CHECKED BY R. BARINGER	DATE 6/3/09		APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 2-2 / REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_HH_EXCEED_INORG_400YD.MXD 05/15/13 SP



X7-SB175
Inorganics (mg/kg)

ALUMINUM	9300	HH
ANTIMONY	3.3 J	HH,ECO
ARSENIC	15.2	HH
CADMIUM	2.21	ECO
COBALT	17.6	ECO
COPPER	59.7	ECO
IRON	51900	HH
LEAD	170	ECO
MANGANESE	1310	HH,ECO
SELENIUM	0.743	ECO
THALLIUM	0.141	ECO
VANADIUM	31.0	HH,ECO
ZINC	118	ECO

X7-SB055
Inorganics (mg/kg)

ALUMINUM	11400	HH
ANTIMONY	37.9 J	HH,ECO
ARSENIC	10.8	HH
CADMIUM	1.27	ECO
COBALT	14.9	ECO
COPPER	197	ECO
IRON	26700	HH
LEAD	1160	HH,ECO
MANGANESE	1110	HH,ECO
SELENIUM	0.663	ECO
THALLIUM	0.171	ECO
VANADIUM	32.0	HH,ECO
ZINC	77.9	ECO

X7-SB173
Inorganics (mg/kg)

ALUMINUM	10900	HH
ANTIMONY	3.7 J	HH,ECO
ARSENIC	11.5	HH
CADMIUM	1.26	ECO
COPPER	30.8	ECO
IRON	44000	HH
LEAD	125	ECO
MANGANESE	1060	HH,ECO
SELENIUM	0.631	ECO
THALLIUM	0.162	ECO
VANADIUM	38.9	HH,ECO
ZINC	61.0	ECO

X7-SB174
Inorganics (mg/kg)

ALUMINUM	10600	HH
ANTIMONY	12.3 J	HH,ECO
ARSENIC	8.80	HH
CADMIUM	1.34	ECO
COBALT	14.3	ECO
COPPER	98.7	ECO
IRON	20900	HH
LEAD	430	HH,ECO
MANGANESE	912	HH,ECO
SELENIUM	0.546	ECO
THALLIUM	0.158	ECO
VANADIUM	27.2	HH,ECO
ZINC	64.0	ECO

X7-SB178
Inorganics (mg/kg)

ALUMINUM	15500	HH
ANTIMONY	0.98 J	ECO
ARSENIC	8.86	HH
CADMIUM	0.969	ECO
CHROMIUM	30.1	ECO
COBALT	20.8	ECO
IRON	30600	HH
LEAD	40.9	ECO
MANGANESE	821	HH,ECO
THALLIUM	0.180	ECO
VANADIUM	39.8	HH,ECO

X7-SB189
Inorganics (mg/kg)

ALUMINUM	10000	HH
ANTIMONY	2.6 J	ECO
ARSENIC	5.52	HH
CADMIUM	0.815	ECO
COBALT	13.3	ECO
COPPER	46.3	ECO
IRON	23200	HH
LEAD	151	ECO
MANGANESE	665	HH,ECO
VANADIUM	25.6	HH,ECO
ZINC	61.8	ECO

X7-SB045
Inorganics (mg/kg)

ALUMINUM	13400	HH
ANTIMONY	3.9 J	HH,ECO
ARSENIC	7.72	HH
CADMIUM	0.387	ECO
CHROMIUM	27.4	ECO
COBALT	13.7	ECO
COPPER	128	ECO
IRON	38600	HH
LEAD	286	ECO
MANGANESE	919	HH,ECO
THALLIUM	0.181	ECO
VANADIUM	34.7	HH,ECO
ZINC	52.3	ECO

X7-SB179
Inorganics (mg/kg)

ALUMINUM	11500	HH
ANTIMONY	2.0 J	ECO
ARSENIC	11.0	HH
CADMIUM	0.439	ECO
CHROMIUM	39.2	ECO
COBALT	14.4	ECO
COPPER	29.2	ECO
IRON	38400	HH
LEAD	83.6	ECO
MANGANESE	637	HH,ECO
THALLIUM	0.147	ECO
VANADIUM	35.9	HH,ECO

X7-SB044
Inorganics (mg/kg)

ALUMINUM	14900	HH
ANTIMONY	4.5 J	HH,ECO
ARSENIC	6.34	HH
CADMIUM	0.462	ECO
COPPER	96.1	ECO
IRON	32100	HH
LEAD	199	ECO
MANGANESE	709	HH,ECO
THALLIUM	0.170	ECO
VANADIUM	32.5	HH,ECO
ZINC	50.3	ECO

X7-SB180
Inorganics (mg/kg)

ALUMINUM	16200	HH
ANTIMONY	2.1 J	ECO
ARSENIC	15.0	HH
CADMIUM	1.32	ECO
CHROMIUM	32.2	ECO
COBALT	19.2	ECO
COPPER	51.9	ECO
IRON	31500	HH
LEAD	89.0	ECO
MANGANESE	544	HH,ECO
SELENIUM	0.604	ECO
THALLIUM	0.390	ECO
VANADIUM	78.0	HH,ECO
ZINC	74.8	ECO

X7-SB177
Inorganics (mg/kg)

ALUMINUM	15200	HH
ANTIMONY	2.6 J	ECO
ARSENIC	10.8	HH
CADMIUM	0.993	ECO
CHROMIUM	57.0	ECO
COBALT	15.0	ECO
COPPER	48.1	ECO
IRON	45000	HH
LEAD	115	ECO
MANGANESE	502	HH,ECO
THALLIUM	0.175	ECO
VANADIUM	44.1	HH,ECO
ZINC	53.1	ECO

X7-SB048
Inorganics (mg/kg)

ALUMINUM	15700	HH
ANTIMONY	5.6 J	HH,ECO
ARSENIC	7.50	HH
CADMIUM	1.05	ECO
COPPER	93.5	ECO
IRON	26600	HH
LEAD	190	ECO
MANGANESE	461	HH,ECO
THALLIUM	0.197	ECO
VANADIUM	36.9	HH,ECO
ZINC	54.1	ECO

X7-SB182
Inorganics (mg/kg)

ALUMINUM	11700	HH
ANTIMONY	2.8 J	ECO
ARSENIC	15.1	HH
CADMIUM	0.823	ECO
CHROMIUM	35.2	ECO
COBALT	22.8	ECO
COPPER	44.2	ECO
IRON	45700	HH
LEAD	95.1	ECO
MANGANESE	641	HH,ECO
THALLIUM	0.224	ECO
VANADIUM	57.0	HH,ECO
ZINC	47.0	ECO

X7-SB046
Inorganics (mg/kg)

ALUMINUM	16300	HH
ANTIMONY	24.5 J	HH,ECO
ARSENIC	7.38	HH
CADMIUM	0.594	ECO
COPPER	283	ECO
IRON	22900	HH
LEAD	1100	HH,ECO
MANGANESE	1060	HH,ECO
THALLIUM	0.223	ECO
VANADIUM	35.9	HH,ECO
ZINC	79.4	ECO

X7-SB183
Inorganics (mg/kg)

ALUMINUM	19400	HH
ARSENIC	17.0	HH
CADMIUM	1.90	ECO
CHROMIUM	28.5	ECO
COBALT	16.9	ECO
COPPER	48.2	ECO
IRON	29700	HH
LEAD	28.8	ECO
MANGANESE	334	HH,ECO
SELENIUM	0.913	ECO
THALLIUM	0.525	HH,ECO
VANADIUM	85.9	HH,ECO
ZINC	74.3	ECO

X7-SB181
Inorganics (mg/kg)

ALUMINUM	14800	HH
ANTIMONY	5.3 J	HH,ECO
ARSENIC	8.77	HH
CADMIUM	0.572	ECO
CHROMIUM	45.9	ECO
COPPER	63.8	ECO
IRON	35800	HH
LEAD	212	ECO
MANGANESE	571	HH,ECO
THALLIUM	0.133	ECO
VANADIUM	73.2	HH,ECO
ZINC	96.5	ECO

X7-SB184
Inorganics (mg/kg)

ALUMINUM	15600	HH
ARSENIC	12.5	HH
CADMIUM	1.32	ECO
COBALT	18.6	ECO
COPPER	33.8	ECO
IRON	24700	HH
LEAD	25.3	ECO
MANGANESE	477	HH,ECO
THALLIUM	0.394	ECO
VANADIUM	64.3	HH,ECO
ZINC	61.0	ECO

X7-SB039
Inorganics (mg/kg)

ALUMINUM	15300	HH
ANTIMONY	96.2 J	HH,ECO
ARSENIC	7.20	HH
CADMIUM	0.895	ECO
COPPER	94.6	ECO
IRON	26600	HH
LEAD	495	HH,ECO
MANGANESE	737	HH,ECO
THALLIUM	0.197	ECO
VANADIUM	32.1	HH,ECO
ZINC	89.8	ECO

DRAWN BY	DATE
J. ENGLISH	05/23/11
CHECKED BY	DATE
R. BARRINGER	05/15/13
REVISED BY	DATE
S. PAXTON	05/15/13
SCALE	
AS NOTED	

NAVFAC

INORGANICS
HUMAN HEALTH AND ECOLOGICAL EXCEEDANCES
UXO 7 - RFI REPORT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO. 2-3	REV 0

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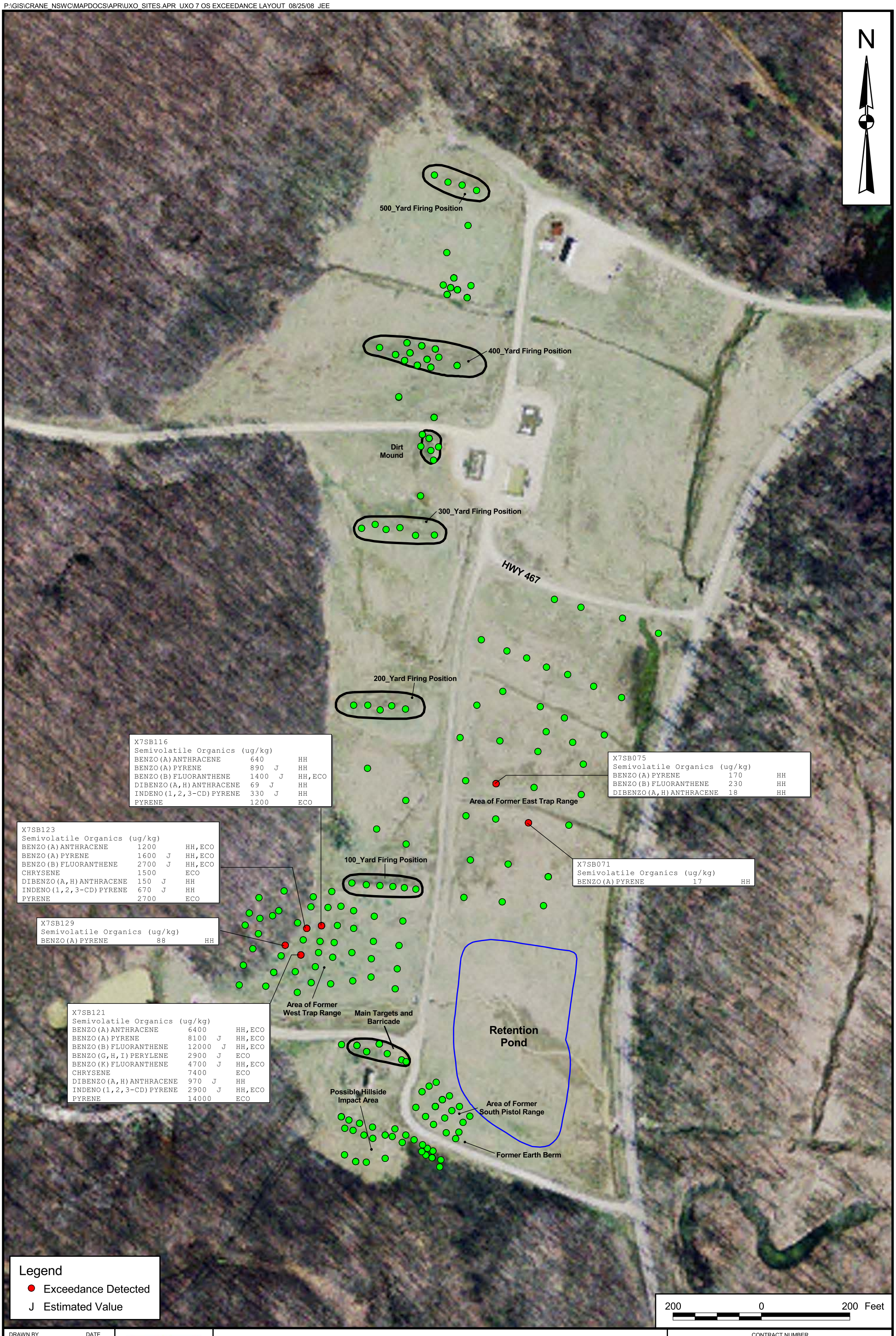


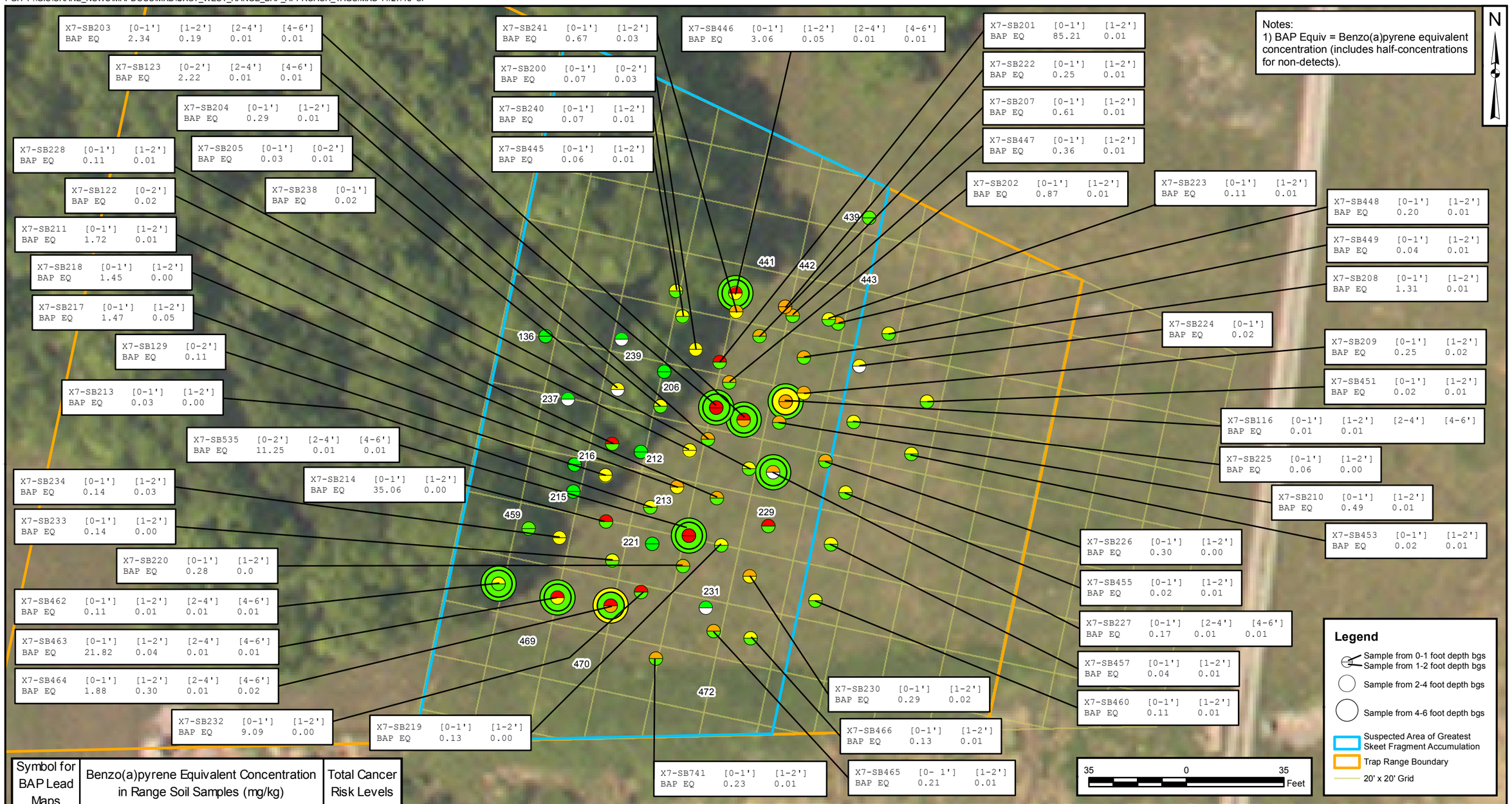
DRAWN BY	DATE
J. ENGLISH	07/31/08
CHECKED BY	DATE
J. GOERDT	08/25/08
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	

NAVFAC

SEMIVOLATILE ORGANICS
HUMAN HEALTH AND ECOLOGICAL EXCEEDANCES
UXO 7 - RFI REPORT
NSWC CRANE
CRANE, INDIANA

CONTRACT NUMBER	
CTO F272	
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
DRAWING NO.	REV
FIGURE 2-4	0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_WEST_RANGE_BAP_APPROACH_TAGS.MXD 11/27/13 SP



Symbol for BAP Lead Maps	Benzo(a)pyrene Equivalent Concentration in Range Soil Samples (mg/kg)	Total Cancer Risk Levels
●	< 0.015 mg/kg	$< 10^{-6}$
●	0.015 mg.kg - 0.15 mg/kg	10^{-6} to 10^{-5}
●	0.15 - 1.5 mg.kg	10^{-5} to 10^{-4}
●	> 1.5 mg/kg	$> 10^{-4}$
○	No sample rsults for indicated depth	N/A

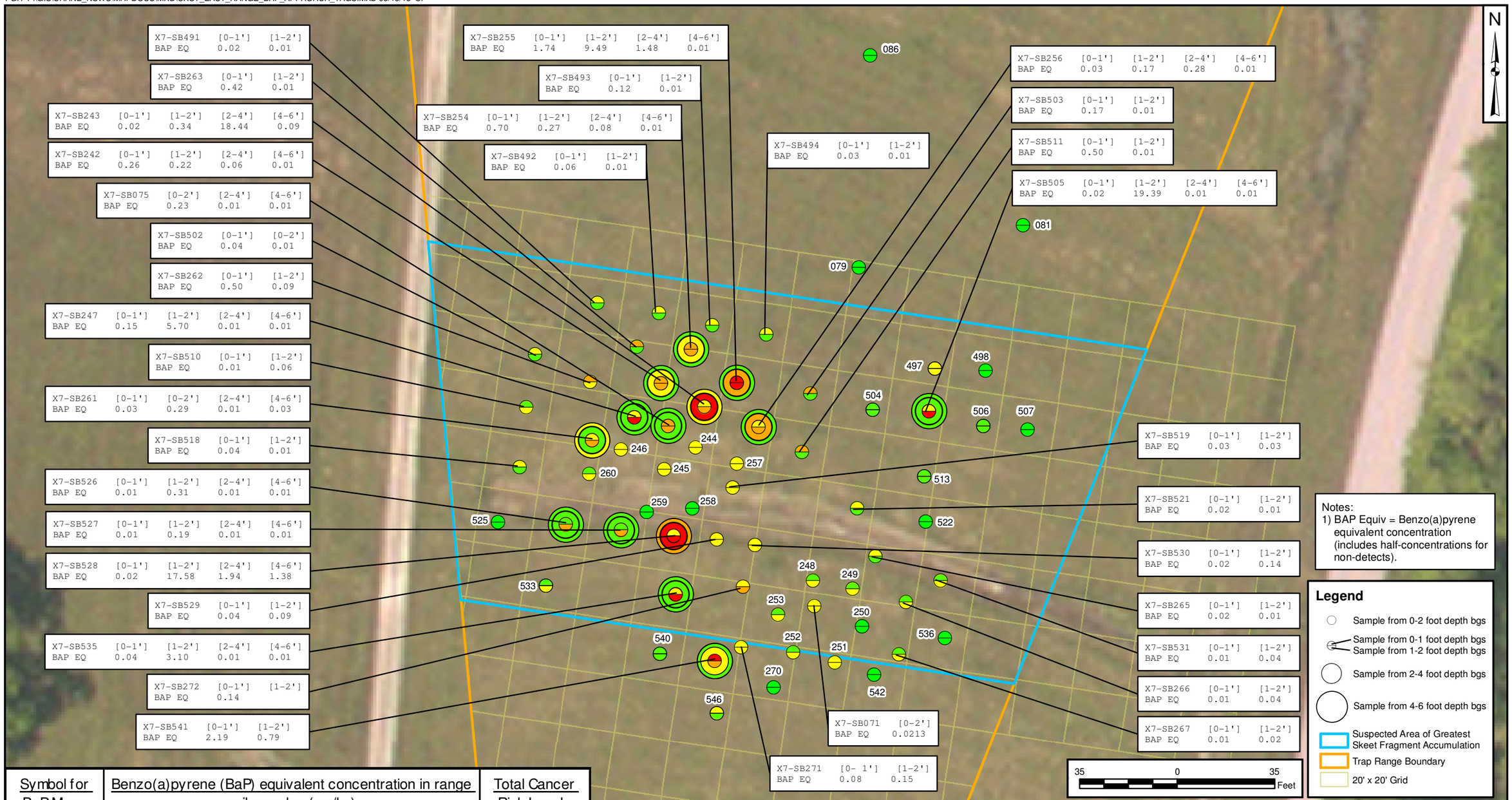
DRAWN BY J. ENGLISH	DATE 03/01/12
CHECKED BY R. BARRINGER	DATE 11/27/13
REVISED BY S. PAXTON	DATE 11/27/13
SCALE AS NOTED	

NAVFAC

BaP EQUIVALENTS IN RANGE SOIL FROM
RFI (2007) & SUPPLEMENTAL SAMPLING
UXO 7 - WEST TRAP RANGE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 0057	CTO NUMBER F272
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. 2-5	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_EAST_RANGE_BAP_APPROACH_TAGS.MXD 05/15/13 SP



Symbol for BaP Maps	Benzo(a)pyrene (BaP) equivalent concentration in range soil samples (mg/kg)	Total Cancer Risk Levels
●	<0.015 mg/kg	$< 10^{-6}$
●	0.015 mg/kg to 0.15 mg/kg	10^{-6} to 10^{-5}
●	0.15 mg/kg to 1.5 mg/kg	10^{-5} to 10^{-4}
●	>1.5 mg/kg	$> 10^{-4}$

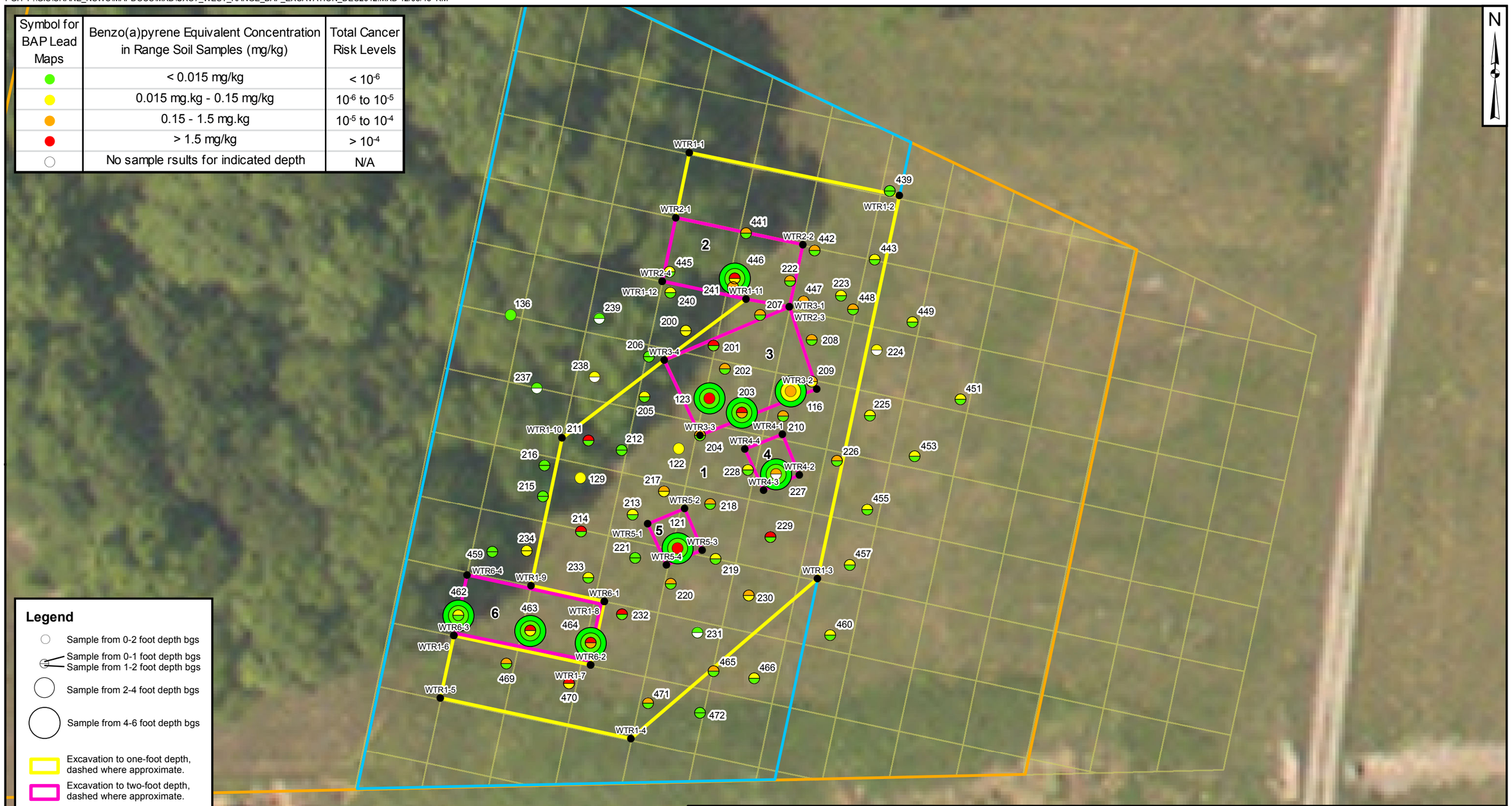
DRAWN BY J. NOVAK	DATE 10/04/12	
CHECKED BY R. BARRINGER	DATE 05/15/13	
REVISED BY S. PAXTON	DATE 05/15/13	
SCALE AS NOTED		

NAVFAC

BaP EQUIVALENT DELINEATION SOIL SAMPLING RESULTS
UXO 7 - EAST TRAP RANGE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 0057	CTO NUMBER F272
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. 2-6	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_WEST_RANGE_BAP_EXCAVATION_DEC2012.MXD 12/03/13 KM

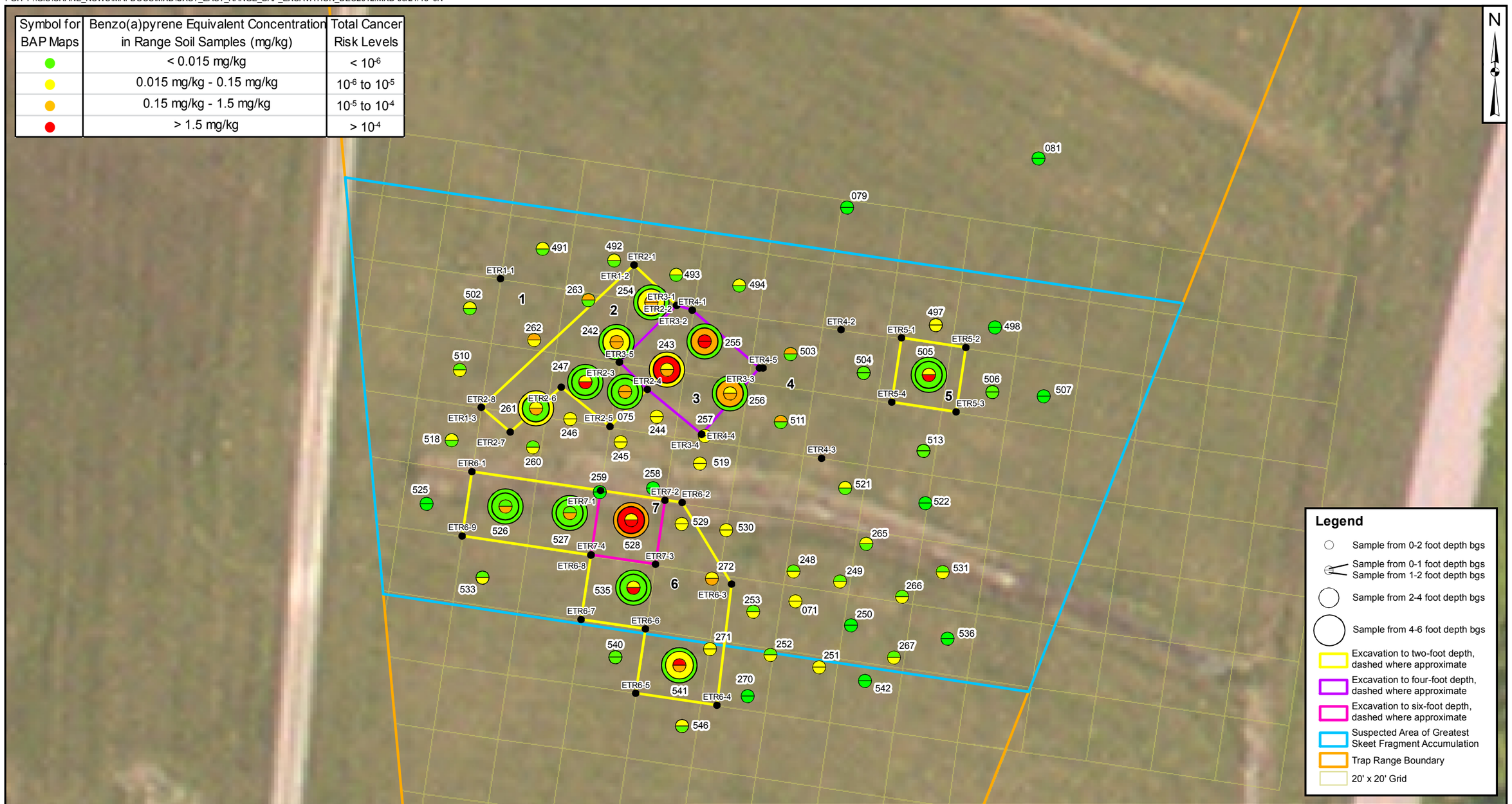


Symbol for BAP Lead Maps	Benzo(a)pyrene Equivalent Concentration in Range Soil Samples (mg/kg)	Total Cancer Risk Levels
●	< 0.015 mg/kg	$< 10^{-6}$
●	0.015 mg.kg - 0.15 mg/kg	10^{-6} to 10^{-5}
●	0.15 - 1.5 mg.kg	10^{-5} to 10^{-4}
●	> 1.5 mg/kg	$> 10^{-4}$
○	No sample rsults for indicated depth	N/A

DRAWN BY J. ENGLISH	DATE 12/04/12	SOIL BAP SAMPLING RESULTS UXO 7 - WEST TRAP RANGE NSA CRANE CRANE, INDIANA	CONTRACT NUMBER 0057 / CTO NUMBER F272
CHECKED BY R. BARRINGER	DATE 12/03/13		APPROVED BY — / DATE —
REVISED BY K. MOORE	DATE 12/03/13		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. 2-7 / REV 0

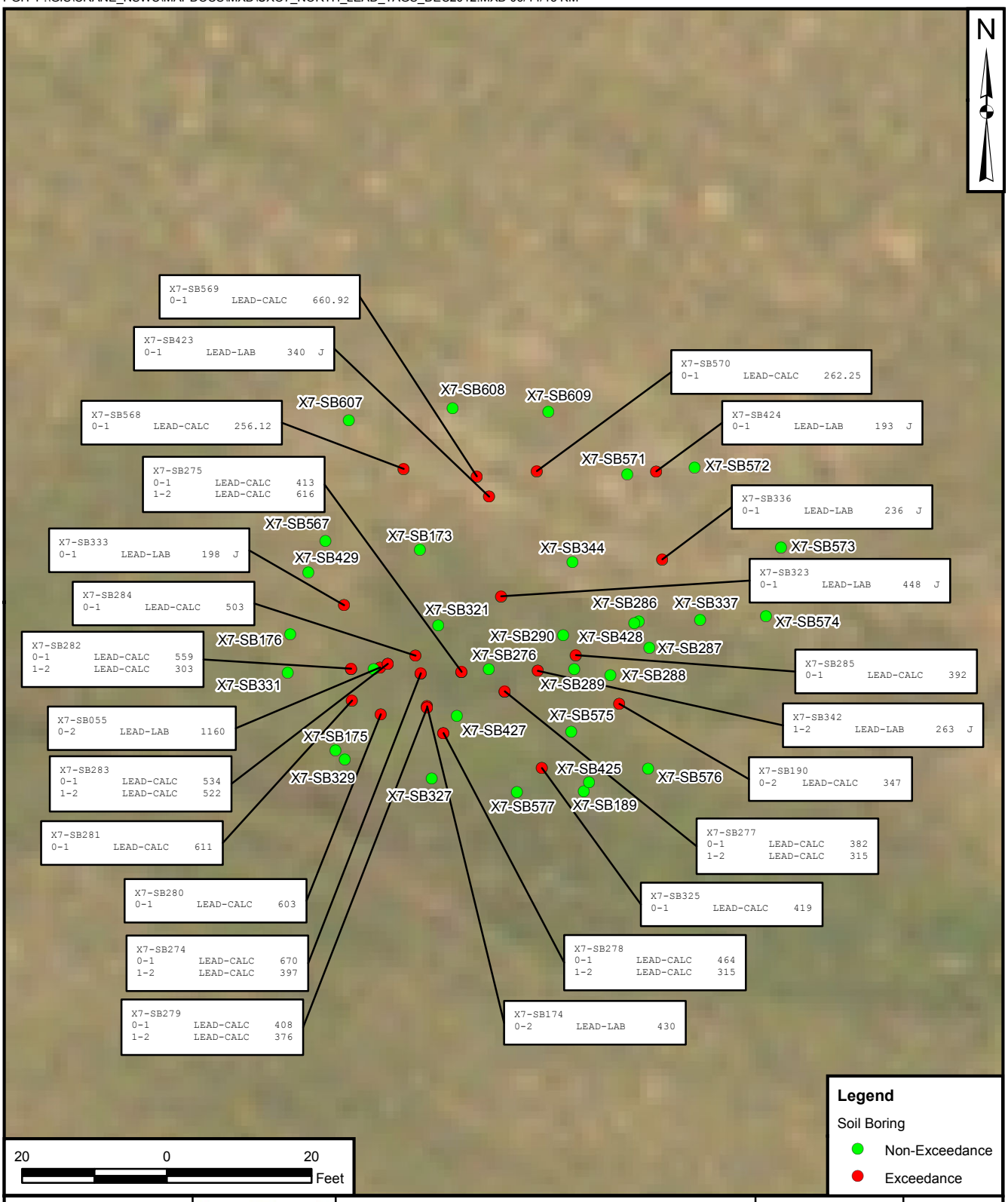
PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_EAST_RANGE_BAP_EXCAVATION_DEC2012.MXD 06/21/13 JN

Symbol for BAP Maps	Benzo(a)pyrene Equivalent Concentration in Range Soil Samples (mg/kg)	Total Cancer Risk Levels
●	< 0.015 mg/kg	$< 10^{-6}$
●	0.015 mg/kg - 0.15 mg/kg	10^{-6} to 10^{-5}
●	0.15 mg/kg - 1.5 mg/kg	10^{-5} to 10^{-4}
●	> 1.5 mg/kg	$> 10^{-4}$



DRAWN BY J. ENGLISH	DATE 12/04/12	SOIL BaP EQUIVALENT REMOVAL AREAS FOR RISK REDUCTION UXO 7 - EAST TRAP RANGE NSA CRANE CRANE, INDIANA	CONTRACT NUMBER 0057
CHECKED BY R. BARRINGER	DATE 06/21/13		CTO NUMBER F272
REVISED BY J. NOVAK	DATE 06/21/13		APPROVED BY — DATE —
SCALE AS NOTED			APPROVED BY — DATE —
			FIGURE NO. 2-8 REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_NORTH_LEAD_TAGS_DEC2012.MXD 06/14/13 KM



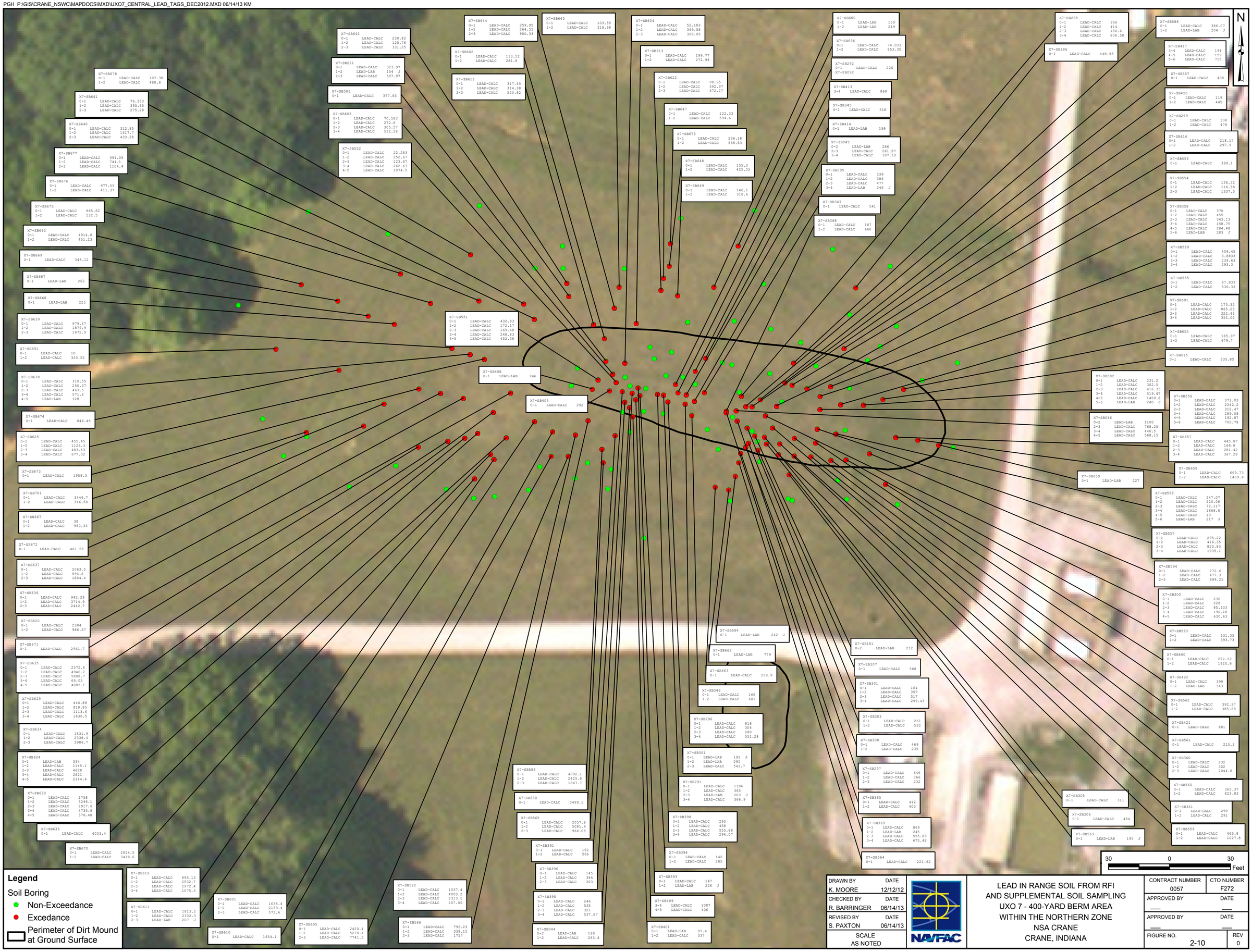
DRAWN BY	DATE
K. MOORE	12/12/12
CHECKED BY	DATE
R. BARRINGER	06/14/13
REVISED BY	DATE
S. PAXTON	06/14/13
SCALE AS NOTED	

NAVFAC

LEAD IN RANGE SOIL FROM RFI
AND SUPPLEMENTAL SOIL SAMPLING
UXO 7 - DRAINAGE AREA
WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___
FIGURE NO.	REV
2-9	0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_CENTRAL_LEAD_TAGS_DEC2012.MXD 06/14/13 KM



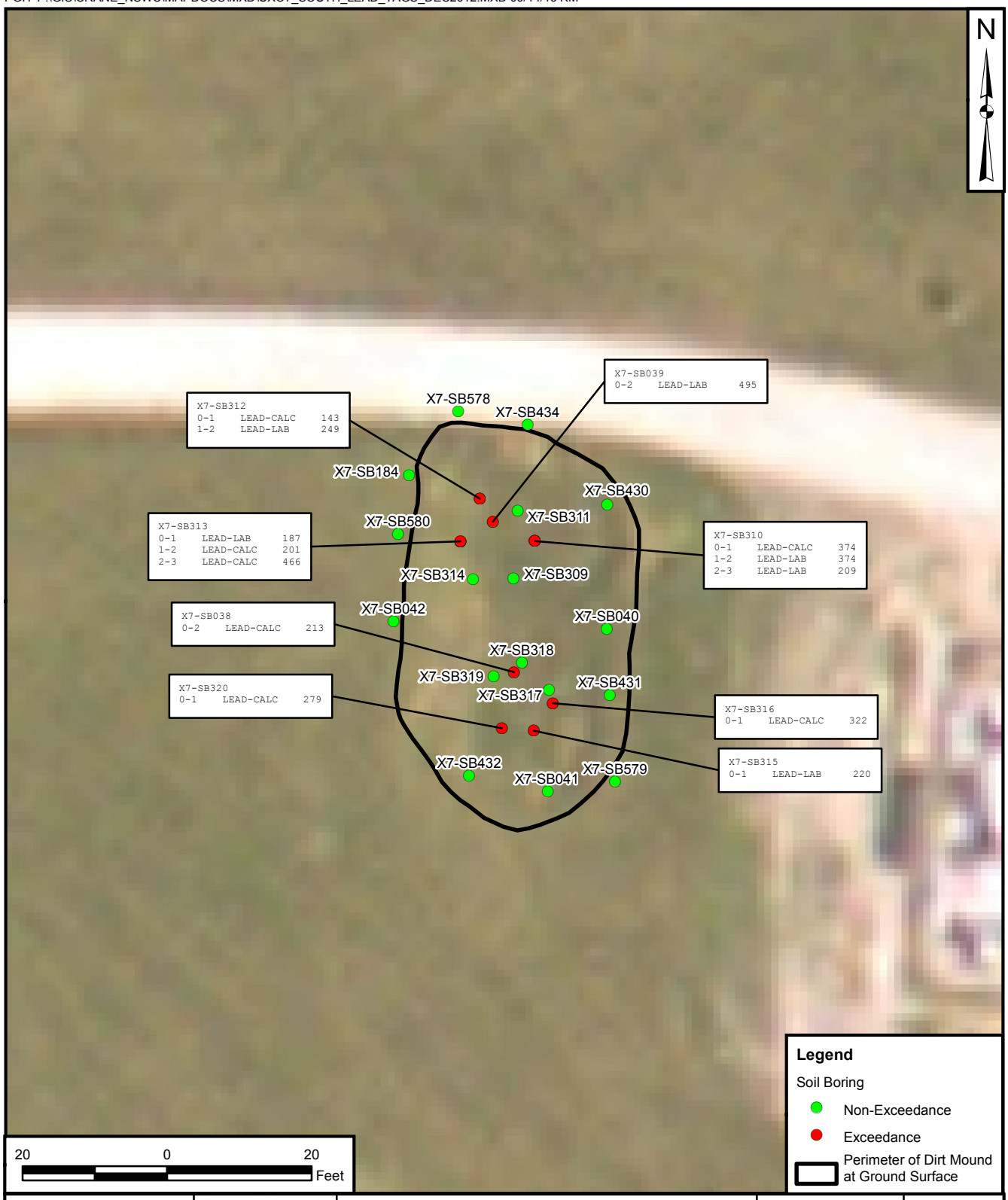
DRAWN BY	DATE
K. MOORE	12/12/12
CHECKED BY	DATE
R. BARRINGER	06/14/13
REVISED BY	DATE
S. PAXTON	06/14/13
SCALE AS NOTED	

NAVFAC

LEAD IN RANGE SOIL FROM RFI AND SUPPLEMENTAL SOIL SAMPLING
UXO 7 - 400-YARD BERM AREA
WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___
FIGURE NO. 2-10	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_SOUTH_LEAD_TAGS_DEC2012.MXD 06/14/13 KM



DRAWN BY	DATE
K. MOORE	12/12/12
CHECKED BY	DATE
R. BARRINGER	06/14/13
REVISED BY	DATE
S. PAXTON	06/14/13
SCALE AS NOTED	

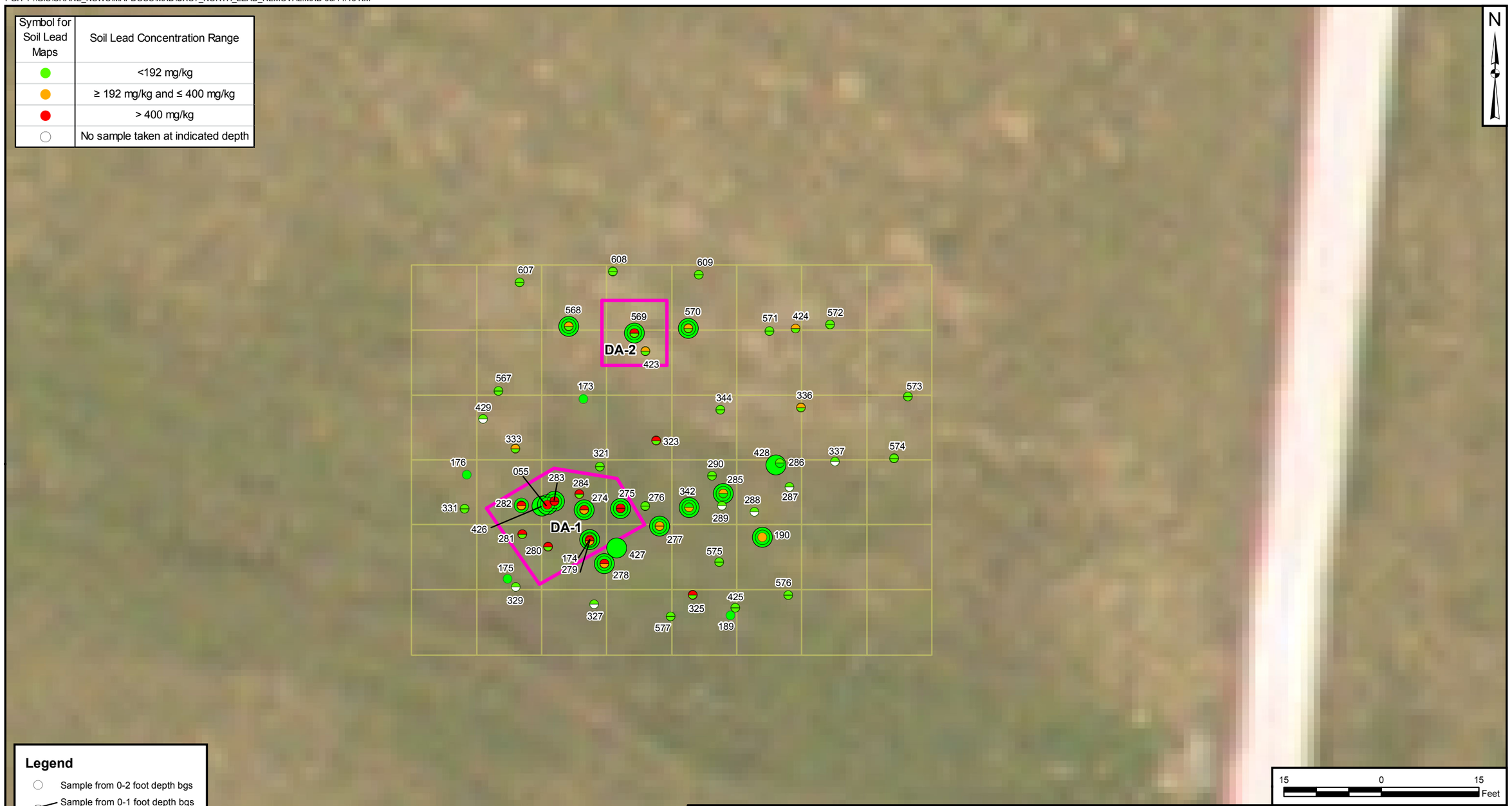
NAVFAC

LEAD IN RANGE SOIL FROM RFI
AND SUPPLEMENTAL SOIL SAMPLING
UXO 7 - DIRT MOUND AREA
WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___
FIGURE NO. 2-11	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_NORTH_LEAD_REMOVAL.MXD 06/14/13 KM

Symbol for Soil Lead Maps	Soil Lead Concentration Range
●	<192 mg/kg
●	≥ 192 mg/kg and ≤ 400 mg/kg
●	> 400 mg/kg
○	No sample taken at indicated depth



Legend

- Sample from 0-2 foot depth bgs
- Sample from 0-1 foot depth bgs
- Sample from 1-2 foot depth bgs
- Sample from 2-3 foot depth bgs
- Sample from 3-4 foot depth bgs
- Excavation to two-foot depth
- 10' x 10' Grid

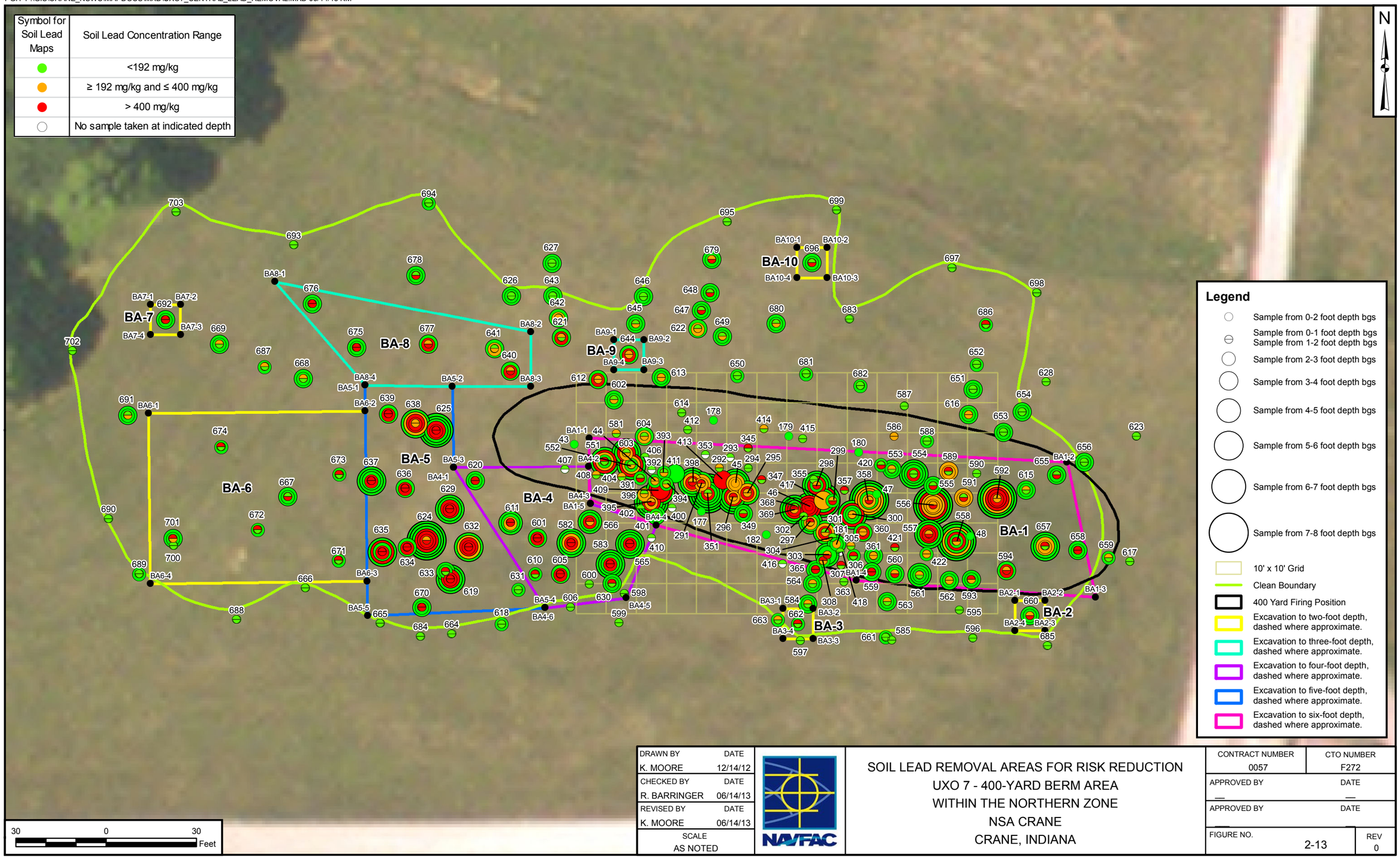
DRAWN BY K. MOORE	DATE 12/14/12
CHECKED BY R. BARRINGER	DATE 06/14/13
REVISED BY K. MOORE	DATE 06/14/13
SCALE AS NOTED	

NAVFAC

SOIL LEAD REMOVAL AREAS FOR RISK REDUCTION
UXO 7 - DRAINAGE AREA WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 0057	CTO NUMBER F272
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. 2-12	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_CENTRAL_LEAD_REMOVAL.MXD 06/14/13 KM



Symbol for Soil Lead Maps	Soil Lead Concentration Range
●	<192 mg/kg
●	≥ 192 mg/kg and ≤ 400 mg/kg
●	> 400 mg/kg
○	No sample taken at indicated depth

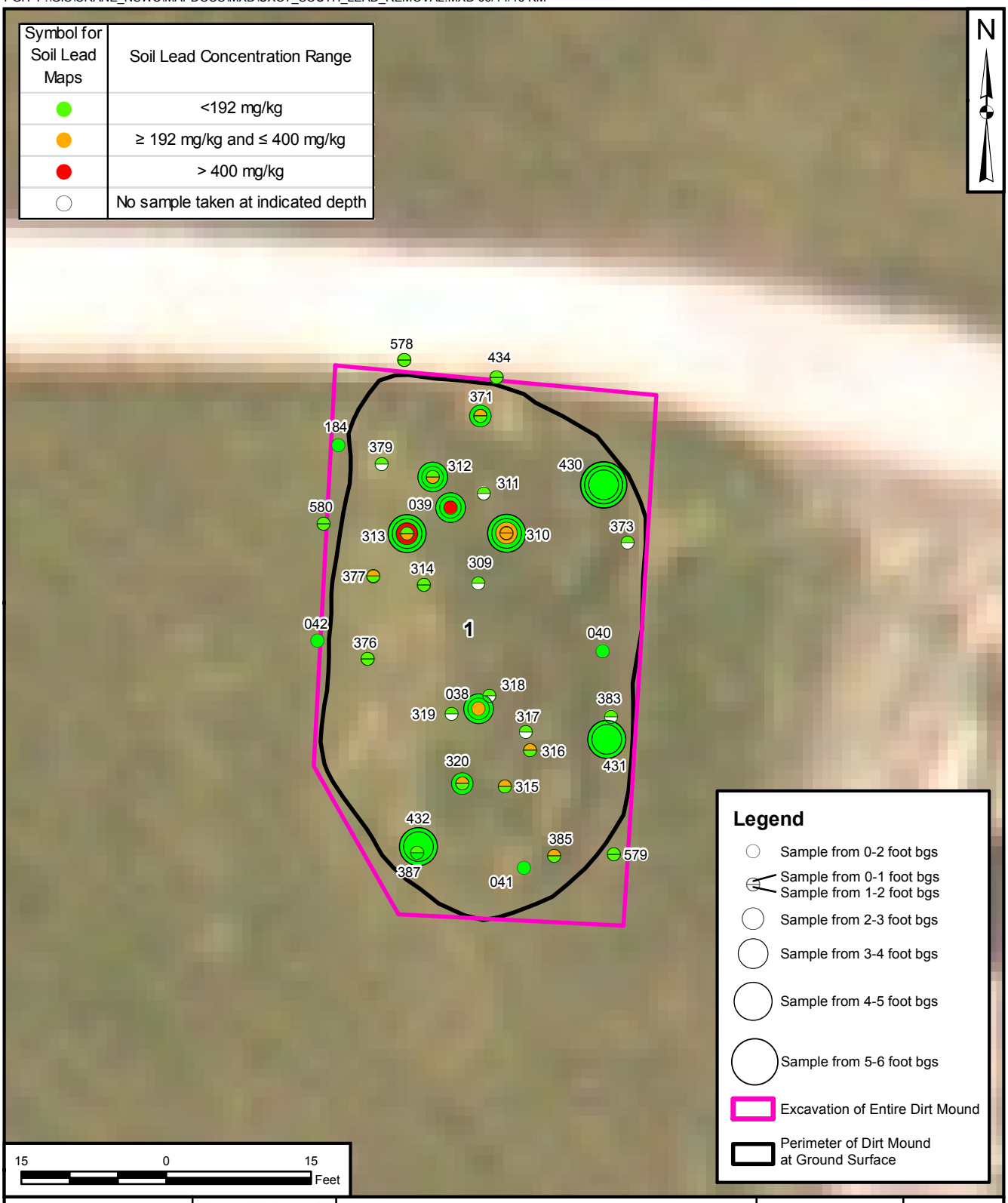
DRAWN BY K. MOORE	DATE 12/14/12
CHECKED BY R. BARRINGER	DATE 06/14/13
REVISED BY K. MOORE	DATE 06/14/13
SCALE AS NOTED	

NAVFAC

SOIL LEAD REMOVAL AREAS FOR RISK REDUCTION
UXO 7 - 400-YARD BERM AREA
WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 0057	CTO NUMBER F272
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. 2-13	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_SOUTH_LEAD_REMOVAL.MXD 06/14/13 KM

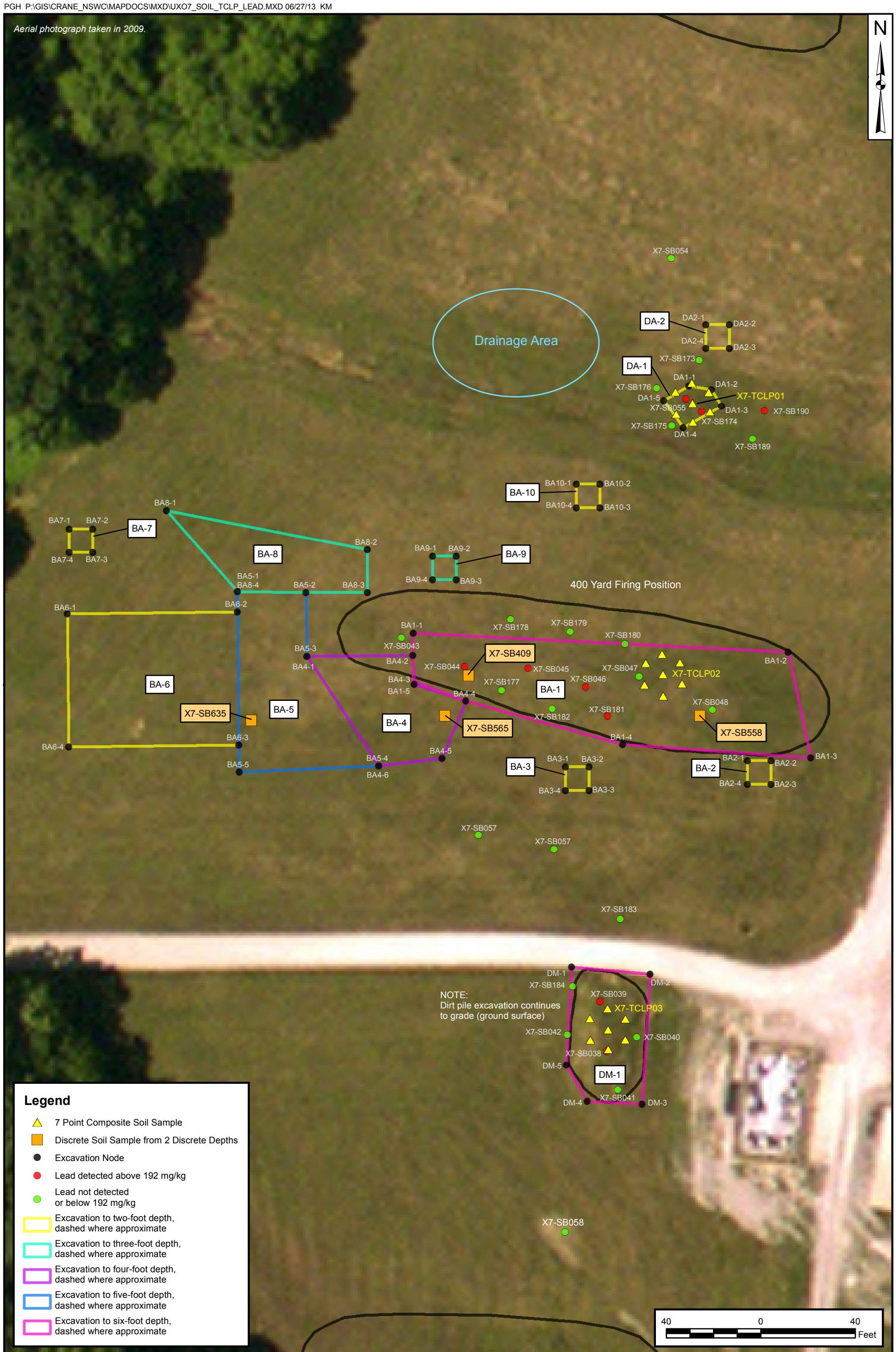


DRAWN BY	DATE
K. MOORE	12/14/12
CHECKED BY	DATE
R. BARRINGER	06/14/13
REVISED BY	DATE
K. MOORE	06/14/13
SCALE AS NOTED	

SOIL LEAD REMOVAL AREAS FOR RISK REDUCTION
UXO 7 - DIRT MOUND AREA
WITHIN THE NORTHERN ZONE
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
0057	F272
APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___
FIGURE NO. 2-14	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_SOIL_TCLP_LEAD.MXD 06/27/13 KM



DRAWN BY	DATE
J. ENGLISH	07/05/11
CHECKED BY	DATE
R. BARRINGER	06/27/13
REVISED BY	DATE
K. MOORE	06/27/13
SCALE	
AS NOTED	

NAVFAC

SOIL LEAD EXCAVATION AREAS
UXO 7 - SOIL SAMPLING LOCATIONS FOR TCLP LEAD DATA
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
—	F272
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO. 2-15	REV 0

3.0 INTERIM MEASURES WORK PLAN

This section describes the interim measures for removal of contaminated soil at UXO 7. The interim measures for UXO 7 include the excavation and off-site disposal of soil containing concentrations of PAH compounds (expressed as BaP equivalents) and lead above specific risk levels to reduce average site-wide risks. This IMWP describes the limits and method of removal and off-site disposal of soil containing concentrations of BaP equivalents. Additionally, the IMWP describes the limits and method of in-situ treatment with a binding agent and off-site disposal of lead-contaminated soil.

3.1 DESCRIPTION OF THE INTERIM MEASURES

This IMWP specifies the removal of contaminated soil from five areas at UXO 7 that contain either PAH compounds derived from clay targets fired on the trap ranges or lead from small arms ammunition fired within the ORR. In addition, this IMWP specifies restoration of these five excavation areas. Removal of soil from these five areas will reduce site-wide exposure risks for PAH and lead to acceptable levels. The volumes presented for excavation are in-place estimates. It is anticipated that these volumes will increase after the soil is excavated and left in an unconsolidated state (PAH soil) or are mechanically blended through in-situ addition of soil amendments/binding agent (lead soil).

A work assignment responsibility chart (Table 3-1) identifies the responsibilities that the Contractor, NSA Crane, and Tetra Tech will have in the IMWP implementation.

3.2 PERFORMANCE STANDARDS

The following is a summary of the five excavation areas identified on Figures 3-1 and 3-2 and the associated performance standards for each excavation area. Excavation nodes are included on those same figures and the excavation node coordinates for the proposed limits of excavation are listed on Table 3-2. Performance standards for the IMWP are presented in the following sections.

<u>Soil Excavation/Removal</u>

Soil in the Trap Range (PAH) Areas and the ORR (lead) Areas will be excavated independently. This soil will be characterized as necessary for disposal purposes, excavated, and transported and disposed off-site.

The planned excavation areas to address soil PAH concentrations within the two former trap ranges areas at UXO 7 collectively cover approximately 0.40 acres (17,228 square feet). The approximate soil volumes to be excavated to address excess soil PAH risks in the former trap range areas were determined using the total excavation area for PAH-contaminated soil as estimated by the GIS data, and multiplying by the required depth of excavation for each subarea in feet (the vertical limit for each subarea for the soil removal excavation). Soil proposed for excavation in the former West Trap Range is no more than two feet in depth and no more than six feet in depth in the former East Trap Range (Figure 3-1). The estimated soil volume targeted for excavation, removal, and off-site disposal from the former trap range areas sum to an estimated 1,113 cy (Table 3-3).

The UXO 7 IMWP for the East and West Trap Ranges consist of the following major soil excavation components:

- **West Trap Range**. The volume of soil to be removed from the West Trap Range totals approximately 476 cy. Six discrete excavation subareas are proposed for excavation and the largest area (subarea 1) covers approximately 9,800 square feet within the suspected maximum skeet fragment area and extends to a depth of one foot (approximately 363 cy of soil for removal). Five other smaller removal areas (subareas 2 through 6) are inside the larger excavation and will extend down one additional foot to address deeper soil contamination. These smaller areas collectively cover 3,042 square feet (at a depth of one foot below the Subarea 1 excavation, or 2 feet bgs) and generate an additional 113 cy of contaminated soil for removal (as presented on Figure 3-1).

- **East Trap Range**. The volume of soil to be removed from the East Trap Range totals approximately 640 cy. Seven discrete excavation subareas are designated for removal (Figure 3-1). The largest area (Subarea 6) covers approximately 2,900 square feet within the suspected maximum skeet fragment area and extends to a depth of two feet (approximately 212 cy of soil for removal). One other smaller removal area (subarea 7) is inside this larger excavation and will extend down 4 additional feet to address deeper soil contamination (at a total depth of six feet bgs). Subarea 7 covers 400 square feet (at a depth of 4 feet below the subarea 6 excavation, or 6 feet bgs) and generates an additional 60 cy of contaminated soil for removal. Subareas 1, 2, 3, 4, and 5 in the north central area of the East Trap Range cover approximately 4,563 square feet and contain an estimated 367 cy of excavated soil. These excavation areas are presented on Figure 3-1.

The planned excavation areas within the three primary ORR (lead) Areas (Drainage Area of Northern Zone, 400-Yard Berm Area of Northern Zone, and Dirt Mound Area of Northern Zone) cover approximately 0.44 acres (19,361 square feet) (Figure 3-2). The approximate soil volumes to be

excavated to address excess soil lead risks in the ORR Areas were determined using the total excavation area for lead-contaminated soil as estimated by GIS data, and multiplying by the required depth of excavation for each subarea in feet (the vertical limit for each subarea for the soil removal excavation). As needed, the lead contaminated soil from the three areas will be excavated, blended, and stabilized to allow transportation and off-site disposal as non-hazardous waste.

The UXO 7 IMWP to address lead contamination consists of the following major soil excavation components:

- **Drainage Area within the UXO 7 Northern Zone**. The volume of soil to be removed from the Drainage Area to achieve reductions in risk to ecological receptors is approximately 22 cy. The lead contamination within the Drainage Area is confined to the upper 2 feet of soil. Two discrete excavation subareas are proposed to address the main risks to ecological receptors. Subarea DA-1 covers approximately 251 square feet to a depth of two feet bgs (approximately 19 cy of soil). The excavation subarea is presented on Figure 3-2. Subarea DA-2 covers approximately 100 square feet to a depth of 1 foot bgs (approximately 4cy). This subarea, as shown on Figure 3-2, includes sample location SB569 which exhibited a lead concentration of 661 mg/kg at the 0- to 1-foot depth bgs. Upon removal of the two proposed excavation subareas and backfilling with clean soil, the overall average lead concentration within the Drainage Area drops from 151 mg/kg to 80 mg/kg. Additionally, no sample-specific lead concentrations greater than 652 mg/kg would remain at the site.

- **400-Yard Berm Area within the UXO 7 Northern Zone**. The volume of soil to be removed from the 400-Yard Berm Area totals approximately 2,716 cy. The lead contamination within the 400-Yard Berm Area is mostly located on the southern face of the 400-yard firing berm as well as in the area located just to the west and southwest of the berm. Numerous bullets and bullet fragments were observed in the area just west and southwest of the firing berm. The lead contamination was found at various depths throughout the site. Upon removal of the 10 excavation subareas and backfilling with clean soil, the overall average lead concentration within the 400-Yard Berm Area drops from 401 mg/kg to 49 mg/kg. Additionally, no sample-specific lead concentrations greater than 652 mg/kg would remain at the site. Ten discrete excavation subareas are proposed to address the main risks to ecological receptors as described below:

The largest area is subarea BA-1, which covers the majority of the southern face of the 400-yard firing berm. Subarea 1 covers approximately 6,141 square feet to a depth of 6 feet bgs (approximately 1,365 cy of soil). The subarea 1 excavation location is presented on Figure 3-2.

Subareas BA-2 and BA-3 each cover approximately 100 square feet to a depth of 2 feet bgs (approximately 7 cy per subarea). These subareas, as shown on Figure 3-2, are located just to the south and southeast of the firing berm.

Subarea BA-4 covers approximately 1,891 square feet to a depth of 4 feet bgs (approximately 280 cy). This subarea, as shown on Figure 3-2, is located along the southwest corner of the firing berm.

Subarea BA-5 covers approximately 2,916 square feet to a depth of 5 feet bgs (approximately 540 cy). This subarea, as shown on Figure 3-2, is located to the west and southwest of the firing berm.

Subarea BA-6 covers approximately 4,067 square feet to a depth of 2 feet bgs (approximately 301 cy). This subarea, as shown on Figure 3-2, is located to the west of the firing berm and includes the area where the majority of bullets and bullet fragments were observed in surface soil.

Subareas BA-7, BA-9, and BA-10 each cover approximately 100 square feet to depths of 2 feet bgs for subareas BA-7 and BA-10 (approximately 7 cy each) and 3 feet bgs for subarea BA-9 (approximately 11 cy). These subareas, as shown on Figure 3-2, are located to the north and northwest of the firing berm.

Subarea BA-8 covers approximately 1,719 square feet to a depth of 3 feet bgs (approximately 191 cy). This subarea, as shown on Figure 3-2, is located to the northwest of the firing berm.

- **Dirt Mound Area within the UXO 7 Northern Zone**. Lead contamination within the Dirt Mound Area was detected at a few locations along the top of the dirt mound with the contamination limited to the upper 3 feet of soil. Because the origin of the dirt mound is unknown and a few bullets were observed within the dirt mound, along with other metallic debris (i.e., nails, door hinges), the entire mound is proposed for removal (subarea DM-1). The dirt mound sits upon a layer of thick plastic sheeting covering approximately 1,776 square feet to an average height of 6 feet above the ground surface (approximately 395 cy of soil). The dirt mound is presented on Figure 3-2. Since the entire dirt mound is to be removed, all significant ecological risk will have been mitigated.

SOIL EXCAVATION / REMOVAL SUMMARY

Soil Area	Depth (feet bgs)	Approximate Non-Hazardous Soil Volume (cy)
Former West Trap Range of UXO 7	As deep as 2	476
Former East Trap Range of UXO 7	As deep as 6	638
Drainage Area of UXO 7 Northern Zone	As deep as 2	22
400-Yard Berm Area of UXO 7 Northern Zone	As deep as 6	2,714
Dirt Mound Area of UXO 7 Northern Zone	Removal of entire earthen mound to grade	395

Soil Erosion Control

Soil that accumulates in E&S control devices (see Section 4.0) prior to backfilling of the excavations will be disposed off-site along with the contaminated soil. Following backfilling of the excavation, soil that accumulates in the E&S control devices will be spread across the disturbed ground surface of the excavation.

In the event the Contractor spills excavated soil on an uncontaminated area, the Contractor will be responsible for removing the contaminated soil along with the impacted surface soil, verifying that all contaminated materials have been removed, and disposing of that material at their own expense.

The Contractor should identify the process of transporting excavated soil in the Contractor's Work Plan.

Dewatering

The Environmental Multiple Award Contract (EMAC) Contractor will make every effort to prevent the need to dewater excavated soil and to prevent the accumulation of water within excavations. Open excavations will be kept to a minimum. It is anticipated that the only material that will require dewatering is excavated soil during a heavy precipitation event which is a precipitation event that results in sufficient water volume to require excavated soil dewatering prior to transportation for off-site disposal. Otherwise, there is no anticipated need for soil dewatering. When necessary, excavated soil will be placed on the dewatering pad at a lift thickness no greater than 3 feet and allowed to drain by gravity. Following dewatering, the Contractor will collect the required disposal characterization samples and mix to promote additional dewatering. It is estimated that following the second day of dewatering, the moisture content of the soil will have been sufficiently reduced and the material will not require the addition of an absorbent agent to be suitable for transportation and disposal. At the conclusion of the field effort, if there is

accumulated water at the dewatering pad, then the water will be sampled for characterization to ensure proper management for off-site disposal.

Sampling and Analysis

At the completion of this IM and following removal of the support facilities (e.g., dewatering pad, decontamination pad, and material storage area, etc.), support area verification samples will be collected by Tetra Tech from the surface soil below the decontamination pad, material storage area, and dewatering pad (if these items are installed). If it is determined that the lining system under any of the support facilities did fail during implementation of this IM, potentially resulting in the contamination of the soil below the support facilities, the Contractor will be required to remove that contamination at their own expense.

Disposal

Soil designated for excavation will be sampled by the Contractor for waste disposal characterization purposes in accordance with the waste disposal facility requirements, using the methods required by the NAVFAC-approved waste disposal facility. The Contractor is responsible for satisfying all disposal requirements of the selected disposal facility. Table 3-3 presents the quantities of soil to be excavated from each subarea and the following is a summary of the volumes expected to be disposed off-site.

Area/Item	Contaminant	Quantity
PAH Areas (two areas)	PAHs	1,113 cy
Metals Areas (three areas)	Lead	3,131 cy
	Total soil:	**4,244 cy**

Soil which is designated as toxicity characteristic (TC) hazardous for lead, will be stabilized as necessary to allow disposal as a non-hazardous waste in a solid waste landfill. The Contractor will be responsible for verifying the classification of off-site disposal material (i.e., disposal as non-hazardous material) by conducting characterization sampling and analysis and satisfying the waste disposal facility requirements.

Backfilling

Immediately following excavation of an individual area of contaminated soil, the excavated areas will be backfilled, compacted, and regraded to the level of surrounding grades (Figure 1-3). Backfilling will be kept to a minimum when excavated areas are above-grade raised earthen structures (i.e., 400-yard firing berm, dirt mound). The 400-yard berm will be contoured after excavation to establish a stable slope face

and the dirt mound will be excavated to the original surface grade (ground surface) to minimize the need for backfill in these areas. Surface and subsurface soil excavation and impacted areas in level areas will be backfilled to approximate pre-construction conditions using continuous backfilling techniques. The backfill materials obtained from an off-site borrow source will have properties similar to the native UXO 7 surface/subsurface soil. This soil will be subject to analytical testing by the Contractor to ensure the material satisfies the following requirements:

- TPH-DRO, EPA SW-846 8015M DRO - less than 1 ppm
- TPH-GRO, USEPA SW-846 8015M GRO - less than 1 ppm
- Sum of benzene, toluene, ethylbenzene, and xylenes, USEPA SW-846 5030 / 8021 - less than 1 ppm
- Characteristic waste determination (ignitability, corrosivity, reactivity, and toxicity), EPA SW-846 1311 - shall not fail the test for characteristic waste
- Total PCB, USEPA SW-846 8082 - less than 1 ppm.

Additionally, the backfill material shall meet the following physical characteristics for each of the five primary excavation areas. The excavated areas for backfilled areas will be restored to pre-construction conditions using permanent stabilization practices by covering the backfilled areas with gravel and, where appropriate, vegetation featuring a variety of habitat enhancement plant species.

<u>Surface/Subsurface Soil Excavation Backfill (to within 6-inches below proposed ground surface elevation)</u> – Backfill soil for the surface/subsurface soil excavation area will be placed in 1-foot thick lifts and compacted by track-walking across the backfilled area with track-type equipment. The backfill material shall meet the following physical characteristics:

- ASTM D 2487, Classifications GW, GP, GM, SW, SP, or SM
- ASTM D 4318, Liquid limit, 35 maximum
- ASTM D 4318, Plasticity index, 12 maximum
- Maximum of 25 percent by weight passing ASTM D 1140, No. 200 sieve
- Maximum particle size of 1 inch

<u>Surface/Subsurface Soil Excavation Topsoil/Gravel (top 6-inches)</u> – The existing surface in the surface/subsurface soil excavation area is covered with either gravel or grass. The top 6 inches of backfill in gravel areas will be AASHTO No. 7 stone compacted using a smooth drum roller or equivalent. The top 6 inches of backfill in vegetated areas will be uncompacted topsoil.

Restoration

The disturbed areas backfilled and regraded as part of the IMWP implementation will be restored and stabilized using permanent stabilization practices. Restoration will consist of surface preparation, fertilizing, seeding, and mulching, where appropriate. Seeding procedures and procedures for associated activities (fertilizing and mulching) are presented in detail in Section 4.4. The following paragraphs describe the restoration activities to be performed at each of the four types of excavation areas.

Surface/Subsurface Soil Excavation Area Restoration – Restoration includes the preparation of gravel and vegetation surfaces. The Contractor will identify the areas that require gravel and vegetation surfaces prior to excavation.

Erosion and Sediment Control

Before excavation activities begin, E&S controls will be established to prevent impacts to surface water downgradient of the disturbance areas, namely Turkey Creek (see Section 4.0). During excavation, backfilling, and restoration operations and until stabilization is achieved, either through placement of biodegradable erosion control matting or vegetation establishment, the E&S controls will be regularly inspected and maintained. To prevent contact with soil in excavation areas and to control the potential for accumulation of precipitation in excavation areas, tarps or plastic sheeting will be employed as temporary barriers (secured with clean fill) to keep contaminated soil from becoming saturated in the excavations. E&S control requirements to be complied with during IMWP implementation include the Indiana Storm Water Quality Manual (IDEM, 2007).

Decontamination Pad

A temporary decontamination pad will be set up to clean equipment used to excavate and transport contaminated soil and sediment at an estimated four locations. The pads will be sized to accommodate all the equipment to be used at the site and will be constructed in a manner that contains all the contaminated material removed from equipment and the liquids used to clean the equipment. Contaminated material removed from the equipment will be disposed off-site with the excavated soil. Water from the temporary decontamination pad will be collected for off-site disposal by the EMAC contractor. Additional decontamination pad requirements are discussed in Section 4.5. Care will be taken to keep off-road transport equipment clean to minimize the spread of contaminated soil to areas adjacent to the excavations or other areas within UXO 7. Any soil removal from these areas and the associated disposal and restoration costs will be the responsibility of the Contractor.

Dewatering Pad

If required, a temporary dewatering pad will be set up to dewater soil excavated due to exposure to heavy precipitation events. Although the need to dewater any excavated soil is not anticipated, should precipitation or mishandling of excavated soil result in a need to dewater prior to off-site disposal, wet soil will be stockpiled within a dewatering pad located within the construction area. The dewatering pads will be sized to accommodate excavated soil and loading equipment, as necessary. The dewatering pads will be constructed in such a manner that will retain all materials while allowing the water to drain by gravity from the soil and be collected in a sump. The water will then be filtered to remove any remaining soil. Following the filtering of the water, it will be sampled for characterization and staged for eventual off-site disposal. In addition, the dewatering pad will be constructed to allow for the loading of dewatered soil material into the trucks for transport to the NSA Crane-approved off-site disposal facility. The direct loading of the trucks from the excavation is the preferred approach and no stockpiling of contaminated soil, except for those soil volumes when dewatering is required, will be authorized.

The volume of water collected through dewatering is not expected to be large, unless soil excavation/removal is performed during periods of heavy precipitation. The EMAC will make every effort to prevent or minimize the excavation of soil requiring dewatering. Excavation activities will cease during heavy rain events and excavations will be covered with tarps or plastic sheeting (as temporary barriers and anchored with clean fill) to keep contaminated soil from becoming saturated in the excavations. If the EMAC fails to show due diligence to prevent or reduce the accumulation of excess water, then the cost of the management and disposal of the water will be borne by the EMAC. Additional dewatering pad requirements are discussed in Section 4.5.

Clearing

Although extensive vegetation clearing is not anticipated, some limited brush and tree vegetation clearing may be required to permit access to the westernmost margins of the planned soil excavations for the West Trap Range. Vegetation clearing will be kept to a minimum to minimize impacts to natural habitat and in accordance with the woody vegetation removal limitations described in Section 3.5.2. Cleared vegetation will be chipped and disposal will be at the direction of the Officer in Charge of Construction (OICC). Standing trees (of specified species and sizes) will not be removed from April 1 through September 30 to comply with Indiana bat regulations, as addressed in Section 3.5.2.

3.3 SEQUENCE OF IMWP IMPLEMENTATION

The generalized sequence of construction activities is presented below. This sequence of construction is subject to change based on the Contractor's Work Plan and the Navy's selected construction approach.

1. Hold a pre-IMWP implementation meeting with the NSA Crane OICC, Contracting Officer, IM Contractor, and Tetra Tech representative, at a minimum.

2. Inspect and photograph UXO 7 to verify existing site conditions, confirm all utility locations, and obtain all required permits.

3. Install perimeter controls per the Erosion and Sediment Control Plan (Section 4.0). Maintain all perimeter controls during excavation and restoration activities.

4. Clear areas for support features including, but not limited to, the decontamination pad, materials storage area, and potential dewatering pad. Construct the support features as needed in work areas.

5. Excavate PAH-contaminated soil areas from former West Trap Range and East Trap Range areas within UXO 7. Continuous backfill shall be employed during soil excavation as much as is practical to reduce the amount of open excavations. Following the excavation and removal of PAH-contaminated soil, restore the disturbed areas as required. Load and transport soil to the NSA Crane-approved off-site disposal facility.

6. Excavate/mechanically blend the targeted lead-contaminated soil volumes through in-situ addition of soil amendments and binding agents within the three primary areas of the Northern Zone of the UXO 7 ORR. The treated and lead-stabilized soil will be loaded for off-site disposal as a non-hazardous waste once post-treatment characterization samples demonstrate that the soil is no longer hazardous for lead and meets the disposal facility requirements.

7. Continuous backfill shall be employed during soil excavation as much as is practical to reduce the amount of open excavations.

8. Following the excavation and removal of lead-contaminated soil, restore the disturbed areas as required.

9. Load and transport soil to the NSA Crane-approved off-site disposal facility.

10. Following transportation and disposal of all excavated surface/subsurface soil, remove the dewatering pad (if necessary), decontamination pad, and materials storage area. Tetra Tech will collect verification samples from within the footprint of the support features. All costs associated with remediation of any contamination found in the support areas will be borne by the EMAC contractor. Following verification that the ground beneath these support features was not impacted by construction activities, regrade as necessary and establish permanent stabilization.

11. Following permanent stabilization of all disturbed areas, and with the approval of the OICC, remove all remaining perimeter controls and immediately stabilize all remaining disturbed areas.

3.4 STORMWATER POLLUTION PREVENTION

The UXO 7 ground surface hydrology, grading, and cover will not be altered from IMWP implementation activities. Pre- and post-development runoff from the limits of disturbance will be the same; therefore, additional stormwater detention capacity is not required.

The full disturbed soil removal area will be approximately 0.84 acres. If the total disturbed area for construction of the dewatering pad (if necessary), decontamination pad, materials storage areas, etc. sums to less than about 0.16 acres, then the preparation of an IDEM Storm Water General Permit should not be required for this activity (stormwater permits are required for disturbances greater than 1 acre). However, if the area to be disturbed during the construction of the dewatering pad (if necessary), decontamination pad, materials storage areas, etc., sums to more than about 0.16 acres, then the EMAC will be required to prepare an IDEM Storm Water General Permit for this activity. It is very like that an IDEM Storm Water General Permit will be needed for this interim measures activity. Additionally, IMWP implementation activities require the use of best management practices for E&S control and stormwater pollution prevention as described in Section 4.0.

3.5 OTHER IMWP IMPLEMENTATION REQUIREMENTS

3.5.1 <u>Utilities</u>

The Contractor is required to verify all utility locations and adequately protect any utilities located in the active work areas before any earth-disturbing activities begin. Potable water for project personnel and equipment decontamination will be provided by NSA Crane.

3.5.2 Protection of Natural Resources

Threatened and endangered species or species of special concern protected under Indiana or Federal regulations exist or may exist at UXO 7 and will be protected. Protected bird species that may use UXO 7 as part of their home range include the bald eagle, osprey, sharp-shinned hawk, red-shouldered hawk, broad-winged hawk, black and white warbler, hooded warbler, and the worm-eating warbler (B&RE, 1997). Also, the Indiana bat, a federally endangered species, is known to forage at NSA Crane. During the spring and summer, Indiana bats roost in trees and forage for insects primarily in riparian and upland forests. The most important characteristic of roost trees is thought to be structural-exfoliating bark with space for bats to roost between the bark and the bole of the tree. To a limited extent, tree cavities and crevices are also used for roosting. Although extensive tree removal is not anticipated, there may be some limited vegetation removal required to access the southernmost soil removal area to address metals contamination. When vegetation removals are necessary, the Contractor will comply with the requirements presented here.

In 1997, NSA Crane received a letter from the United States Fish and Wildlife Services (USFWS) stating that, in their opinion, NSA Crane had an abundance of Indiana bat habitat and that any activity that would result in the clearing of woody vegetation may affect the Indiana bat and would require consultation under the Endangered Species Act (ESA). The USFWS recommended interim guidelines for protecting Indiana bats and their habitat from silvicultural activities, and these recommendations were immediately implemented by NSA Crane under the timber management program.

Because of the Indiana bat and its potential habitat, the cutting of trees at NSA Crane is restricted to certain times during the year, and the cutting of shagbark hickory trees (potential Indiana bat habitat) is prohibited. A summary of Indiana bat-related restrictions prepared by the NSA Crane Natural Resources Office (i.e., “bat primer”) is as follows:

- Woody vegetation that is 5 inches in diameter or greater at 4.5 feet above the ground surface may not be removed from April 1 through September 30.

- Standing dead trees may not be removed from April 1 through September 30.

- Timber harvesting may occur after September 30 and before April 1 without a case-by-case consultation provided the interim guidelines for silvicultural treatment issued to the NSA Crane Natural Resources Office by the USFWS are followed.

- During emergency situations, necessary and prudent tree removal is allowed at all times without consultation. However, the contractor will still need to seek the approval of the NAVFAC Crane Natural Resources Office.

- Tree removal from residential settings and industrial areas for safety reasons is allowed during the period of April 1 and September 30 without further consultation. This includes tree trimming.

- Tree removal within 25 feet of railroad tracks and within 50 feet of explosive storage and explosive operating buildings is allowed during the period of April 1 and September 30 without further consultation.

- Brush clearing of woody vegetation less than 3 inches in diameter at 4.5 feet above the ground may occur at any time of the year without consultation.

- All other tree removal or clearing projects not covered above must be submitted to the USFWS for informal consultation on a case-by-case basis.

3.5.3 Traffic Control Plan

Access to NSA Crane is via four gates: the Main Gate referred to as the Bloomington Gate (Gate House No. 1) in the north, Burns City Gate (Gate House No. 2) in the west, Bedford Gate (Gate House No. 3) in the east, and Crane Gate (Gate House No. 4) in the northwest. NSA Crane will be accessed by the Contractor only through the Crane Gate. All vehicles will pass through the Crane Gate via the traffic routing plan shown on Figure 3-3. The Contractor is not permitted to travel within restricted areas of the facility. All waste hauling vehicles will be weighed upon arrival and at time of departure using the certified weight scale located at the Defense Reutilization and Marketing Office (DRMO) (Building 1940). The DRMO scale is operated during normal business hours, and weight tickets are available. All waste hauling trucks shall record both empty and loaded weights for each trip.

3.5.4 Contractor Requirements

The Contractor will be required to perform all IMWP implementation activities in accordance with the Contractor's Basic Contract, NSA Crane Contractor's Operations Manual (NSWC Crane, 2002), and supplemental specifications provided in Appendix E.

The IWMP will be implemented by the Contractor, NSA Crane, and Tetra Tech, with work assignments summarized in Table 3-1.

3.6 IMPLEMENTATION

The Contractor will coordinate all field work through the OICC.

IMWP implementation may be impacted by NSA Crane activities and the facility's "Protective Measures". NSA Crane will implement a corresponding set of "Protective Measures" based on the warnings provided by the Homeland Security Advisory System in the form of graduated "Threat Conditions." The Contractor will be subject to any implemented "Protective Measures."

A RCRA-permitted hazardous waste open burning (OB) unit known as the Old Rifle Range OB unit burning unit is located within UXO 7. Treatment operations are infrequent. However, excavations cannot take place during treatment operations and EMAC personnel would have to evacuate. A second hazardous waste treatment unit, the Demolition Range, is located adjacent to UXO 7. The explosive arc for the Demolition Range encompasses UXO 7. During treatment operations at the Demolition Range it will be necessary to cease all excavation activities and for all EMAC personnel to evacuate UXO 7. Demolition treatment operations occur more frequently than those at the ORR OB unit (typically one event per day requiring an average evacuation time of two hours per event).

The Navy will provide a full-time oversight representative during IMWP implementation.

3.7 EXCAVATION SAMPLING

The UXO 7 interim measures are being conducted to mitigate human health and ecological risks. During the proposed soil removal actions at UXO 7, soil samples will be collected from excavation sidewalls and floors, as necessary, and analyzed for lead and PAHs to provide the Navy data on the adequacy of the risk mitigation effort while the EMAC is still in the field. Appendix D contains the Sampling Plan for use in the UXO 7 soil excavation sampling. After the interim measures are completed, the post-removal action soil concentrations for PAH and lead concentrations at UXO 7 will be formally reassessed. The UXO 7 Interim Measures Report will include the screening level risk assessment and should confirm that the soil removal action successfully mitigated the excess human health and ecological risks at UXO 7.

TABLE 3-1

WORK ASSIGNMENT RESPONSIBILITY CHART
INTERIM MEASURES WORK PLAN
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

WORK ITEM	CONTRACTOR	NSA CRANE	Tetra Tech
Pre-IMWP Implementation Meeting	X	X	X
Interim Measure Implementation	X		
Contractor Work Plan (1)	X		
Site Specific Health and Safety Plan / Activity Hazard Analysis	X		
Project Quality Control Plan	X		
Surveying and marking of excavation node			X
Environmental Conditions Report	(2)		X
Permits			
- Safety & Building Availability Permit (ESO 8020/11)	X		
- Digging Permit (NWSCC 11000/3)	X(3)		
- Flame Tool / Hot Work Permit (NWSCC 11320)	X		
- IDEM Storm Water General Permit			X
Field Work Reports and Submittals (4)	X		
Sampling and Analysis	X(6)		X(5)
Wastewater Disposal (Decontamination Water)	X		
CTO Closure Report	X(6)		X

NOTES:

1. Contractor Work Plan includes, but is not limited to, an excavation and handling plan, waste management plan, environmental protection plan, erosion and sediment control plan, stormwater pollution prevention plan, sampling plan, and transportation and disposal plan.
2. Contractor will participate in documenting environmental conditions before, during, and after implementation of the interim measures.
3. Contractor completes the permit form.
4. Contractor will furnish items identified in the Basic Contract, NSA Crane Contractor's Operations Manual, and the Supplemental Specifications provided in Appendix E.
5. Contractor will be responsible for the collection of characterization samples required for off-site disposal of excavated surface soils. Contractor will be responsible for collection, storage, characterization, and discharge of wastewater to the NSA Crane approved stabilized drainage channel, storm drain, or wastewater treatment plant. Contractor will be required to characterize backfill materials.
6. Contractor will furnish items identified in the Supplemental Specifications provided in Appendix E.

CTO - Contract Task Order
IMWP - Interim Measures Work Plan
NSA - Naval Support Activity
Tetra Tech - Tetra Tech, Inc.
X – Indicates responsible party

TABLE 3-2

EXCAVATION NODES FOR UXO 7 INTERIM MEASURES
NSA CRANE, INDIANA

Subarea Name	Excavation Node Point Label	Easting	Nothing
DA1	DA1-1	3025932.12	1305765.96
	DA1-2	3025941.83	1305764.39
	DA1-3	3025946.06	1305757.29
	DA1-4	3025929.88	1305748.13
	DA1-5	3025921.71	1305759.82
DA2	DA2-1	3025939.49	1305791.80
	DA2-2	3025949.49	1305791.80
	DA2-3	3025949.49	1305781.80
	DA2-4	3025939.49	1305781.80
BA1	BA1-1	3025815.61	1305661.18
	BA1-2	3025974.25	1305653.22
	BA1-3	3025983.83	1305608.37
	BA1-4	3025904.31	1305613.87
	BA1-5	3025816.02	1305639.36
BA2	BA2-1	3025957.04	1305607.19
	BA2-2	3025967.04	1305607.19
	BA2-3	3025967.04	1305597.19
	BA2-4	3025957.04	1305597.19
BA3	BA3-1	3025880.02	1305604.46
	BA3-2	3025890.02	1305604.46
	BA3-3	3025890.02	1305594.46
	BA3-4	3025880.02	1305594.46
BA4	BA4-1	3025770.55	1305651.39
	BA4-2	3025815.41	1305651.80
	BA4-3	3025816.02	1305639.36
	BA4-4	3025837.87	1305632.28
	BA4-5	3025827.84	1305608.16
	BA4-6	3025800.93	1305604.90
BA5	BA5-1	3025741.18	1305678.71
	BA5-2	3025770.14	1305678.31
	BA5-3	3025770.55	1305651.39
	BA5-4	3025800.93	1305604.90
	BA5-5	3025742.00	1305602.25
BA6	BA6-1	3025669.21	1305669.33
	BA6-2	3025741.18	1305670.15
	BA6-3	3025741.82	1305613.66
	BA6-4	3025669.85	1305612.84

TABLE 3-2

EXCAVATION NODES FOR UXO 7 INTERIM MEASURES
NSA CRANE, INDIANA

Subarea Name	Excavation Node Point Label	Easting	Nothing
BA7	BA7-1	3025669.92	1305705.43
	BA7-2	3025679.92	1305705.43
	BA7-3	3025679.92	1305695.43
	BA7-4	3025669.92	1305695.43
BA8	BA8-1	3025711.21	1305713.17
	BA8-2	3025796.24	1305696.45
	BA8-3	3025796.24	1305678.31
	BA8-4	3025741.18	1305678.71
BA9	BA9-1	3025823.80	1305693.83
	BA9-2	3025833.80	1305693.83
	BA9-3	3025833.80	1305683.83
	BA9-4	3025823.80	1305683.83
BA10	BA10-1	3025884.63	1305724.37
	BA10-2	3025894.63	1305724.37
	BA10-3	3025894.63	1305714.37
	BA10-4	3025884.63	1305714.37
DM	DM-1	3025882.60	1305519.72
	DM-2	3025915.86	1305516.65
	DM-3	3025912.45	1305461.72
	DM-4	3025889.16	1305462.91
	DM-5	3025880.38	1305478.27
ETR1	ETR1-1	3025972.50	1304952.15
	ETR1-2	3026013.58	1304956.36
	ETR1-3	3025966.58	1304912.59
ETR2	ETR2-1	3026013.58	1304956.36
	ETR2-2	3026026.70	1304944.04
	ETR2-3	3026009.10	1304926.45
	ETR2-4	3026017.64	1304918.05
	ETR2-5	3026006.14	1304906.67
	ETR2-6	3025991.17	1304918.81
	ETR2-7	3025975.44	1304905.03
	ETR2-8	3025966.58	1304912.59
ETR3	ETR3-1	3026026.70	1304944.04
	ETR3-2	3026031.46	1304942.50
	ETR3-3	3026052.17	1304924.65
	ETR3-4	3026034.39	1304904.27
	ETR3-5	3026009.10	1304926.45

TABLE 3-2

EXCAVATION NODES FOR UXO 7 INTERIM MEASURES
NSA CRANE, INDIANA

Subarea Name	Excavation Node Point Label	Easting	Nothing
ETR4	ETR4-1	3026031.46	1304942.50
	ETR4-2	3026077.27	1304936.47
	ETR4-3	3026071.26	1304896.92
	ETR4-4	3026034.39	1304904.27
	ETR4-5	3026053.29	1304924.66
ETR5	ETR5-1	3026095.87	1304933.96
	ETR5-2	3026115.65	1304931.00
	ETR5-3	3026112.69	1304911.22
	ETR5-4	3026092.91	1304914.18
ETR6	ETR6-1	3025963.62	1304892.81
	ETR6-2	3026028.34	1304883.28
	ETR6-3	3026043.52	1304858.15
	ETR6-4	3026039.09	1304820.85
	ETR6-5	3026014.08	1304824.59
	ETR6-6	3026017.04	1304844.37
	ETR6-7	3025997.26	1304847.33
	ETR6-8	3026000.22	1304867.11
	ETR6-9	3025960.66	1304873.03
ETR7	ETR7-1	3026003.31	1304886.98
	ETR7-2	3026023.09	1304884.02
	ETR7-3	3026020.13	1304864.24
	ETR7-4	3026000.35	1304867.20
WTR1	WTR1-1	3025684.29	1304745.44
	WTR1-2	3025748.90	1304732.21
	WTR1-3	3025723.70	1304614.35
	WTR1-4	3025666.35	1304565.22
	WTR1-5	3025607.66	1304577.72
	WTR1-6	3025611.83	1304596.85
	WTR1-7	3025653.92	1304587.88
	WTR1-8	3025658.12	1304607.44
	WTR1-9	3025635.56	1304612.24
	WTR1-10	3025645.13	1304657.62
	WTR1-11	3025701.73	1304700.39
	WTR1-12	3025675.95	1304705.88
WTR2	WTR2-1	3025680.12	1304725.44
	WTR2-2	3025719.24	1304717.11
	WTR2-3	3025715.08	1304697.98
	WTR2-4	3025675.95	1304705.88

TABLE 3-2

EXCAVATION NODES FOR UXO 7 INTERIM MEASURES
NSA CRANE, INDIANA

Subarea Name	Excavation Node Point Label	Easting	Nothing
WTR3	WTR3-1	3025715.08	1304697.98
	WTR3-2	3025723.53	1304672.79
	WTR3-3	3025687.56	1304658.45
	WTR3-4	3025676.56	1304681.55
WTR4	WTR4-1	3025712.91	1304658.81
	WTR4-2	3025718.11	1304646.26
	WTR4-3	3025707.12	1304641.62
	WTR4-4	3025701.40	1304654.23
WTR5	WTR5-1	3025671.49	1304631.22
	WTR5-2	3025682.80	1304635.95
	WTR5-3	3025688.27	1304623.24
	WTR5-4	3025677.28	1304618.55
WTR6	WTR6-1	3025658.12	1304607.44
	WTR6-2	3025653.92	1304587.88
	WTR6-3	3025611.83	1304596.85
	WTR6-4	3025615.89	1304615.55

DA = Drainage Area of the Northern Zone (lead)
BA = 400-Yard Berm Area of the Northern Zone (lead)
DM = Dirt Mound Area of the Northern Zone (lead)
ETR = East Trap Range (PAH)
WTR = West Trap Range (PAH)
(see Figures 3-1 and 3-2 for the mapped locations of these excavation nodes).

TABLE 3-3

ESTIMATED SOIL EXCAVATION AREAS, DEPTHS, AND REMOVAL VOLUMES FOR INTERIM MEASURES
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE, INDIANA

Excavation Subarea	Area (square feet)	Excavation Depth (feet)	Estimated Volume (cubic feet)	Estimated Volume (cubic yards)
DA1	251	2	502	19
DA2	100	1	100	4
		DA Total =	602	22
BA1	6141	6	36846	1365
BA2	100	2	200	7
BA3	100	2	200	7
BA4	1891	4	7564	280
BA5	2916	5	14580	540
BA6	4067	2	8134	301
BA7	100	2	200	7
BA8	1719	3	5157	191
BA9	100	2	200	7
BA10	100	2	200	7
		BA Total =	73281	2714
DM1	1776	6	10656	395
		DM Total =	10656	395
		N. Zone (lead)	84539	3131
WTR1	9798	1	9798	363
WTR2*	796	1	796	29
WTR3*	1050	1	1050	39
WTR4*	167	1	167	6
WTR5*	168	1	168	6
WTR6*	861	1	861	32
		WTR Total =	12840	476
ETR1	800	1	800	30
ETR2	1250	2	2500	93
ETR3	1225	4	4900	181
ETR4	888	1	888	33
ETR5	400	2	800	30
ETR6	2867	2	5734	212
ETR7*	400	4	1600	59
		ETR Total =	17222	638
		C. Zone (PAHs)	30062	1113

DA = Drainage Area of the Northern Zone (lead)
BA = 400-Yard Berm Area of the Northern Zone (lead)
DM = Dirt Mound Area of the Northern Zone (lead)
ETR = East Trap Range in Central Zone (PAH)
WTR = West Trap Range in Central Zone (PAH)
* Indicates additional excavation within shallower initial excavation.

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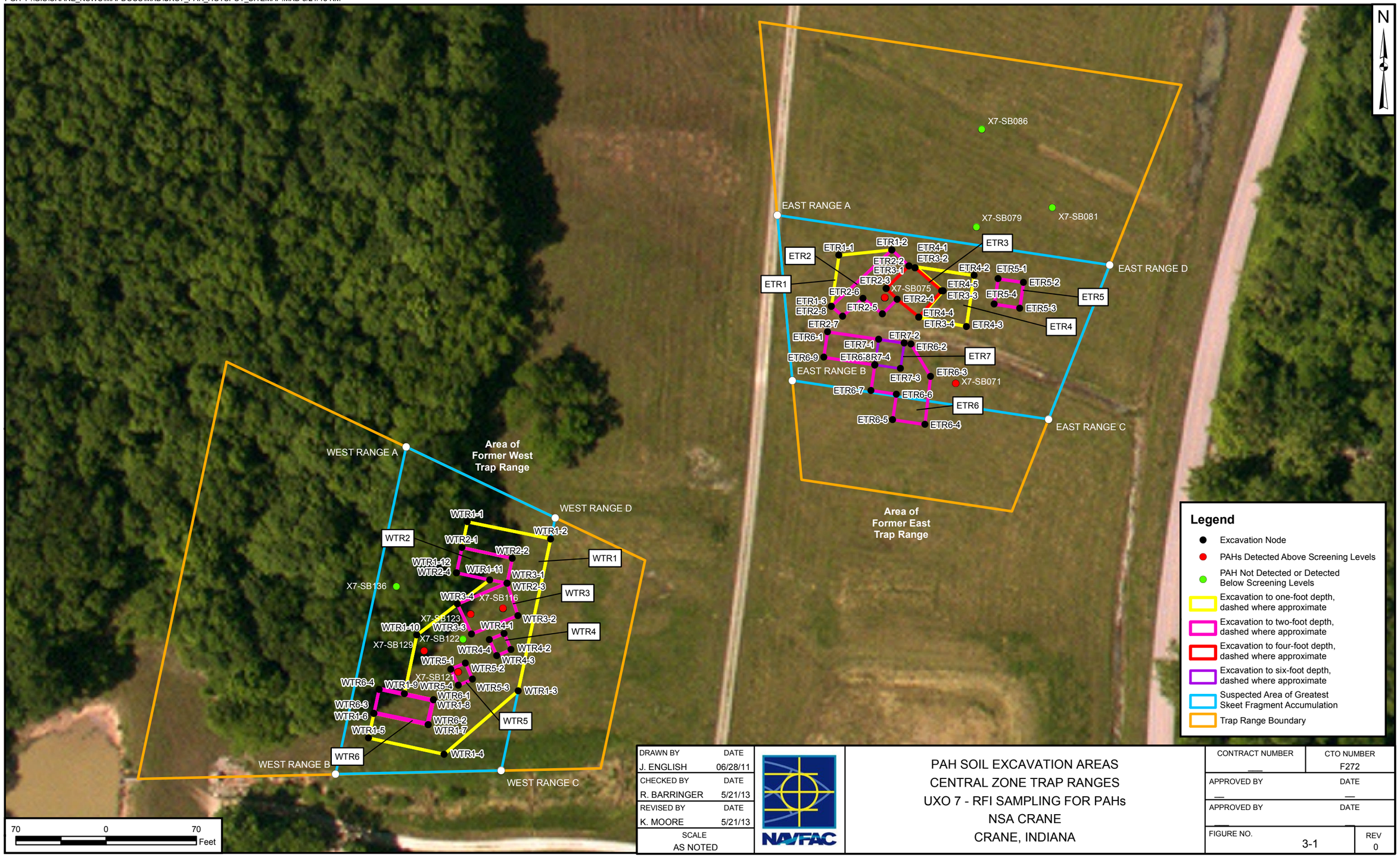


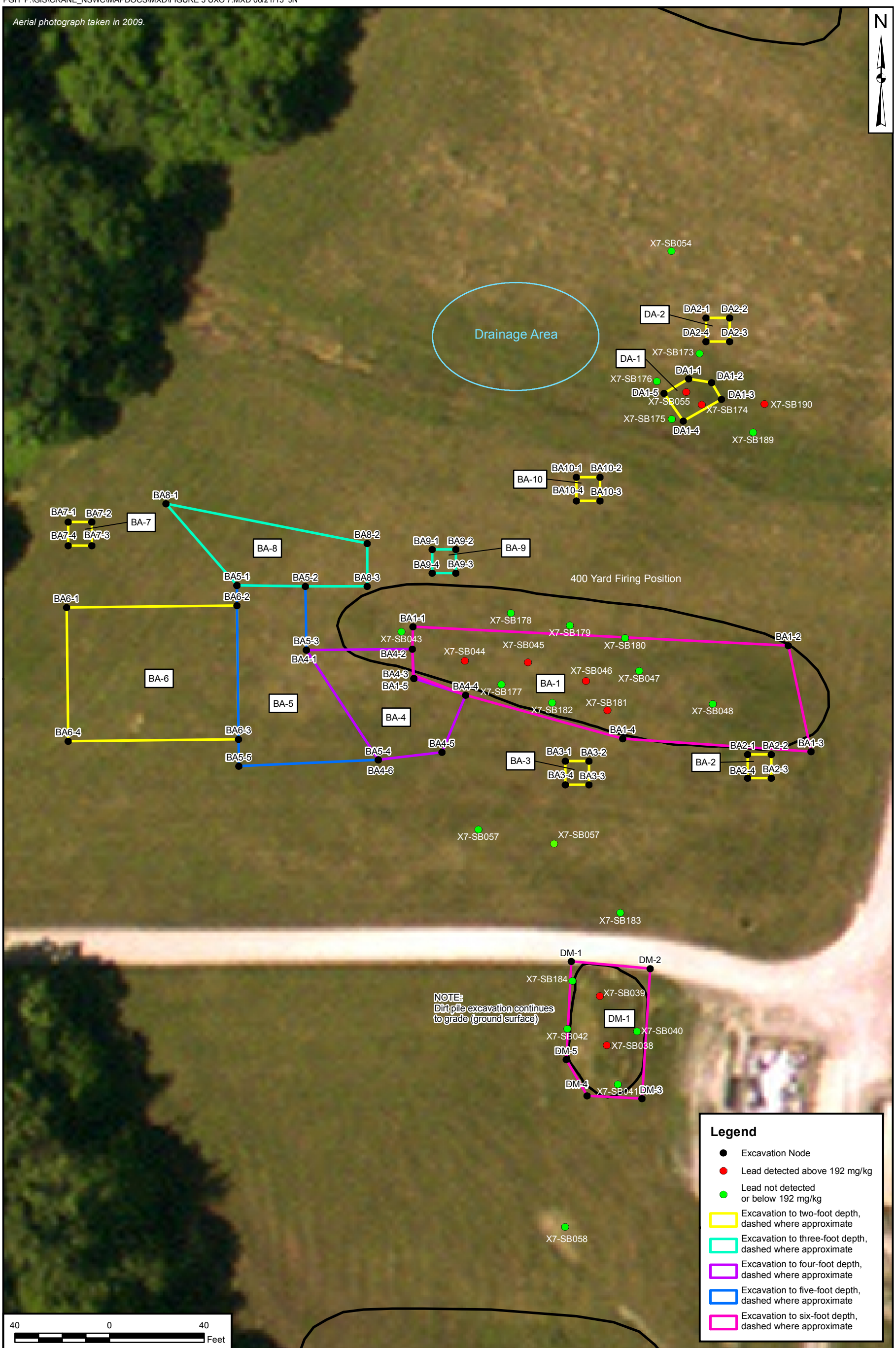
DRAWN BY	DATE
J. ENGLISH	06/28/11
CHECKED BY	DATE
R. BARRINGER	5/21/13
REVISED BY	DATE
K. MOORE	5/21/13
SCALE	
AS NOTED	

NAVFAC

PAH SOIL EXCAVATION AREAS
CENTRAL ZONE TRAP RANGES
UXO 7 - RFI SAMPLING FOR PAHs
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
—	F272
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
3-1	0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\FIGURE 3 UXO 7.MXD 06/21/13 JN



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J. ENGLISH	07/05/11
CHECKED BY	DATE
R. BARRINGER	06/21/13
REVISED BY	DATE
J. NOVAK	06/21/13
SCALE	
AS NOTED	

NAVFAC

LEAD SOIL EXCAVATION AREAS
NORTHERN ZONE
UXO 7 - RFI SAMPLING FOR LEAD
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
—	F272
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO. 3-2	REV 0

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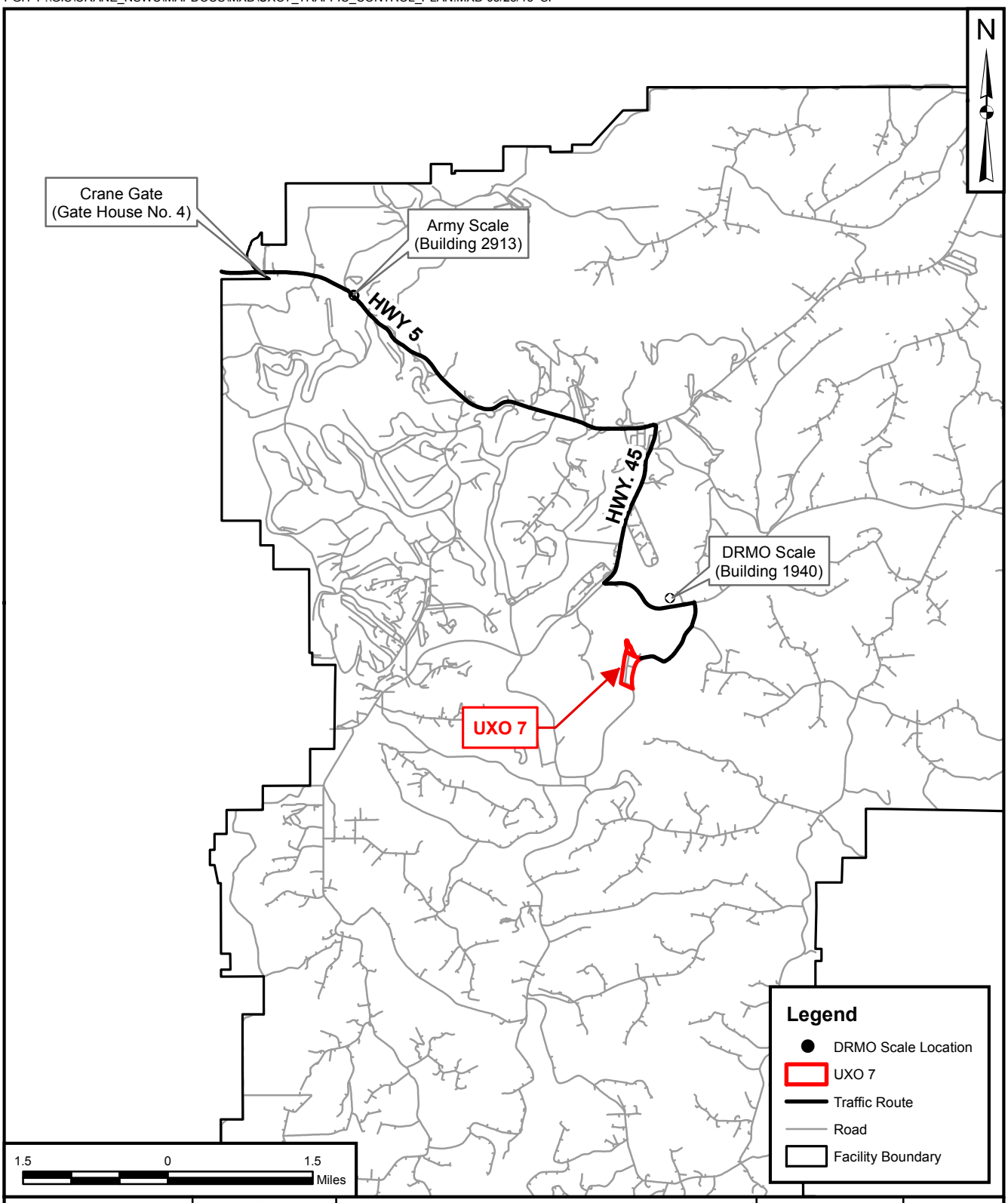

DRAWN BY S. PAXTON	DATE 01/04/13	TRAFFIC CONTROL PLAN UXO 7 - OLD RIFLE RANGE AND TRAP RANGES NSA CRANE CRANE, INDIANA	CONTRACT NUMBER 0057	CTO NUMBER F272
CHECKED BY R. BARRINGER	DATE 05/23/13		APPROVED BY ___	DATE ___
REVISED BY S. PAXTON	DATE 05/23/13		APPROVED BY ___	DATE ___
SCALE AS NOTED			FIGURE NO. 3-3	REV 0

4.0 EROSION AND SEDIMENT CONTROL PLAN

4.1 PURPOSE

The purpose of this section is to provide the steps that will be taken to minimize and/or eliminate erosion and sedimentation during the implementation of the IMWP at UXO 7. The E&S control plan has been developed in accordance with the guidelines defined in the Indiana Storm Water Quality Manual (Handbook) (IDEM, 2007). The E&S control devices described in this text can be modified based on construction equipment and techniques presented in the Contractor's Work Plan. Selected E&S control devices must be identified in the E&S Control Plan submitted with the Contractor Work Plan. After the E&S Control Plan is approved, no changes can be made without approval by the OICC.

The Contractor should note that this E&S Control Plan assumes that all elements of the UXO 7 removal action will occur at one time. In the event the Navy elects to phase the construction activities at UXO 7, all of the E&S Controls identified in this plan may or may not be required. The Contractor must identify the E&S Controls required for the construction activities identified in their work plan.

4.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

E&S control measures are implemented to reduce or eliminate erosion and sedimentation of soil that would be detrimental to surface water quality. Surface drainage at UXO 7 flows into drainage ditches and culverts that flow into unnamed intermittent streams that discharge to Turkey Creek. A series of drainage ditches and culverts were constructed across UXO 7 to promote local surface drainage and control surface flow. Culverts were constructed beneath Highway 8 on the east perimeter of UXO 7 to convey the surface drainage from UXO 7 to unnamed creeks and streams that flow eastward for some 500 feet and eventually discharge into Turkey Creek. A small retention basin is located within the Southern Zone of UXO 7. A small surface water impoundment is located along the western margin of UXO 7, near the boundary between the Central Zone and the Southern Zone.

The elevation of Turkey Creek at this location is approximately 490 feet amsl. The drainage ditches are usually dry and are typically only wet during and immediately after rainfall. Figure 1-1 presents the regional surface water drainage features and Figure 1-3 presents the surface water drainages within and immediately adjacent to UXO 7. Turkey Creek discharges into Boggs Creek, which discharges into Lake Gallimore near the southern boundary of NSA Crane. Lake Gallimore is located approximately 7 stream miles south-southwest of UXO 7 and eventually discharges to a tributary of the Wabash River.

IMWP implementation activities for UXO 7 consist of excavation and disposal of PAH-contaminated soil, in-situ stabilization of lead-contaminated soil and excavation of the metals-stabilized soil for disposal, backfilling excavations, and restoration of disturbed areas. Surface and subsurface soil will be excavated from several areas located within UXO 7.

Considering the type of IMWP activities and access issues, the proposed E&S control measures include the following:

- Silt Fence – Placed along the downslope sides of the surface soil excavation areas and the gravel construction entrances to provide a temporary sediment barrier. Silt fencing consists of synthetic filter fabric and wooden posts.

- Gravel Construction Entrances – Placed as a controlled site entrance to reduce the amount of sediment transported by construction vehicles onto facility and public roads.

- Dust Control – Utilized to prevent surface and air movement of dust from exposed soil surfaces and to reduce the amount of airborne substances that may present health hazards, traffic safety problems, or harm plant/animal life.

- Permanent Seeding – Utilized to establish perennial vegetation on disturbed areas by planting seeds of native grasses.

The construction, implementation, and maintenance of these E&S control devices will be in accordance with the Handbook. Figures 2-7, 2-8, 2-12, 2-13, and 2-14 present the proposed excavation areas. Figures 4-1 and 4-2 present typical details of the E&S control devices proposed for IMWP implementation (i.e., silt fence, gravel construction entrance, and in-stream sediment trap). Permanent seeding is discussed in Section 4.4. Dust control will be addressed in the Contractor's Work Plan. All E&S controls will remain in place until all upgradient areas have been stabilized. Stabilization will be determined by the OICC.

4.3 INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROLS

In general, all E&S control measures will be checked daily and after each runoff-producing rainfall event during the IMWP implementation activities. Any required repairs will be made immediately. The following items will be checked:

- The construction entrance will be maintained in a condition that will minimize tracking sediment onto facility or public roads.

- The silt fence will be checked for undermining or deterioration of the fabric. Sediment will be removed when the level of sediment causes bulging or reaches one-half of the fabric height.

- Seeded areas will be checked regularly to ensure that a good growth of vegetation is maintained and these areas will be fertilized and reseeded, as needed.

- The fuel and lubricant materials storage area will be checked to ensure that stored containers are not leaking and that the lining system is functioning properly.

All E&S control devices will be inspected and maintained until the OICC has formally accepted the permanent stabilization of the disturbed areas. The Contractor will maintain a logbook of all E&S control device inspections and maintenance. This logbook will be available at the site at all times for inspection by duly authorized officials including NSA Crane personnel and the IDEM.

4.4 SITE RESTORATION

All areas disturbed by IMWP implementation activities (excavation and support facility areas) will be restored and stabilized using soil, gravel, and permanent seeding. Activities to establish permanent stabilization will be implemented as soon as possible following the establishing of final grades. The establishment of permanent vegetation includes site/seed bed preparation, seeding, and mulching of the following locations:

- Surface soil below support facilities
- Surface soil excavation areas that extend beyond existing gravel paved areas

The procedures and requirements for permanent seeding activities are presented in Section 3.12 of the Handbook. The seed mixture recommended for use at UXO 7 is a standard Indiana seed mixture for open and disturbed areas. The seed mixture includes perennial ryegrass and tall fescue. Planting rates and optimum soil pH for this mixture are presented in Exhibit 3.12-C of the Handbook. Following seeding, the seeded areas will be covered with temporary erosion control matting (e.g., coconut fiber matting, straw) to provide additional stabilization until vegetation is established. In the event that disturbed areas are brought to final grade outside of the optimal growing season for the permanent seed mixture, the disturbed areas will be temporarily stabilized using a temporary seed mixture. The procedures and

requirements for establishing temporary stabilization are presented in Section 3.11 of the Handbook. As indicated in the Handbook, E&S control devices will remain in place until permanent stabilization is established over the disturbed areas. Therefore, E&S control devices will not be removed by the Contractor until directed by the OICC.

4.5 RESPONSE PROCEDURES FOR SPILL MITIGATION

Potential non-stormwater discharges anticipated during IMWP implementation activities include dewatering liquids, wash water resulting from decontamination efforts associated with field equipment and vehicles, fuel and lubricant spills from vehicle fueling, lubrication, and maintenance, and spills of fertilizers and small quantities of laboratory chemicals used in sample collection, and other flammable substances.

All decontamination wash water will be collected in a lined decontamination and equipment wash pad area. All waters generated from decontamination and/or other washing activities will be collected, characterized, and properly managed by the EMAC contractor. The water from the temporary decontamination pad will be collected for off-site disposal by the EMAC contractor. All vehicle fueling, lubrication, and maintenance will be performed utilizing drip pans to contain any spills that may occur or within the decontamination pad to contain spills. Containers of detergents and vehicle maintenance fluids (e.g., oil, grease, antifreeze, hydraulic fluid, etc.) will be stored within an enclosed, lined, diked area along with the equipment fuel, which is stored in tanks. This area, referred to as the materials storage area, will be bermed and lined with a 60-mil low-density polyethylene (LDPE) geomembrane and will be sized to contain 110 percent of the volume stored within the area. A small sump, or low point in the liner, will be designed to serve as a collection and monitoring point for any leaks or spills from the containers stored within the materials storage area. When not in use, chemicals, paints, and other flammable substances will be stored in a flammable storage cabinet located within the Contractor's equipment trailer.

Good housekeeping procedures will be followed to reduce risks associated with these materials. These procedures include, but are not limited to, keeping materials in their original containers whenever possible, maintaining original labels and Material Safety Data Sheets (MSDSs), and using proper disposal methods for surplus materials. Accidental spills that may occur will be contained as appropriate for the spilled medium (liquid or solid) and collected and containerized immediately after discovery of the spill. Containerized material will be characterized for off-site transportation and disposal. The following spill mitigation equipment should be available on site during construction activities:

- Drip pans
- Oil-dry or similar compound

- Absorbent socks
- Shovels
- 55-gallon drums or storage tank (for containerization)
- Labels for contents identification

Following spill cleanup, the cause of the spill will be investigated, and material storage and handling procedures will be reviewed and revised where appropriate. All spills will be reported to the NSA Crane Environmental Department.

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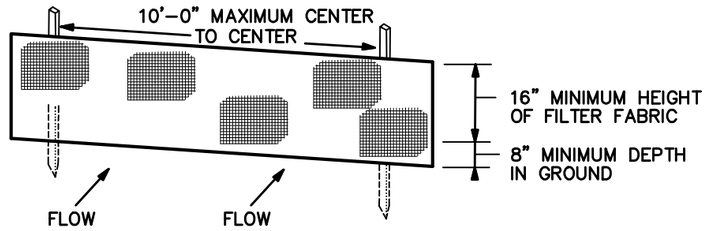
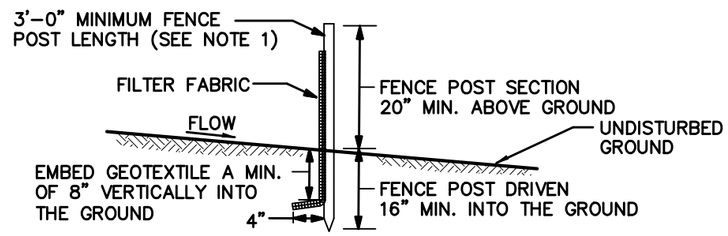
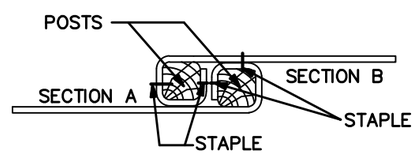


PERSPECTIVE VIEW



CROSS SECTION

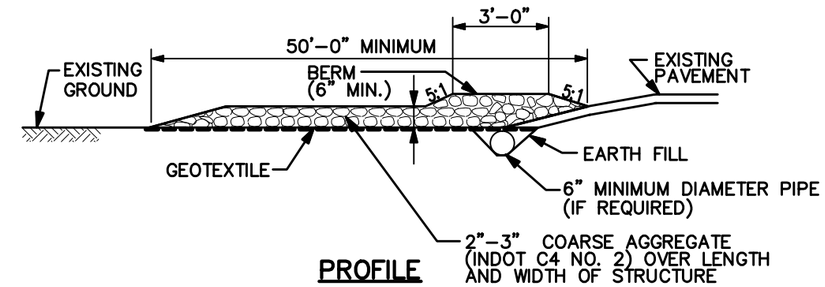


TOP VIEW – JOINING TWO
ADJACENT SILT FENCE SECTIONS

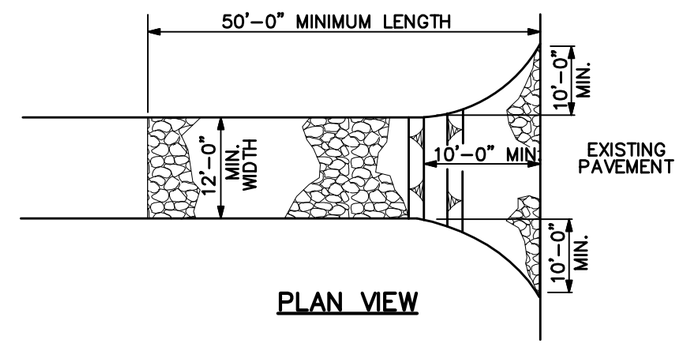
NOTES:

1. WOOD POSTS SHALL BE 1.5" BY 1.5" SQUARE (MIN) CUT OR 1.75" DIAMETER (MIN) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
2. FILTER FABRIC SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
3. INSTALL SILT FENCE PARALLEL TO THE CONTOUR OF THE LAND.

SILT FENCE



PROFILE

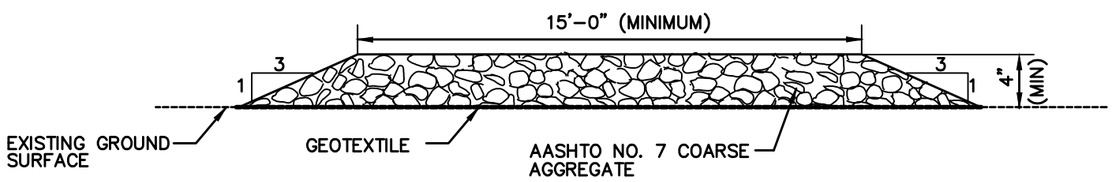


PLAN VIEW

NOTES:

1. ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE.
2. IF REQUIRED PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM DIAMETER WILL BE REQUIRED.

GRAVEL CONSTRUCTION ENTRANCE



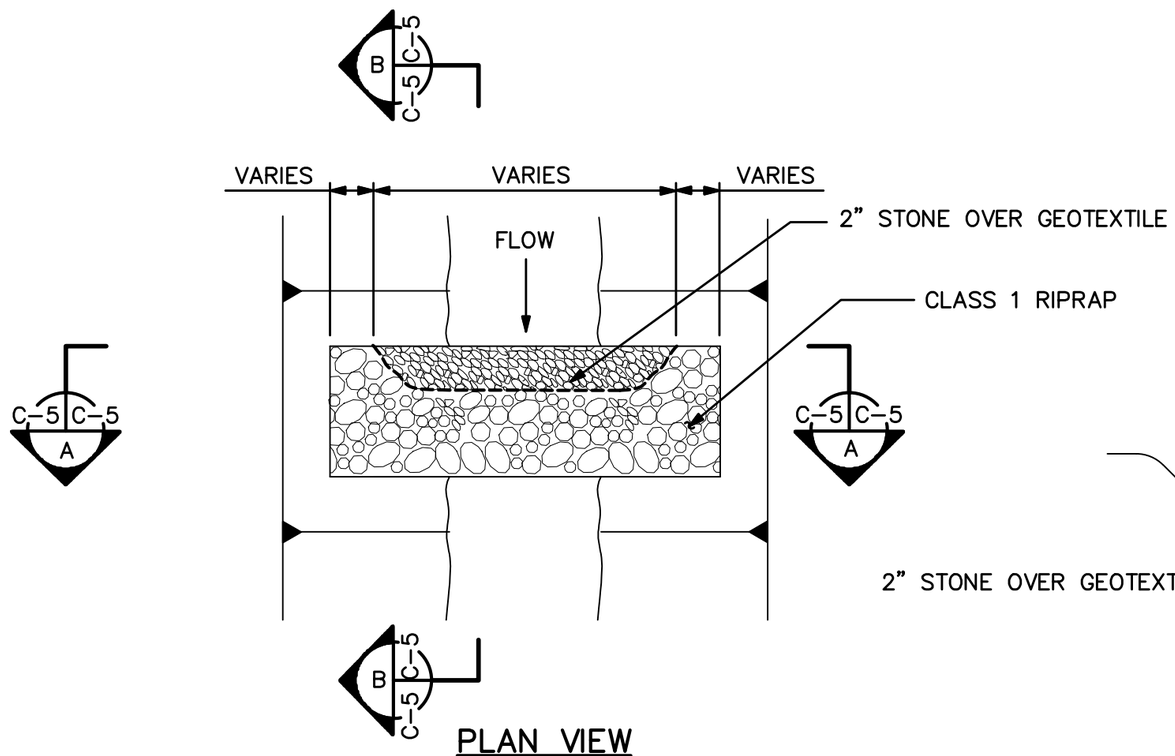
TEMPORARY SITE ACCESS ROAD

NOT TO SCALE

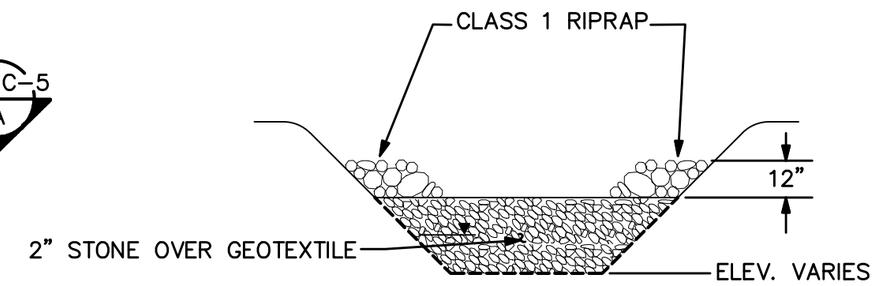
DRAWN BY MF DATE 5/16/06		EROSION AND SEDIMENT CONTROL DEVICES UXO 7 OLD RIFLE RANGE AND TRAP RANGES INTERIM MEASURES WORK PLAN NSA CRANE CRANE, INDIANA	CONTRACT NO. –0057
CHECKED BY RB DATE 5/17/13	NAVFAC		CTO NO. F272
REVISED BY DATE			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 4–1 / REV. 0

FORM CADD NO. TTNUS–BH.DWG – REV 1 – 9/10/98

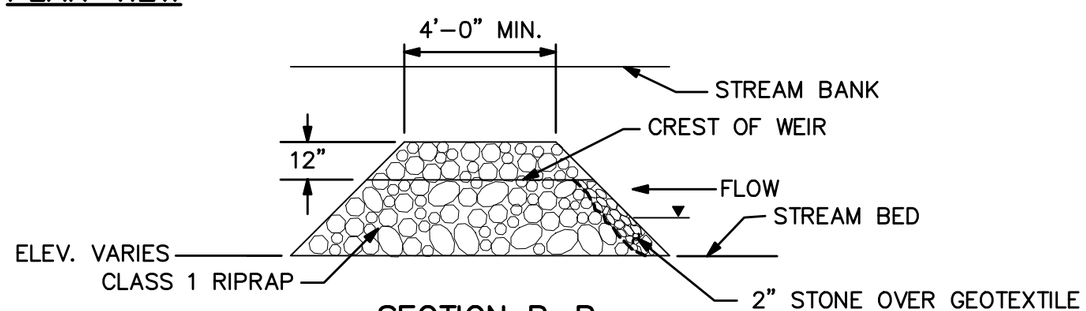
ACAD:0352CD04.dwg 5/17/13 NN PIT



PLAN VIEW



SECTION A–A



SECTION B–B

NOTE:

1. GABION BASKETS – GABION BASKETS WITH GEOTEXTILE CAN BE USED INSTEAD OF STONE.

IN–STREAM SEDIMENT TRAP

NOT TO SCALE

DRAWN BY MF DATE 5/16/06	NAVFAC	EROSION AND SEDIMENT CONTROL DEVICES (SHEET 2 OF 2) UXO 7 OLD RIFLE RANGE AND TRAP RANGES INTERIM MEASURES WORK PLAN NSA CRANE CRANE, INDIANA	CONTRACT NO. –0057
CHECKED BY RB DATE 5/17/13			CTO NO. F272
REVISED BY DATE			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 4–2 REV. 0

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APPENDIX A

SITE PHOTOGRAPHS

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** North	**DESCRIPTION:** View of UXO 7 from main target area. West Trap Range to the left (just past rough area). East Trap Range to the right of the gravel road. Rifle Range shooting berms along left side of photo..	1 10/2/2007

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** East	**DESCRIPTION:** Retention pond located northeast of the Old Pistol Range	2 10/2/2007

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** West	**DESCRIPTION:** Backside of the Main Target Area of the Old Rifle Range.	3 10/2/2007

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** North	**DESCRIPTION:** Top of the Main Target Area	4 10/2/2007

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** South	**DESCRIPTION:** Front view of the Main Target Area	5 10/2/2007

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** South	**DESCRIPTION:** View of hillside south of the Main Target Area	6 10/2/2007

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** East	**DESCRIPTION:** Typical view of firing berm on the Old Rifle Range (ORR)	7 10/7/2007

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** West	**DESCRIPTION:** West Trap Range looking west toward tree line	8 10/2/2007

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** East	**DESCRIPTION:** Sample locations at the 400-yard firing berm.	9 11/11/2011

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** Southwest	**DESCRIPTION:** View of the dirt mound located between the 300- and 400-yard firing berms.	10 11/14/2011

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** North	**DESCRIPTION:** View of the dirt mound located between the 300- and 400-yard firing berms.	11 11/15/2011

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** West	**DESCRIPTION:** View of the West Trap Range standing at firing points and looking west toward tree line.	12 10/11/2012

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** East	**DESCRIPTION:** View of the East Trap Range with PVC driven into the ground to represent each sample location.	13 10/11/2012

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** J. Goerdt **VIEW:** Closeup	**DESCRIPTION:** Bullets and fragments recovered during soil sampling at the 400-yard firing line	14 11/10/2011

Appendix A – NSA Crane UXO 7 Ranges - Site Photographs

SITE: UXO 7 Ranges and Vicinity	**PHOTOGRAPHER:** **VIEW:** Aerial View	**DESCRIPTION:** Aerial Photograph of the UXO 7 Ranges dated September 23, 1974. There is some sort of soil disturbance or excavation activity in the immediate vicinity (to the north and south) of what is now the 400-yard firing berm on the 500-yard Rifle Range shown in this image.	15 09/23/1974

APPENDIX B

ANALYTICAL RESULTS

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS001-0002	X7-SB001	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	44	--	--	--	--	--	--	--	--	--	--	49.5
X7-SS002-0002	X7-SB002	0	2	20071002	12800	0.71 U	12.9	110	0.82	0.683	2500	24.6	21.9	20.5	40200	22.8	55	2340	694	28.7	1790	0.65	0.102	75.7 U	0.25	29.6	59.3	61
X7-SS003-0002	X7-SB003	0	2	20071002	7910	5.8 J	16.4	907	1.35	1.09	4430	66.6	14.3	21.7	90700	140	96	923	974	50.2	626	0.559	0.117	22.7 U	0.0808	46.3	110	101.67
X7-SS004-0002	X7-SB004	0	2	20071002	8600	11.1 J	9.34	949	0.67	0.923	1810	25	13.5	33.8	37600	125	258	999	749	16.8	1040	0.46	0.113	21.1 U	0.138	23.7	111	254
X7-SS005-0002	X7-SB005	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	68	--	--	--	--	--	--	--	--	--	--	74.33
X7-SS006-0002	X7-SB006	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS006-0002-D	X7-SB006	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	38
X7-SS007-0002	X7-SB007	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS008-0002	X7-SB008	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	--	--	--	42.33
X7-SS009-0002	X7-SB009	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	42	--	--	--	--	--	--	--	--	--	--	47
X7-SS009-0002-D	X7-SB009	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	77	--	--	--	--	--	--	--	--	--	--	83.33
X7-SS010-0002	X7-SB010	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	83	--	--	--	--	--	--	--	--	--	--	88.67
X7-SS011-0002	X7-SB011	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS012-0002	X7-SB012	0	2	20071002	14000	1.6 J	7.93	95.6	0.909	0.959	13400	22.3	11.4	30.9	37200	43.9	40	2130	1370	17.8	1190	0.618	0.11	36.8 U	0.204	34.9	68.1	45.67
X7-SS012-0002-D	X7-SB012	0	2	20071002	16500	0.86 U	8.09	103	0.82	0.689	11200	21.1	12.7	22.3	23200	26.6	--	2350	1210	17.5	1100	0.602	0.103	38.6 U	0.226	35.6	59.5	--
X7-SS013-0002	X7-SB013	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	44	--	--	--	--	--	--	--	--	--	--	49.67
X7-SS014-0002	X7-SB014	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	55	--	--	--	--	--	--	--	--	--	--	61
X7-SS015-0002	X7-SB015	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	38
X7-SS016-0002	X7-SB016	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--	--	--	--	--	--	--	39
X7-SS017-0002	X7-SB017	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	44	--	--	--	--	--	--	--	--	--	--	49.33
X7-SS018-0002	X7-SB018	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	108	--	--	--	--	--	--	--	--	--	--	113.67
X7-SS019-0002	X7-SB019	0	2	20071002	13300	3.7 J	5.69	118	0.873	0.712	4700	21	12.4	427	29200	537	259	1950	950	24.8	1780	0.553	0.105	57.8 U	0.157	27.1	148	255.33
X7-SS020-0002	X7-SB020	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	33.67
X7-SS021-0002	X7-SB021	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	31	--	--	--	--	--	--	--	--	--	--	36
X7-SS022-0002	X7-SB022	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS023-0002	X7-SB023	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30
X7-SS024-0002	X7-SB024	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30
X7-SS025-0002	X7-SB025	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	34
X7-SS026-0002	X7-SB026	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS027-0002	X7-SB027	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS028-0002	X7-SB028	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.5
X7-SS029-0002	X7-SB029	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS030-0002	X7-SB030	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	43	--	--	--	--	--	--	--	--	--	--	48.67
X7-SS030-0002-D	X7-SB030	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29
X7-SS031-0002	X7-SB031	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	37
X7-SS032-0002	X7-SB032	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	33.67
X7-SS033-0002	X7-SB033	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--	--	--	--	--	32
X7-SS034-0002	X7-SB034	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS035-0002	X7-SB035	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS036-0002	X7-SB036	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS037-0002	X7-SB037	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	38	--	--	--	--	--	--	--	--	--	--	43.33
X7-SB038-0203	X7-SB038	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	74.417	--	--	--	--	--	--	--	--	--	--	89.67
X7-SB038-0304	X7-SB038	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--	--	--	--	--	38
X7-SS038-0002	X7-SB038	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	213	--	--	--	--	--	--	--	--	--	--	213.33
X7-SB039-0203	X7-SB039	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	152	172.55	--	--	--	--	--	--	--	--	--	--	175
X7-SB039-0304	X7-SB039	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	162.58	--	--	--	--	--	--	--	--	--	--	166.33
X7-SS039-0002	X7-SB039	0	2	20071003	15300	96.2 J	7.2	91.2	0.637	0.895	26700	20.4	9.72	94.6	26600	495	400	7000	737	14.5	1100	0.406	0.109	65.3 U	0.197	32.1	89.8	382
X7-SS040-0002	X7-SB040	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	119	--	--	--	--	--	--	--	--	--	--	124
X7-SS041-0002	X7-SB041	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS042-0002	X7-SB042	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS043-0002	X7-SB043	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	56	--	--	--	--	--	--	--	--	--	--	62
X7-SB044-0203	X7-SB044	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10.4	--	--	--	--	--	--	--	--	--	--	34
X7-SS044-0002	X7-SB044	0	2	20071003	14900	4.5 J	6.34	61	0.553	0.462	735	24.1	12.1	96.1	32100	199	203	1680	709	11.7	852	0.249	0.064	59.2 U	0.17	32.5	50.3	204
X7-SS044-0102	X7-SB044	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	263.4	--	--	--	--	--	--	--	--	--	--	254
X7-SB045-0203	X7-SB045	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	261.87	--	--	--	--	--	--	--	--	--	--	252.67
X7-SB045-0304	X7-SB045	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	397.18	--	--	--	--	--	--	--	--	--	--	370.33
X7-SB045-0405	X7-SB045	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	76.333	--	--	--	--	--	--	--	--	--	--	91.33
X7-SB045-0506	X7-SB045	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	56.017	--	--	--	--	--	--	--	--	--	--	73.67
X7-SS045-0002	X7-SB045	0	2	20071003	13400	3.9 J	7.72	69.4	0.601	0.387	917	27.4	13.7	128	38600	286	607	1610	919	14	788	0.273	0.0695	16.1 U	0.181	34.7	52.3	562
X7-SS045-0002-D	X7-SB045	0	2	20071003	12800	9.4 J	10.3	62.4	1.18	0.949	788	39.7	11.4	136	39900	403	--	1180	547	20.1	771	0.389	0.121	32.8 U	0.165	45.7	63.1	--
X7-SB046-0203	X7-SB046	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	768.25	--	--	--	--	--	--	--	--	--	--	693
X7-SB046-0304	X7-SB046	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	440.5	--	--	--	--	--	--	--	--	--	--	408
X7-SB046-0405	X7-SB046	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	568.15	--	--	--	--	--	--	--	--	--	--	519
X7-SB046-0506	X7-SB046	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	42.6	--	--	--	--	--	--	--	--	--	--	62
X7-SS046-0002	X7-SB046	0	2	20071003	16300	24.5 J	7.38	85.3	0.776	0.594	3670	23.4	12	283	22900	1100	771	2760	1060	15.7	1100	0.368	0.115	34.1 U	0.223	35.9	79.4	701
X7-SS047-0002	X7-SB047	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	63	--	--	--	--	--	--	--	--	--	--	69.33
X7-SS048-0002	X7-SB048	0	2	20071003	15700	5.6 J	7.5	80.9	0.612	1.05	1300	23.2	12.5	93.5	26600	190	142	1720	461	13.7	894	0.365	0.1	44.4 U	0.197	36.9	54.1	146.33
X7-SS049-0002	X7-SB049	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	28
X7-SS050-0002	X7-SB050	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	57	--	--	--	--	--	--	--	--	--	--	62.67
X7-SS051-0002	X7-SB051	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--	--	--	35
X7-SS052-0002	X7-SB052	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--	--	--	--	--	--	--	39
X7-SS053-0002	X7-SB053	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	37
X7-SS054-0002	X7-SB054	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SB055-0203	X7-SB055	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	--	--	--	--	--	--	--	--	--	28
X7-SB055-0304	X7-SB055	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SS055-0002	X7-SB055	0	2	20071006	11400	37.9 J	10.8	86.1	0.715	1.27	1080	18.6	14.9	197	26700	1160	818	1040	1110	18.6	579	0.663	0.161	40.5 U	0.171	32	77.9	741
X7-SS055-0002-D	X7-SB055	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1014.67
X7-SS056-0002	X7-SB056	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS057-0002	X7-SB057	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS058-0002	X7-SB058	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	99	--	--	--	--	--	--	--	--	--	--	105
X7-SS058-0002-D	X7-SB058	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	85
X7-SS059-0002	X7-SB059	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS060-0002	X7-SB060	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS061-0002	X7-SB061	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS062-0002	X7-SB062	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	--	27
X7-SS063-0002	X7-SB063	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS064-0002	X7-SB064	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS065-0002	X7-SB065	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	33
X7-SS066-0002	X7-SB066	0	2	20071004	8700	0.21 J	3.86	163	0.407	0.662	763	10.2	6.79	6.34	12200	10.3	24	830	347	8.75	476	0.546	0.0627	46.8	0.138	19.9	30.9	28.5
X7-SS067-0002	X7-SB067	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS068-0002	X7-SB068	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS069-0002	X7-SB069	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS070-0002	X7-SB070	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	18	--	--	--	--	--	--	--	--	--	--	22
X7-SS071-0002	X7-SB071	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS071-0002-D	X7-SB071	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS072-0002	X7-SB072	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS073-0002	X7-SB073	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41
X7-SS074-0002	X7-SB074	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	38

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																						XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SB075-0204	X7-SB075	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB075-0406	X7-SB075	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS075-0002	X7-SB075	0	2	20071005	14800	0.93 J	8.54	627	0.634	1.12	1930	16.5	10.3	15	23000	33.1	25	1410	770	14.8	853	0.575	0.0844	66.7	0.209	32.8	63	29.67
X7-SS076-0002	X7-SB076	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS077-0002	X7-SB077	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS078-0002	X7-SB078	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	28
X7-SS079-0002	X7-SB079	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS079-0002-D	X7-SB079	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS080-0002	X7-SB080	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41
X7-SS081-0002	X7-SB081	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	34
X7-SS082-0002	X7-SB082	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--	--	--	--	--	32
X7-SS082-0002-D	X7-SB082	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	31
X7-SS083-0002	X7-SB083	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS084-0002	X7-SB084	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS085-0002	X7-SB085	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41
X7-SS086-0002	X7-SB086	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS087-0002	X7-SB087	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS088-0002	X7-SB088	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS089-0002	X7-SB089	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS090-0002	X7-SB090	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	35	--	--	--	--	--	--	--	--	--	--	40
X7-SS091-0002	X7-SB091	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS092-0002	X7-SB092	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	26
X7-SS093-0002	X7-SB093	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS094-0002	X7-SB094	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS095-0002	X7-SB095	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	45	--	--	--	--	--	--	--	--	--	--	50
X7-SS096-0002	X7-SB096	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS097-0002	X7-SB097	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS098-0002	X7-SB098	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS099-0002	X7-SB099	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	37.33
X7-SS100-0002	X7-SB100	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS101-0002	X7-SB101	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	37
X7-SS102-0002	X7-SB102	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	40	--	--	--	--	--	--	--	--	--	--	45.5
X7-SS103-0002	X7-SB103	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	--	27
X7-SS104-0002	X7-SB104	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS105-0002	X7-SB105	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SS106-0002	X7-SB106	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS107-0002	X7-SB107	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	28
X7-SS108-0002	X7-SB108	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	25.67
X7-SS109-0002	X7-SB109	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	25.67
X7-SS110-0002	X7-SB110	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41
X7-SS111-0002	X7-SB111	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	31	--	--	--	--	--	--	--	--	--	--	36
X7-SS112-0002	X7-SB112	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--	--	--	35
X7-SS112-0002-D	X7-SB112	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29
X7-SS113-0002	X7-SB113	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SS114-0002	X7-SB114	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS115-0002	X7-SB115	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SB116-0204	X7-SB116	2	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB116-0406	X7-SB116	4	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS116-0002	X7-SB116	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS117-0002	X7-SB117	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS118-0002	X7-SB118	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31.33
X7-SS119-0002	X7-SB119	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	37
X7-SS120-0002	X7-SB120	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	--	27
X7-SB121-0204	X7-SB121	2	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB121-0406	X7-SB121	4	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS121-0002	X7-SB121	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS122-0002	X7-SB122	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	38
X7-SB123-0204	X7-SB123	2	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB123-0406	X7-SB123	4	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS123-0002	X7-SB123	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	37.5
X7-SS124-0002	X7-SB124	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41.33
X7-SS125-0002	X7-SB125	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--	--	--	--	--	32
X7-SS126-0002	X7-SB126	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	39	--	--	--	--	--	--	--	--	--	--	44.33
X7-SS127-0002	X7-SB127	0	2	20071007	19400	0.61 J	8.84	145	0.883	1.43	3720	23.9	14.4	24.7	26000	25.3	30	2510	677	17.1	1750	0.405	0.129	62.2 U	0.231	38.1	64.4	35
X7-SS127-0002-D	X7-SB127	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32
X7-SS128-0002	X7-SB128	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	33.5
X7-SS129-0002	X7-SB129	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	41	--	--	--	--	--	--	--	--	--	--	46
X7-SS130-0002	X7-SB130	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	37
X7-SS131-0002	X7-SB131	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	38	--	--	--	--	--	--	--	--	--	--	43.33
X7-SS132-0002	X7-SB132	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	33	--	--	--	--	--	--	--	--	--	--	37.33
X7-SS133-0002	X7-SB133	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SS134-0002	X7-SB134	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	34
X7-SS135-0002	X7-SB135	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	39	--	--	--	--	--	--	--	--	--	--	43.67
X7-SS136-0002	X7-SB136	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS137-0002	X7-SB137	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	29
X7-SS138-0002	X7-SB138	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SS139-0002	X7-SB139	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	40	--	--	--	--	--	--	--	--	--	--	44.67
X7-SS140-0002	X7-SB140	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	40.5
X7-SS141-0002	X7-SB141	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	27	--	--	--	--	--	--	--	--	--	--	31
X7-SS142-0002	X7-SB142	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS143-0002	X7-SB143	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	--	--	--	41.67
X7-SS143-0002-D	X7-SB143	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36.67
X7-SS144-0002	X7-SB144	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0 U
X7-SS144-0002-D	X7-SB144	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33
X7-SS145-0002	X7-SB145	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	56	--	--	--	--	--	--	--	--	--	--	61.67
X7-SS146-0002	X7-SB146	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--	--	--	--	--	--	--	39.33
X7-SS147-0002	X7-SB147	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	65	--	--	--	--	--	--	--	--	--	--	71
X7-SS148-0002	X7-SB148	0	2	20071007	13700	1.2 J	7.41	153	0.859	1.32	5560	18.7	15.3	26.6	22400	71.8	144	2100	1320	21.4	1730	0.661	0.0984	106 U	0.18	28.1	58.5	148
X7-SS149-0002	X7-SB149	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	50	--	--	--	--	--	--	--	--	--	--	55.33
X7-SS150-0002	X7-SB150	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.33
X7-SS151-0002	X7-SB151	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	28.67
X7-SS152-0002	X7-SB152	0	2	20071007	12800	6.1 J	7.84	134	0.888	1.25	18000	23	17.3	66.3	27300	460	250	5840	1280	26.6	1550	0.717	0.105	68.9 U	0.169	31.2	72.9	247.33
X7-SS153-0002	X7-SB153	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	66	--	--	--	--	--	--	--	--	--	--	71.67
X7-SS154-0002	X7-SB154	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--	--	--	25
X7-SS155-0002	X7-SB155	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	25.67
X7-SS155-0002-D	X7-SB155	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS156-0002	X7-SB156	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	--	27
X7-SS157-0002	X7-SB157	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	41.33
X7-SS158-0002	X7-SB158	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	--	--	--	--	--	--	--	27
X7-SS159-0002	X7-SB159	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--	--	--	24.5
X7-SS160-0002	X7-SB160	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS161-0002	X7-SB161	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	67	--	--	--	--	--	--	--	--	--	--	73
X7-SS162-0002	X7-SB162	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	193	--	--	--	--	--	--	--	--	--	--	194.33
X7-SS163-0002	X7-SB163	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	66	--	--	--	--	--	--	--	--	--	--	71.67
X7-SS164-0002	X7-SB164	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	129	--	--	--	--	--	--	--	--	--	--	133.33
X7-SS165-0002	X7-SB165	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	124	--	--	--	--	--	--	--	--	--	--	128.67
X7-SS166-0002	X7-SB166	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	45	--	--	--	--	--	--	--	--	--	--	50.67
X7-SS167-0002	X7-SB167	0	2	20071007	18400	0.73 J	10.6	138	1.13	1.79	3100	28.6	17.8	36.9	36100	72.2	95	1860	934	28.9	2380	0.81	0.144	75.8 U	0.205	37.4	86.4	101
X7-SS168-0002	X7-SB168	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	--	--	--	41.67
X7-SS169-0002	X7-SB169	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--	--	--	--	--	18
X7-SS170-0002	X7-SB170	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	240	--	--	--	--	--	--	--	--	--	--	237.67
X7-SS171-0002	X7-SB171	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--	--	--	24.33
X7-SS173-0002	X7-SB173	0	2	20071007	10900	3.7 J	11.5	91.4	0.95	1.26	1350	20.7	12.9	30.8	44000	125	116	1160	1060	22.6	754	0.631	0.136	83.9 U	0.162	38.9	61	121.33
X7-SB174-0203	X7-SB174	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	8.1	--	--	--	--	--	--	--	--	--	--	32
X7-SB174-0304	X7-SB174	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.33
X7-SS174-0002	X7-SB174	0	2	20071007	10600	12.3 J	8.8	87.9	0.741	1.34	1420	19.1	14.3	98.7	20900	430	469	1040	912	19.1	782	0.546	0.165	58.5 U	0.158	27.2	64	442.33
X7-SS175-0002	X7-SB175	0	2	20071007	9300	3.3 J	15.2	90.6	0.905	2.21	1430	18.1	17.6	59.7	51900	170	90	723	1310	25.9	768	0.743	0.141	31.1 U	0.141	31	118	96
X7-SS176-0002	X7-SB176	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	143	--	--	--	--	--	--	--	--	--	--	147.33
X7-SS177-0002	X7-SB177	0	2	20071007	15200	2.6 J	10.8	59.9	0.78	0.993	1330	57	15	48.1	45000	115	109	1580	502	17.3	882	0.365	0.0996	50.1 U	0.175	44.1	53.1	114.67
X7-SS178-0002	X7-SB178	0	2	20071007	15500	0.98 J	8.86	82.8	0.594	0.969	1360	30.1	20.8	16.9	30600	40.9	25	1420	821	16.3	884	0.43	0.0894	43.9 U	0.18	39.8	40.7	29.67
X7-SS179-0002	X7-SB179	0	2	20071007	11500	2 J	11	56.2	0.769	0.439	1110	39.2	14.4	29.2	38400	83.6	98	1190	637	13.6	592	0.322	0.0593	23.8 U	0.147	35.9	42.2	104
X7-SS180-0002	X7-SB180	0	2	20071007	16200	2.1 J	15	81.8	0.827 J	1.32	1020	32.2	19.2	51.9	31500	89	79	2280	544	27	1210	0.604	0.186	138	0.39	78	74.8	84.67
X7-SB181-0203	X7-SB181	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	59.083	--	--	--	--	--	--	--	--	--	--	76.33
X7-SB181-0304	X7-SB181	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	4.65	--	--	--	--	--	--	--	--	--	--	29
X7-SS181-0002	X7-SB181	0	2	20071007	14800	5.3 J	8.77	118	1.2	0.572	1080	45.9	11.2	63.8	35800	212	202	1810	571	32.4	715	0.279	0.062	19.1 U	0.133	73.2	96.5	202.33
X7-SS182-0002	X7-SB182	0	2	20071007	11700	2.8 J	15.1	61.5	0.703 J	0.823	1040	35.2	22.8	44.2	45700	95.1	103	1140	641	22.1	810	0.373	0.0985	40.9	0.224	57	47	109
X7-SS183-0002	X7-SB183	0	2	20071007	19400	0.59 U	17	92.9	0.718 J	1.9	18700	28.5	16.9	48.2	29700	28.8	21	3910	334	29.7	1740	0.913	0.238	138	0.525	85.9	74.3	24.67
X7-SS184-0002	X7-SB184	0	2	20071007	15600	0.38 U	12.5	73.7	0.625 J	1.32	1790	21.1	18.6	33.8	24700	25.3	22	2620	477	24.3	1180	0.367	0.152	93.5	0.394	64.3	61	25.67
X7-SS185-0002	X7-SB185	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	21	--	--	--	--	--	--	--	--	--	--	24.33
X7-SS186-0002	X7-SB186	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--	--	--	--	--	32
X7-SS187-0002	X7-SB187	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	18	--	--	--	--	--	--	--	--	--	--	21
X7-SS188-0002	X7-SB188	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	20	--	--	--	--	--	--	--	--	--	--	23.67
X7-SS189-0002	X7-SB189	0	2	20071009	10000	2.6 J	5.52	82.8	0.86	0.815	1130	16.7	13.3	46.3	23200	151	163	1020	665	19.6	660	0.383	0.126	64.7 U	0.128 U	25.6	61.8	165.67
X7-SB190-0203	X7-SB190	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SB190-0304	X7-SB190	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7
X7-SS190-0002	X7-SB190	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--	--	--	--	--	--	--	--	--	334.67
X7-SS200-0001	X7-SB200	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS200-0102	X7-SB200	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS201-0001	X7-SB201	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS201-0102	X7-SB201	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS202-0001	X7-SB202	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS202-0102	X7-SB202	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB203-0204	X7-SB203	2	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB203-0406	X7-SB203	4	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS203-0001	X7-SB203	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS203-0102	X7-SB203	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS204-0001	X7-SB204	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS204-0102	X7-SB204	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS205-0001	X7-SB205	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS205-0102	X7-SB205	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS205-0102-D	X7-SB205	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS206-0001	X7-SB206	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS206-0102	X7-SB206	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS207-0001	X7-SB207	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS207-0102	X7-SB207	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS208-0001	X7-SB208	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS208-0102	X7-SB208	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS209-0001	X7-SB209	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS209-0102	X7-SB209	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS210-0001	X7-SB210	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS210-0102	X7-SB210	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS211-0001	X7-SB211	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS211-0102	X7-SB211	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS212-0001	X7-SB212	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS212-0102	X7-SB212	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS213-0001	X7-SB213	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS213-0102	X7-SB213	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS214-0001	X7-SB214	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS214-0102	X7-SB214	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS215-0001	X7-SB215	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS215-0102	X7-SB215	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS215-0102-D	X7-SB215	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS216-0001	X7-SB216	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS216-0102	X7-SB216	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS217-0001	X7-SB217	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS217-0102	X7-SB217	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS218-0001	X7-SB218	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS218-0102	X7-SB218	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS219-0001	X7-SB219	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS219-0102	X7-SB219	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS220-0001	X7-SB220	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS220-0102	X7-SB220	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS221-0001	X7-SB221	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS221-0102	X7-SB221	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS222-0001	X7-SB222	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS222-0001-D	X7-SB222	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS225-0102	X7-SB225	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS226-0001	X7-SB226	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS226-0102	X7-SB226	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB227-0204	X7-SB227	2	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB227-0406	X7-SB227	4	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS227-0001	X7-SB227	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS229-0001	X7-SB229	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS230-0001	X7-SB230	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS230-0102	X7-SB230	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS231-0001	X7-SB231	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS232-0001	X7-SB232	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS232-0102	X7-SB232	1	2	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS237-0001	X7-SB237	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS238-0001	X7-SB238	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS239-0001	X7-SB239	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS240-0001	X7-SB240	0	1	20111110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB256-0406	X7-SB256	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB261-0204	X7-SB261	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB261-0406	X7-SB261	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS271-0001	X7-SB271	0	1	20111109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS271-0102	X7-SB271	1	2	20111109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS272-0001	X7-SB272	0	1	20111109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS272-0102	X7-SB272	1	2	20111109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SB274-0203	X7-SB274	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	28.417	--	--	--	--	--	--	--	--	--	--	49.67
X7-SB274-0304	X7-SB274	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	11.933	--	--	--	--	--	--	--	--	--	--	35.33
X7-SS274-0001	X7-SB274	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	670	--	--	--	--	--	--	--	--	--	--	734.67
X7-SS274-0102	X7-SB274	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	397	--	--	--	--	--	--	--	--	--	--	433.33
X7-SB275-0203	X7-SB275	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	46.433	--	--	--	--	--	--	--	--	--	--	65.33
X7-SB275-0304	X7-SB275	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	1.5833	--	--	--	--	--	--	--	--	--	--	26.33
X7-SS275-0001	X7-SB275	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	413	--	--	--	--	--	--	--	--	--	--	451
X7-SS275-0102	X7-SB275	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	616	--	--	--	--	--	--	--	--	--	--	675
X7-SS276-0001	X7-SB276	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	128	--	--	--	--	--	--	--	--	--	--	135
X7-SS276-0102	X7-SB276	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	90.9	--	--	--	--	--	--	--	--	--	--	94.33
X7-SB277-0203	X7-SB277	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20.67
X7-SB277-0304	X7-SB277	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SS277-0001	X7-SB277	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	382	--	--	--	--	--	--	--	--	--	--	416.67
X7-SS277-0102	X7-SB277	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	315	--	--	--	--	--	--	--	--	--	--	342.33
X7-SB278-0203	X7-SB278	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.33
X7-SB278-0304	X7-SB278	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.33
X7-SS278-0001	X7-SB278	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	464	--	--	--	--	--	--	--	--	--	--	507
X7-SS278-0102	X7-SB278	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	315	--	--	--	--	--	--	--	--	--	--	342
X7-SB279-0203	X7-SB279	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	20.1 J	23.4	--	--	--	--	--	--	--	--	--	--	19.67
X7-SS279-0001	X7-SB279	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	408	--	--	--	--	--	--	--	--	--	--	445.33
X7-SS279-0102	X7-SB279	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	376	--	--	--	--	--	--	--	--	--	--	409.67
X7-SS280-0001	X7-SB280	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	603	--	--	--	--	--	--	--	--	--	--	661
X7-SS280-0102	X7-SB280	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	94.3 J	98.5	--	--	--	--	--	--	--	--	--	--	102.67
X7-SS281-0001	X7-SB281	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	611	--	--	--	--	--	--	--	--	--	--	669.33
X7-SS281-0102	X7-SB281	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	96.6	--	--	--	--	--	--	--	--	--	--	100.67
X7-SB282-0203	X7-SB282	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	88.8	--	--	--	--	--	--	--	--	--	--	92
X7-SS282-0001	X7-SB282	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	559	--	--	--	--	--	--	--	--	--	--	611.67
X7-SS282-0102	X7-SB282	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	303	--	--	--	--	--	--	--	--	--	--	329
X7-SB283-0203	X7-SB283	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	39.917	--	--	--	--	--	--	--	--	--	--	59.67
X7-SB283-0304	X7-SB283	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SS283-0001	X7-SB283	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	534	--	--	--	--	--	--	--	--	--	--	584
X7-SS283-0001-D	X7-SB283	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	555	--	--	--	--	--	--	--	--	--	--	608
X7-SS283-0102	X7-SB283	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	522	--	--	--	--	--	--	--	--	--	--	571.67
X7-SS284-0001	X7-SB284	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	503	--	--	--	--	--	--	--	--	--	--	550.33
X7-SS284-0102	X7-SB284	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	87.3	--	--	--	--	--	--	--	--	--	--	90.33
X7-SB285-0203	X7-SB285	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	3
X7-SB285-0304	X7-SB285	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.67
X7-SS285-0001	X7-SB285	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	392	--	--	--	--	--	--	--	--	--	--	427.67
X7-SS286-0001	X7-SB286	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	189	--	--	--	--	--	--	--	--	--	--	202.67
X7-SS287-0001	X7-SB287	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	44.8 J	65.6	--	--	--	--	--	--	--	--	--	--	66.33
X7-SS288-0001	X7-SB288	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	63.8 J	79.5	--	--	--	--	--	--	--	--	--	--	81.67
X7-SS289-0001	X7-SB289	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	78	--	--	--	--	--	--	--	--	--	--	80
X7-SS290-0001	X7-SB290	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	143	--	--	--	--	--	--	--	--	--	--	151.67
X7-SS290-0102	X7-SB290	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	--	--	--	--	25.67
X7-SB291-0203	X7-SB291	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	203 J	280	--	--	--	--	--	--	--	--	--	--	303.67
X7-SB291-0304	X7-SB291	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	366.9	--	--	--	--	--	--	--	--	--	--	344
X7-SB291-0405	X7-SB291	4	5	20120907	--	--	--	--	--	--	--	--	--	--	--	--	18.067	--	--	--	--	--	--	--	--	--	--	40.67
X7-SS291-0001	X7-SB291	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	1186	--	--	--	--	--	--	--	--	--	--	1306
X7-SS291-0102	X7-SB291	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	365	--	--	--	--	--	--	--	--	--	--	397
X7-SS292-0001	X7-SB292	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	226	--	--	--	--	--	--	--	--	--	--	244
X7-SS292-0102	X7-SB292	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	90.6	--	--	--	--	--	--	--	--	--	--	94
X7-SS293-0001	X7-SB293	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	71.6	--	--	--	--	--	--	--	--	--	--	73
X7-SS294-0001	X7-SB294	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	148	--	--	--	--	--	--	--	--	--	--	157
X7-SS294-0102	X7-SB294	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	61.7	--	--	--	--	--	--	--	--	--	--	62
X7-SB295-0203	X7-SB295	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	477	--	--	--	--	--	--	--	--	--	--	521.33
X7-SB295-0304	X7-SB295	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	246 J	238.87	--	--	--	--	--	--	--	--	--	--	232.67
X7-SB295-0405	X7-SB295	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.67
X7-SS295-0001	X7-SB295	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	339	--	--	--	--	--	--	--	--	--	--	368.67
X7-SS295-0102	X7-SB295	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	386	--	--	--	--	--	--	--	--	--	--	420.33
X7-SB296-0203	X7-SB296	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	280	--	--	--	--	--	--	--	--	--	--	303.33
X7-SB296-0304	X7-SB296	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	551.28	--	--	--	--	--	--	--	--	--	--	504.33
X7-SB296-0405	X7-SB296	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	16.917	--	--	--	--	--	--	--	--	--	--	39.67
X7-SB296-0506	X7-SB296	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.67
X7-SB296-0607	X7-SB296	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.33
X7-SS296-0001	X7-SB296	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	818	--	--	--	--	--	--	--	--	--	--	899
X7-SS296-0102	X7-SB296	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	304	--	--	--	--	--	--	--	--	--	--	330
X7-SB297-0203	X7-SB297	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	232	--	--	--	--	--	--	--	--	--	--	250
X7-SB297-0304	X7-SB297	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	16.15	--	--	--	--	--	--	--	--	--	--	39
X7-SB297-0405	X7-SB297	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.33
X7-SS297-0001	X7-SB297	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	646	--	--	--	--	--	--	--	--	--	--	708.33
X7-SS297-0102	X7-SB297	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	366	--	--	--	--	--	--	--	--	--	--	398.33
X7-SB298-0203	X7-SB298	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	180.6	--	--	--	--	--	--	--	--	--	--	182
X7-SB298-0304	X7-SB298	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	806.58	--	--	--	--	--	--	--	--	--	--	726.33
X7-SB298-0405	X7-SB298	4	5	20120909	--	--	--	--	--	--	--	--	--	--	--	142 J	120.03	--	--	--	--	--	--	--	--	--	--	129.33
X7-SB298-0506	X7-SB298	5	6	20120909	--	--	--	--	--	--	--	--	--	--	--	--	24.2	--	--	--	--	--	--	--	--	--	--	46
X7-SS298-0001	X7-SB298	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	356	--	--	--	--	--	--	--	--	--	--	388
X7-SS298-0102	X7-SB298	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	414	--	--	--	--	--	--	--	--	--	--	452
X7-SB299-0203	X7-SB299	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	122	--	--	--	--	--	--	--	--	--	--	128.67
X7-SB299-0203-D	X7-SB299	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	131	--	--	--	--	--	--	--	--	--	--	139
X7-SS299-0001	X7-SB299	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	338	--	--	--	--	--	--	--	--	--	--	367.33
X7-SS299-0102	X7-SB299	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	478	--	--	--	--	--	--	--	--	--	--	522.33
X7-SB300-0203	X7-SB300	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	85.533	--	--	--	--	--	--	--	--	--	--	99.33
X7-SB300-0304	X7-SB300	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	190.18	--	--	--	--	--	--	--	--	--	--	190.33
X7-SB300-0405	X7-SB300	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	630.63	--	--	--	--	--	--	--	--	--	--	573.33
X7-SB300-0506	X7-SB300	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SS300-0001	X7-SB300	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	230	--	--	--	--	--	--	--	--	--	--	248
X7-SS300-0102	X7-SB300	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	228	--	--	--	--	--	--	--	--	--	--	245.67
X7-SB301-0203	X7-SB301	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	517	--	--	--	--	--	--	--	--	--	--	565.67
X7-SB301-0304	X7-SB301	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	299.43	--	--	--	--	--	--	--	--	--	--	285.33
X7-SB301-0405	X7-SB301	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	0.43333	--	--	--	--	--	--	--	--	--	--	25.33
X7-SS301-0001	X7-SB301	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	164	--	--	--	--	--	--	--	--	--	--	175.67
X7-SS301-0102	X7-SB301	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	357	--	--	--	--	--	--	--	--	--	--	388.33
X7-SS302-0001	X7-SB302	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	159	--	--	--	--	--	--	--	--	--	--	169.67
X7-SS302-0102	X7-SB302	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	76.2	--	--	--	--	--	--	--	--	--	--	78
X7-SB303-0304	X7-SB303	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.67
X7-SB303-0405	X7-SB303	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	19.983	--	--	--	--	--	--	--	--	--	--	42.33
X7-SS303-0001	X7-SB303	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	261	--	--	--	--	--	--	--	--	--	--	282.67
X7-SS303-0102	X7-SB303	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	532	--	--	--	--	--	--	--	--	--	--	582.67
X7-SS304-0001	X7-SB304	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	87.9	--	--	--	--	--	--	--	--	--	--	91

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS305-0001	X7-SB305	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	311	--	--	--	--	--	--	--	--	--	--	338.33
X7-SS305-0102	X7-SB305	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	68	--	--	--	--	--	--	--	--	--	--	69
X7-SB306-0203	X7-SB306	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	82.5	--	--	--	--	--	--	--	--	--	--	85
X7-SS306-0001	X7-SB306	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	484	--	--	--	--	--	--	--	--	--	--	529.67
X7-SS306-0102	X7-SB306	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	160	--	--	--	--	--	--	--	--	--	--	170.67
X7-SS307-0001	X7-SB307	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	568	--	--	--	--	--	--	--	--	--	--	622
X7-SS307-0102	X7-SB307	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	47.5	--	--	--	--	--	--	--	--	--	--	46.33
X7-SB308-0203	X7-SB308	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	23.7	--	--	--	--	--	--	--	--	--	--	20
X7-SS308-0001	X7-SB308	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	469	--	--	--	--	--	--	--	--	--	--	512.33
X7-SS308-0102	X7-SB308	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	235	--	--	--	--	--	--	--	--	--	--	253.33
X7-SS309-0001	X7-SB309	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	65.9	--	--	--	--	--	--	--	--	--	--	66.67
X7-SB310-0203	X7-SB310	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	209	184	--	--	--	--	--	--	--	--	--	--	197.67
X7-SB310-0304	X7-SB310	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	186.35	--	--	--	--	--	--	--	--	--	--	187
X7-SB310-0405	X7-SB310	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	145	115.82	--	--	--	--	--	--	--	--	--	--	125.67
X7-SS310-0001	X7-SB310	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	374	--	--	--	--	--	--	--	--	--	--	408
X7-SS310-0102	X7-SB310	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	374	350	--	--	--	--	--	--	--	--	--	--	381.33
X7-SS311-0001	X7-SB311	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	88.5	--	--	--	--	--	--	--	--	--	--	91.67
X7-SB312-0203	X7-SB312	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	35.317	--	--	--	--	--	--	--	--	--	--	55.67
X7-SB312-0304	X7-SB312	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20
X7-SS312-0001	X7-SB312	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	143	--	--	--	--	--	--	--	--	--	--	152
X7-SS312-0102	X7-SB312	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	249	197	--	--	--	--	--	--	--	--	--	--	212
X7-SB313-0203	X7-SB313	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	466	--	--	--	--	--	--	--	--	--	--	509.33
X7-SB313-0304	X7-SB313	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.67
X7-SB313-0405	X7-SB313	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.33
X7-SS313-0001	X7-SB313	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	187	157	--	--	--	--	--	--	--	--	--	--	167.33
X7-SS313-0102	X7-SB313	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	201	--	--	--	--	--	--	--	--	--	--	215.67
X7-SS314-0001	X7-SB314	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	126	--	--	--	--	--	--	--	--	--	--	133
X7-SS314-0102	X7-SB314	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	179	--	--	--	--	--	--	--	--	--	--	192
X7-SS315-0001	X7-SB315	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	220	201	--	--	--	--	--	--	--	--	--	--	215.67
X7-SS315-0102	X7-SB315	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	64.7	--	--	--	--	--	--	--	--	--	--	65.33
X7-SS316-0001	X7-SB316	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	322	--	--	--	--	--	--	--	--	--	--	350
X7-SS316-0102	X7-SB316	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--	--	--	--	--	--	--	31.33
X7-SS317-0001	X7-SB317	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	74.9	--	--	--	--	--	--	--	--	--	--	76.67
X7-SS318-0001	X7-SB318	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	90.9	--	--	--	--	--	--	--	--	--	--	94.33
X7-SS319-0001	X7-SB319	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	70.7	--	--	--	--	--	--	--	--	--	--	72
X7-SB320-0203	X7-SB320	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	24.9	--	--	--	--	--	--	--	--	--	--	21.33
X7-SS320-0001	X7-SB320	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	279	--	--	--	--	--	--	--	--	--	--	302.67
X7-SS320-0102	X7-SB320	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	162	--	--	--	--	--	--	--	--	--	--	172.67
X7-SS321-0001	X7-SB321	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	156 J	162	--	--	--	--	--	--	--	--	--	--	173
X7-SS321-0102	X7-SB321	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	40	--	--	--	--	--	--	--	--	--	--	38
X7-SS323-0001	X7-SB323	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	448 J	398	--	--	--	--	--	--	--	--	--	--	433.67
X7-SS323-0102	X7-SB323	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	50.2	--	--	--	--	--	--	--	--	--	--	49.33
X7-SS325-0001	X7-SB325	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	419	--	--	--	--	--	--	--	--	--	--	457.33
X7-SS325-0102	X7-SB325	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	37.3	--	--	--	--	--	--	--	--	--	--	35
X7-SS327-0001	X7-SB327	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	66.4 J	54.8	--	--	--	--	--	--	--	--	--	--	54.33
X7-SS327-0001-D	X7-SB327	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	60.7	65.3	--	--	--	--	--	--	--	--	--	--	66
X7-SS329-0001	X7-SB329	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	46.3 J	65.6	--	--	--	--	--	--	--	--	--	--	66.33
X7-SS331-0001	X7-SB331	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	138 J	130	--	--	--	--	--	--	--	--	--	--	137.67
X7-SS331-0001-D	X7-SB331	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	178	--	--	--	--	--	--	--	--	--	--	190.33
X7-SS331-0102	X7-SB331	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	39.4	--	--	--	--	--	--	--	--	--	--	37.33
X7-SS333-0001	X7-SB333	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	198 J	172	--	--	--	--	--	--	--	--	--	--	184.33
X7-SS333-0102	X7-SB333	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	39.4	--	--	--	--	--	--	--	--	--	--	37.33
X7-SS336-0001	X7-SB336	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	236 J	252	--	--	--	--	--	--	--	--	--	--	272.67
X7-SS336-0102	X7-SB336	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	71	--	--	--	--	--	--	--	--	--	--	72.33
X7-SS337-0001	X7-SB337	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	63.1 J	64.4	--	--	--	--	--	--	--	--	--	--	65
X7-SB342-0203	X7-SB342	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8.33
X7-SB342-0304	X7-SB342	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SS342-0102	X7-SB342	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	263 J	262	--	--	--	--	--	--	--	--	--	--	284
X7-SS344-0001	X7-SB344	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	111 J	136	--	--	--	--	--	--	--	--	--	--	143.67
X7-SS344-0102	X7-SB344	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	22.8	--	--	--	--	--	--	--	--	--	--	19
X7-SS345-0001	X7-SB345	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	518	--	--	--	--	--	--	--	--	--	--	567
X7-SS345-0102	X7-SB345	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	78.4 J	92.7	--	--	--	--	--	--	--	--	--	--	96.33
X7-SS347-0001	X7-SB347	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	541	--	--	--	--	--	--	--	--	--	--	592
X7-SS347-0102	X7-SB347	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	91.5 J	79.2	--	--	--	--	--	--	--	--	--	--	81.33
X7-SB349-0203	X7-SB349	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	40.3	--	--	--	--	--	--	--	--	--	--	60
X7-SB349-0304	X7-SB349	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	9.25	--	--	--	--	--	--	--	--	--	--	33
X7-SS349-0001	X7-SB349	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	166	--	--	--	--	--	--	--	--	--	--	177
X7-SS349-0102	X7-SB349	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	601	--	--	--	--	--	--	--	--	--	--	658.67
X7-SB351-0203	X7-SB351	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	541.7	--	--	--	--	--	--	--	--	--	--	496
X7-SB351-0304	X7-SB351	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	114 J	194.78	--	--	--	--	--	--	--	--	--	--	194.33
X7-SB351-0405	X7-SB351	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	9.33
X7-SB351-0506	X7-SB351	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	128 J	163.35	--	--	--	--	--	--	--	--	--	--	167
X7-SB351-0607	X7-SB351	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8.67
X7-SB351-0708	X7-SB351	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	5.67
X7-SS351-0001	X7-SB351	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	191 J	208	--	--	--	--	--	--	--	--	--	--	223.33
X7-SS351-0102	X7-SB351	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	290	259	--	--	--	--	--	--	--	--	--	--	280.33
X7-SS353-0001	X7-SB353	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	157	113	--	--	--	--	--	--	--	--	--	--	118.33
X7-SS355-0001	X7-SB355	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	136	122	--	--	--	--	--	--	--	--	--	--	128.33
X7-SS355-0102	X7-SB355	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	110	--	--	--	--	--	--	--	--	--	--	115
X7-SS357-0001	X7-SB357	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	408	--	--	--	--	--	--	--	--	--	--	444.67
X7-SS357-0102	X7-SB357	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	69.2	--	--	--	--	--	--	--	--	--	--	70.33
X7-SB358-0203	X7-SB358	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	343.13	--	--	--	--	--	--	--	--	--	--	323.33
X7-SB358-0304	X7-SB358	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	158.75	--	--	--	--	--	--	--	--	--	--	163
X7-SB358-0405	X7-SB358	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	284.48	--	--	--	--	--	--	--	--	--	--	272.33
X7-SB358-0506	X7-SB358	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	283 J	271.83	--	--	--	--	--	--	--	--	--	--	261.33
X7-SB358-0506-D	X7-SB358	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	231	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB358-0607	X7-SB358	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SB358-0708	X7-SB358	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8.67
X7-SS358-0001	X7-SB358	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	403
X7-SS358-0102	X7-SB358	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	455	--	--	--	--	--	--	--	--	--	--	497
X7-SB360-0203	X7-SB360	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	2044.8	--	--	--	--	--	--	--	--	--	--	1803
X7-SB360-0304	X7-SB360	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	88.217	--	--	--	--	--	--	--	--	--	--	101.67
X7-SS360-0001	X7-SB360	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	232	--	--	--	--	--	--	--	--	--	--	250.67
X7-SS360-0102	X7-SB360	1	2	2011111	--	--	--	--	--	--	--	--	--	--	--	--	302	--	--	--	--	--	--	--	--	--	--	327.33
X7-SB361-0203	X7-SB361	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20.33
X7-SB361-0304	X7-SB361	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	105.47	--	--	--	--	--	--	--	--	--	--	116.67
X7-SS361-0001	X7-SB361	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	299	--	--	--	--	--	--	--	--	--	--	325
X7-SS361-0102	X7-SB361	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	291	--	--	--	--	--	--	--	--	--	--	316
X7-SS363-0001	X7-SB363	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	180	177	--	--	--	--	--	--	--	--	--	--	190
X7-SS363-0102	X7-SB363	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	10.2	--	--	--	--	--	--	--	--	--	--	5

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SB365-0203	X7-SB365	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SB365-0304	X7-SB365	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.67
X7-SS365-0001	X7-SB365	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	412	--	--	--	--	--	--	--	--	--	--	450
X7-SS365-0102	X7-SB365	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	403	--	--	--	--	--	--	--	--	--	--	440
X7-SB368-0203	X7-SB368	2	3	20120909	--	--	--	--	--	--	--	--	--	--	--	87.5 J	123.87	--	--	--	--	--	--	--	--	--	--	132.67
X7-SB368-0304	X7-SB368	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SS368-0001	X7-SB368	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	187	--	--	--	--	--	--	--	--	--	--	200.67
X7-SS368-0102	X7-SB368	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	660	--	--	--	--	--	--	--	--	--	--	723.67
X7-SB369-0203	X7-SB369	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	555.88	--	--	--	--	--	--	--	--	--	--	508.33
X7-SB369-0304	X7-SB369	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	675.48	--	--	--	--	--	--	--	--	--	--	612.33
X7-SB369-0405	X7-SB369	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	19.983	--	--	--	--	--	--	--	--	--	--	42.33
X7-SB369-0506	X7-SB369	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	14.617	--	--	--	--	--	--	--	--	--	--	37.67
X7-SS369-0001	X7-SB369	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	869	--	--	--	--	--	--	--	--	--	--	955
X7-SS369-0102	X7-SB369	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	245	327	--	--	--	--	--	--	--	--	--	--	356
X7-SS371-0001	X7-SB371	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	244	239	--	--	--	--	--	--	--	--	--	--	258.33
X7-SS371-0102	X7-SB371	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	110	123.87	--	--	--	--	--	--	--	--	--	--	132.67
X7-SS371-0102D	X7-SB371	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15.33
X7-SS371-0203	X7-SB371	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.333
X7-SS373-0001	X7-SB373	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	50.8	--	--	--	--	--	--	--	--	--	--	50
X7-SS376-0001	X7-SB376	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	184	--	--	--	--	--	--	--	--	--	--	197.33
X7-SS376-0102	X7-SB376	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	136	142	--	--	--	--	--	--	--	--	--	--	150.67
X7-SS377-0001	X7-SB377	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	380	--	--	--	--	--	--	--	--	--	--	413.67
X7-SS377-0102	X7-SB377	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	98.6	123	--	--	--	--	--	--	--	--	--	--	130
X7-SS377-0102-D	X7-SB377	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	93.1	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS379-0001	X7-SB379	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	49.6	--	--	--	--	--	--	--	--	--	--	48.67
X7-SS383-0001	X7-SB383	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	64.4	--	--	--	--	--	--	--	--	--	--	65
X7-SS385-0001	X7-SB385	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	200	154	--	--	--	--	--	--	--	--	--	--	164
X7-SS385-0102	X7-SB385	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	60.8	--	--	--	--	--	--	--	--	--	--	61
X7-SS387-0001	X7-SB387	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	77.4	--	--	--	--	--	--	--	--	--	--	79.33
X7-SB391-0203	X7-SB391	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	52.3	--	--	--	--	--	--	--	--	--	--	51.67
X7-SS391-0001	X7-SB391	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	152	--	--	--	--	--	--	--	--	--	--	161.67
X7-SS391-0102	X7-SB391	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	566	--	--	--	--	--	--	--	--	--	--	619.67
X7-SS392-0001	X7-SB392	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	107 J	111	--	--	--	--	--	--	--	--	--	--	116.67
X7-SB393-0203	X7-SB393	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	186	--	--	--	--	--	--	--	--	--	--	199.67
X7-SS393-0001	X7-SB393	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	147	--	--	--	--	--	--	--	--	--	--	156.67
X7-SS393-0102	X7-SB393	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	226 J	261	--	--	--	--	--	--	--	--	--	--	283
X7-SS393-0102-D	X7-SB393	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	436 J	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB394-0203	X7-SB394	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	35.5	--	--	--	--	--	--	--	--	--	--	33
X7-SS394-0001	X7-SB394	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	142	--	--	--	--	--	--	--	--	--	--	151
X7-SS394-0102	X7-SB394	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	285	--	--	--	--	--	--	--	--	--	--	309
X7-SB395-0203	X7-SB395	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	321	--	--	--	--	--	--	--	--	--	--	348.33
X7-SB395-0304	X7-SB395	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	537.87	--	--	--	--	--	--	--	--	--	--	492.67
X7-SB395-0405	X7-SB395	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	160 J	253.82	--	--	--	--	--	--	--	--	--	--	245.67
X7-SB395-0506	X7-SB395	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8
X7-SB395-0607	X7-SB395	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SS395-0001	X7-SB395	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	246	--	--	--	--	--	--	--	--	--	--	266
X7-SS395-0102	X7-SB395	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	535	--	--	--	--	--	--	--	--	--	--	585.67
X7-SB396-0203	X7-SB396	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	303	--	--	--	--	--	--	--	--	--	--	329.33
X7-SS396-0001	X7-SB396	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	145	--	--	--	--	--	--	--	--	--	--	154.33
X7-SS396-0001-D	X7-SB396	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	138	--	--	--	--	--	--	--	--	--	--	146
X7-SS396-0102	X7-SB396	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	384	--	--	--	--	--	--	--	--	--	--	418
X7-SB398-0203	X7-SB398	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	555.88	--	--	--	--	--	--	--	--	--	--	508.33
X7-SB398-0304	X7-SB398	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	294.07	--	--	--	--	--	--	--	--	--	--	280.67
X7-SB398-0405	X7-SB398	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	69.433	--	--	--	--	--	--	--	--	--	--	85.33
X7-SB398-0506	X7-SB398	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	--	--	--	--	--	--	--	--	--	28
X7-SS398-0001	X7-SB398	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	293	--	--	--	--	--	--	--	--	--	--	317.33
X7-SS398-0102	X7-SB398	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	458	--	--	--	--	--	--	--	--	--	--	500.67
X7-SS400-0001	X7-SB400	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	104	--	--	--	--	--	--	--	--	--	--	108.67
X7-SB401-0203	X7-SB401	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.67
X7-SB401-0304	X7-SB401	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8.67
X7-SS401-0001	X7-SB401	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	97.4	161	--	--	--	--	--	--	--	--	--	--	171.67
X7-SS401-0102	X7-SB401	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	337	--	--	--	--	--	--	--	--	--	--	366.67
X7-SS402-0001	X7-SB402	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	89.7	111	--	--	--	--	--	--	--	--	--	--	116.67
X7-SS404-0001	X7-SB404	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	292	--	--	--	--	--	--	--	--	--	--	317
X7-SS404-0102	X7-SB404	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	83.4	--	--	--	--	--	--	--	--	--	--	86
X7-SS404-0102-D	X7-SB404	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	102	--	--	--	--	--	--	--	--	--	--	106.67
X7-SS406-0001	X7-SB406	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	80.4	--	--	--	--	--	--	--	--	--	--	82.67
X7-SS406-0001-D	X7-SB406	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	73.1	--	--	--	--	--	--	--	--	--	--	74.67
X7-SS407-0001	X7-SB407	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	73.7	77	--	--	--	--	--	--	--	--	--	--	78.67
X7-SS408-0001	X7-SB408	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	246	286	--	--	--	--	--	--	--	--	--	--	310.67
X7-SS408-0102	X7-SB408	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	31.9	--	--	--	--	--	--	--	--	--	--	29
X7-SB409-0304	X7-SB409	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	1087	--	--	--	--	--	--	--	--	--	--	1196.33
X7-SB409-0405	X7-SB409	4	5	20120907	--	--	--	--	--	--	--	--	--	--	--	--	406	--	--	--	--	--	--	--	--	--	--	378
X7-SB409-0506	X7-SB409	5	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22.33
X7-SS410-0001	X7-SB410	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	12.3	10.2	--	--	--	--	--	--	--	--	--	--	5
X7-SB411-0304	X7-SB411	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	52	--	--	--	--	--	--	--	--	--	--	51.33
X7-SS412-0001	X7-SB412	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	189	174	--	--	--	--	--	--	--	--	--	--	186.67
X7-SS412-0102	X7-SB412	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	31.9	--	--	--	--	--	--	--	--	--	--	29
X7-SB413-0304	X7-SB413	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	869	--	--	--	--	--	--	--	--	--	--	955.33
X7-SS414-0001	X7-SB414	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	199	175	--	--	--	--	--	--	--	--	--	--	187.67
X7-SS414-0102	X7-SB414	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	104	--	--	--	--	--	--	--	--	--	--	108.33
X7-SS415-0001	X7-SB415	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	105	170	--	--	--	--	--	--	--	--	--	--	181.67
X7-SS415-0102	X7-SB415	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	36.4	--	--	--	--	--	--	--	--	--	--	34
X7-SS416-0001	X7-SB416	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	78.2	80	--	--	--	--	--	--	--	--	--	--	82.67
X7-SB417-0304	X7-SB417	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	194	--	--	--	--	--	--	--	--	--	--	208
X7-SB417-0405	X7-SB417	4	5	20111114	--	--	--	--	--	--	--	--	--	--	--	--	159	--	--	--	--	--	--	--	--	--	--	170
X7-SB417-0506	X7-SB417	5	6	20111114	--	--	--	--	--	--	--	--	--	--	--	--	715	--	--	--	--	--	--	--	--	--	--	118.67
X7-SB417-0607	X7-SB417	6	7	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.33
X7-SS418-0001	X7-SB418	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	48.4	--	--	--	--	--	--	--	--	--	--	47.33
X7-SS420-0001	X7-SB420	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	119	--	--	--	--	--	--	--	--	--	--	125
X7-SS420-0102	X7-SB420	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	445	--	--	--	--	--	--	--	--	--	--	485.67
X7-SS420-0203	X7-SB420	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	--	76.5	--	--	--	--	--	--	--	--	--	--	78.33
X7-SS421-0001	X7-SB421	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	681	--	--	--	--	--	--	--	--	--	--	747.33
X7-SS421-0102	X7-SB421	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	19.8	--	--	--	--	--	--	--	--	--	--	15.67
X7-SB422-0203	X7-SB422	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	44.5	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS422-0001	X7-SB422	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	399	--	--	--	--	--	--	--	--	--	--	434.67
X7-SS422-0102	X7-SB422	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	343	333	--	--	--	--	--	--	--	--	--	--	362
X7-SS422-0102-D	X7-SB422	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	343	--	--	--	--	--	--	--	--	--	--	373.33
X7-SS422-0203	X7-SB422	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	--	49	--	--	--	--	--	--	--	--	--	--	48
X7-SS423-0001	X7-SB423	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	340 J	276	--	--	--	--	--	--	--	--	--	--	298.67
X7-SS423-0102	X7-SB423	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	25.8	--	--	--	--	--	--	--	--	--	--	22.33

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS424-0001	X7-SB424	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	193 J	198	--	--	--	--	--	--	--	--	--	--	212.33
X7-SS424-0102	X7-SB424	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	91 J	103	--	--	--	--	--	--	--	--	--	--	108
X7-SS425-0001	X7-SB425	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	160 J	163	--	--	--	--	--	--	--	--	--	--	174.33
X7-SS425-0102	X7-SB425	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	16.5	--	--	--	--	--	--	--	--	--	--	12
X7-SB426-0304	X7-SB426	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	16.2	--	--	--	--	--	--	--	--	--	--	11.67
X7-SB427-0304	X7-SB427	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	22.7 J	21.6	--	--	--	--	--	--	--	--	--	--	17.67
X7-SB428-0304	X7-SB428	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	26.7	--	--	--	--	--	--	--	--	--	--	23.33
X7-SS429-0001	X7-SB429	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	125 J	102	--	--	--	--	--	--	--	--	--	--	106.67
X7-SB430-0304	X7-SB430	3	4	20111115	--	--	--	--	--	--	--	--	--	--	--	--	15.3	--	--	--	--	--	--	--	--	--	--	10.67
X7-SB430-0405	X7-SB430	4	5	20111115	--	--	--	--	--	--	--	--	--	--	--	--	10.2	--	--	--	--	--	--	--	--	--	--	5
X7-SB430-0506	X7-SB430	5	6	20111115	--	--	--	--	--	--	--	--	--	--	--	--	10.2	--	--	--	--	--	--	--	--	--	--	5
X7-SB431-0304	X7-SB431	3	4	20111115	--	--	--	--	--	--	--	--	--	--	--	--	47.2	--	--	--	--	--	--	--	--	--	--	46
X7-SB431-0405	X7-SB431	4	5	20111115	--	--	--	--	--	--	--	--	--	--	--	21.3	32.8	--	--	--	--	--	--	--	--	--	--	30
X7-SB432-0304	X7-SB432	3	4	20111115	--	--	--	--	--	--	--	--	--	--	--	--	23.4	--	--	--	--	--	--	--	--	--	--	19.67
X7-SB432-0405	X7-SB432	4	5	20111115	--	--	--	--	--	--	--	--	--	--	--	--	10.2	--	--	--	--	--	--	--	--	--	--	5
X7-SS434-0001	X7-SB434	0	1	20111115	--	--	--	--	--	--	--	--	--	--	--	162	98.5	--	--	--	--	--	--	--	--	--	--	102.67
X7-SS434-0102	X7-SB434	1	2	20111115	--	--	--	--	--	--	--	--	--	--	--	--	29.4	--	--	--	--	--	--	--	--	--	--	26.33
X7-SS434-0102-D	X7-SB434	1	2	20111115	--	--	--	--	--	--	--	--	--	--	--	--	30.3	--	--	--	--	--	--	--	--	--	--	27.33
X7-SS439-0001	X7-SB439	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
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X7-SS525-0102	X7-SB525	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB526-0204	X7-SB526	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB526-0406	X7-SB526	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS526-0001	X7-SB526	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS526-0102	X7-SB526	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB527-0204	X7-SB527	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB527-0406	X7-SB527	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS527-0001	X7-SB527	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS527-0102	X7-SB527	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB528-0204	X7-SB528	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB528-0406	X7-SB528	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS528-0001	X7-SB528	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS528-0102	X7-SB528	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS529-0001	X7-SB529	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS529-0102	X7-SB529	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS530-0001	X7-SB530	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS530-0102	X7-SB530	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS531-0001	X7-SB531	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS531-0102	X7-SB531	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS533-0001	X7-SB533	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS533-0102	X7-SB533	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB535-0204	X7-SB535	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB535-0406	X7-SB535	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS535-0001	X7-SB535	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS535-0102	X7-SB535	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS536-0001	X7-SB536	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS536-0102	X7-SB536	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS540-0001	X7-SB540	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS540-0102	X7-SB540	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB541-0204	X7-SB541	2	4	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB541-0406	X7-SB541	4	6	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS541-0001	X7-SB541	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS541-0102	X7-SB541	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS542-0001	X7-SB542	0	1	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS542-0102	X7-SB542	1	2	20120906	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS546-0001	X7-SB546	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS546-0102	X7-SB546	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB551-0203	X7-SB551	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	169.48	--	--	--	--	--	--	--	--	--	--	172.33
X7-SB551-0304	X7-SB551	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	248.83	--	--	--	--	--	--	--	--	--	--	241.33
X7-SB551-0405	X7-SB551	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	452.38	--	--	--	--	--	--	--	--	--	--	418.33
X7-SB551-0506	X7-SB551	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7
X7-SS551-0001	X7-SB551	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	432.83	--	--	--	--	--	--	--	--	--	--	401.33
X7-SS551-0102	X7-SB551	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	172.17	--	--	--	--	--	--	--	--	--	--	174.67
X7-SB552-0203	X7-SB552	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	123.87	--	--	--	--	--	--	--	--	--	--	132.67
X7-SB552-0304	X7-SB552	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	262.63	--	--	--	--	--	--	--	--	--	--	253.33
X7-SB552-0405	X7-SB552	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	1074.5	--	--	--	--	--	--	--	--	--	--	959.33
X7-SB552-0506	X7-SB552	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	5.67
X7-SS552-0001	X7-SB552	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	22.283	--	--	--	--	--	--	--	--	--	--	44.33
X7-SS552-0102	X7-SB552	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	252.67	--	--	--	--	--	--	--	--	--	--	244.67
X7-SB553-0203	X7-SB553	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	107	--	--	--	--	--	--	--	--	--	--	118
X7-SB553-0304	X7-SB553	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	26.5	--	--	--	--	--	--	--	--	--	--	48
X7-SS553-0001	X7-SB553	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	399.1	--	--	--	--	--	--	--	--	--	--	372
X7-SS553-0102	X7-SB553	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	128.85	--	--	--	--	--	--	--	--	--	--	137
X7-SB554-0203	X7-SB554	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	1337.5	--	--	--	--	--	--	--	--	--	--	1188
X7-SB554-0304	X7-SB554	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	129.62	--	--	--	--	--	--	--	--	--	--	137.67
X7-SB554-0405	X7-SB554	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	31.867	--	--	--	--	--	--	--	--	--	--	52.67
X7-SB554-0506	X7-SB554	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11
X7-SS554-0001	X7-SB554	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	136.52	--	--	--	--	--	--	--	--	--	--	143.67
X7-SS554-0102	X7-SB554	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	116.58	--	--	--	--	--	--	--	--	--	--	126.33
X7-SB555-0203	X7-SB555	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	108.53	--	--	--	--	--	--	--	--	--	--	119.33
X7-SB555-0304	X7-SB555	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23
X7-SS555-0001	X7-SB555	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	87.833	--	--	--	--	--	--	--	--	--	--	101.33
X7-SS555-0102	X7-SB555	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	536.33	--	--	--	--	--	--	--	--	--	--	491.33
X7-SB556-0203	X7-SB556	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	312.47	--	--	--	--	--	--	--	--	--	--	296.67
X7-SB556-0304	X7-SB556	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	289.08	--	--	--	--	--	--	--	--	--	--	276.33
X7-SB556-0405	X7-SB556	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	192.87	--	--	--	--	--	--	--	--	--	--	192.67
X7-SB556-0506	X7-SB556	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	700.78	--	--	--	--	--	--	--	--	--	--	634.33
X7-SB556-0607	X7-SB556	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	108.15	--	--	--	--	--	--	--	--	--	--	119
X7-SB556-0708	X7-SB556	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	23.05	--	--	--	--	--	--	--	--	--	--	45
X7-SS556-0001	X7-SB556	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	373.03	--	--	--	--	--	--	--	--	--	--	349.33
X7-SS556-0102	X7-SB556	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	2242.2	--	--	--	--	--	--	--	--	--	--	1974.67
X7-SB557-0203	X7-SB557	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	823.83	--	--	--	--	--	--	--	--	--	--	741.33
X7-SB557-0304	X7-SB557	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	1935.1	--	--	--	--	--	--	--	--	--	--	1707.67
X7-SB557-0405	X7-SB557	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10.4	--	--	--	--	--	--	--	--	--	--	34
X7-SB557-0506	X7-SB557	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	2.35	--	--	--	--	--	--	--	--	--	--	27
X7-SS557-0001	X7-SB557	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	295.22	--	--	--	--	--	--	--	--	--	--	281.67
X7-SS557-0102	X7-SB557	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	416.35	--	--	--	--	--	--	--	--	--	--	387
X7-SB558-0203	X7-SB558	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	72.117	--	--	--	--	--	--	--	--	--	--	87.67
X7-SB558-0304	X7-SB558	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	1868.8	--	--	--	--	--	--	--	--	--	--	1650
X7-SB558-0405	X7-SB558	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SB558-0506	X7-SB558	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	217 J	188.27	--	--	--	--	--	--	--	--	--	--	188.67
X7-SB558-0607	X7-SB558	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--	--	--	--	--	38
X7-SB558-0708	X7-SB558	7	8	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	24
X7-SS558-0001	X7-SB558	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	547.07	--	--	--	--	--	--	--	--	--	--	500.67
X7-SS558-0102	X7-SB558	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	220.08	--	--	--	--	--	--	--	--	--	--	216.33
X7-SB559-0203	X7-SB559	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	39.15	--	--	--	--	--	--	--	--	--	--	59
X7-SB559-0304	X7-SB559	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.67

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS559-0001	X7-SB559	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	465.8	--	--	--	--	--	--	--	--	--	--	430
X7-SS559-0102	X7-SB559	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	1027.8	--	--	--	--	--	--	--	--	--	--	918.67
X7-SB560-0203	X7-SB560	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	131.15	--	--	--	--	--	--	--	--	--	--	139
X7-SB560-0304	X7-SB560	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	37.617	--	--	--	--	--	--	--	--	--	--	57.67
X7-SS560-0001	X7-SB560	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	365.37	--	--	--	--	--	--	--	--	--	--	342.67
X7-SS560-0102	X7-SB560	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	823.83	--	--	--	--	--	--	--	--	--	--	741.33
X7-SB561-0203	X7-SB561	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	144 J	170.63	--	--	--	--	--	--	--	--	--	--	173.33
X7-SB561-0304	X7-SB561	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.33
X7-SB561-0405	X7-SB561	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.67
X7-SS561-0001	X7-SB561	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	215.1	--	--	--	--	--	--	--	--	--	--	212
X7-SS561-0102	X7-SB561	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	99.333	--	--	--	--	--	--	--	--	--	--	111.33
X7-SB562-0203	X7-SB562	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	173.32	--	--	--	--	--	--	--	--	--	--	175.67
X7-SB562-0304	X7-SB562	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS562-0001	X7-SB562	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	392.97	--	--	--	--	--	--	--	--	--	--	366.67
X7-SS562-0102	X7-SB562	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	385.68	--	--	--	--	--	--	--	--	--	--	360.33
X7-SB563-0203	X7-SB563	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.67
X7-SB563-0304	X7-SB563	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.33
X7-SS563-0001	X7-SB563	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	195 J	234.27	--	--	--	--	--	--	--	--	--	--	228.67
X7-SS563-0102	X7-SB563	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.67
X7-SB564-0203	X7-SB564	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7.33
X7-SB564-0304	X7-SB564	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7.67
X7-SS564-0001	X7-SB564	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	221.62	--	--	--	--	--	--	--	--	--	--	217.67
X7-SS564-0102	X7-SB564	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	36.083	--	--	--	--	--	--	--	--	--	--	56.33
X7-SB565-0203	X7-SB565	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	966.05	--	--	--	--	--	--	--	--	--	--	865
X7-SB565-0304	X7-SB565	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21.33
X7-SB565-0405	X7-SB565	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	8.4833	--	--	--	--	--	--	--	--	--	--	32.33
X7-SB565-0506	X7-SB565	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SS565-0001	X7-SB565	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	2057.8	--	--	--	--	--	--	--	--	--	--	1814.33
X7-SS565-0102	X7-SB565	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	5081.9	--	--	--	--	--	--	--	--	--	--	4444
X7-SB566-0203	X7-SB566	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	1727	--	--	--	--	--	--	--	--	--	--	1526.67
X7-SB566-0304	X7-SB566	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	52.183	--	--	--	--	--	--	--	--	--	--	70.33
X7-SB566-0405	X7-SB566	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	3.1167	--	--	--	--	--	--	--	--	--	--	27.67
X7-SS566-0001	X7-SB566	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	796.23	--	--	--	--	--	--	--	--	--	--	717.33
X7-SS566-0102	X7-SB566	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	338.15	--	--	--	--	--	--	--	--	--	--	319
X7-SS567-0001	X7-SB567	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	99.333	--	--	--	--	--	--	--	--	--	--	111.33
X7-SS567-0102	X7-SB567	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	12.7	--	--	--	--	--	--	--	--	--	--	36
X7-SB568-0203	X7-SB568	2	3	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.67
X7-SB568-0304	X7-SB568	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18
X7-SS568-0001	X7-SB568	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	256.12	--	--	--	--	--	--	--	--	--	--	247.67
X7-SS568-0102	X7-SB568	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	88.2	77.483	--	--	--	--	--	--	--	--	--	--	92.33
X7-SB569-0203	X7-SB569	2	3	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.67
X7-SB569-0304	X7-SB569	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.33
X7-SS569-0001	X7-SB569	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	660.92	--	--	--	--	--	--	--	--	--	--	599.67
X7-SS569-0102	X7-SB569	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	93.1	97.033	--	--	--	--	--	--	--	--	--	--	109.33
X7-SB570-0203	X7-SB570	2	3	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19
X7-SB570-0304	X7-SB570	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10.67
X7-SS570-0001	X7-SB570	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	262.25	--	--	--	--	--	--	--	--	--	--	253
X7-SS570-0102	X7-SB570	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	11.933	--	--	--	--	--	--	--	--	--	--	35.33
X7-SS571-0001	X7-SB571	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	82.083	--	--	--	--	--	--	--	--	--	--	96.33
X7-SS571-0102	X7-SB571	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14
X7-SS572-0001	X7-SB572	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	17.3	--	--	--	--	--	--	--	--	--	--	40
X7-SS572-0102	X7-SB572	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	38	--	--	--	--	--	--	--	--	--	--	58
X7-SS573-0001	X7-SB573	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	47.967	--	--	--	--	--	--	--	--	--	--	66.67
X7-SS573-0102	X7-SB573	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	46.817	--	--	--	--	--	--	--	--	--	--	65.67
X7-SS574-0001	X7-SB574	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	59.467	--	--	--	--	--	--	--	--	--	--	76.67
X7-SS574-0102	X7-SB574	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	16.917	--	--	--	--	--	--	--	--	--	--	39.67
X7-SS575-0001	X7-SB575	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	90.517	--	--	--	--	--	--	--	--	--	--	103.67
X7-SS575-0102	X7-SB575	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20
X7-SS576-0001	X7-SB576	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	94.35	--	--	--	--	--	--	--	--	--	--	107
X7-SS576-0102	X7-SB576	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	4.65	--	--	--	--	--	--	--	--	--	--	29
X7-SS577-0001	X7-SB577	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	95.3	116.58	--	--	--	--	--	--	--	--	--	--	126.33
X7-SS577-0102	X7-SB577	1	2	20120909	--	--	--	--	--	--	--	--	--	--	--	--	1.9667	--	--	--	--	--	--	--	--	--	--	26.67
X7-SS578-0001	X7-SB578	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SS578-0102	X7-SB578	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	9.67
X7-SS579-0001	X7-SB579	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23
X7-SS579-0102	X7-SB579	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	9.33
X7-SS580-0001	X7-SB580	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SS580-0102	X7-SB580	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	6.33
X7-SS581-0001	X7-SB581	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	377.63	--	--	--	--	--	--	--	--	--	--	353.33
X7-SS581-0102	X7-SB581	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20
X7-SB582-0203	X7-SB582	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	2313.5	--	--	--	--	--	--	--	--	--	--	2036.67
X7-SB582-0304	X7-SB582	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	207.05	--	--	--	--	--	--	--	--	--	--	205
X7-SB582-0405	X7-SB582	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	7.7167	--	--	--	--	--	--	--	--	--	--	31.67
X7-SB582-0506	X7-SB582	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.33
X7-SS582-0001	X7-SB582	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	1037.4	--	--	--	--	--	--	--	--	--	--	927
X7-SS582-0102	X7-SB582	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	4003.2	--	--	--	--	--	--	--	--	--	--	3506
X7-SB583-0203	X7-SB583	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	1847.7	--	--	--	--	--	--	--	--	--	--	1631.67
X7-SB583-0304	X7-SB583	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SB583-0405	X7-SB583	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	9
X7-SB583-0506	X7-SB583	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SS583-0001	X7-SB583	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	4092.1	--	--	--	--	--	--	--	--	--	--	3583.33
X7-SS583-0102	X7-SB583	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	2425.8	--	--	--	--	--	--	--	--	--	--	2134.33
X7-SB584-0203	X7-SB584	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	3
X7-SB584-0304	X7-SB584	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8
X7-SS584-0001	X7-SB584	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	242 J	205.9	--	--	--	--	--	--	--	--	--	--	204
X7-SS584-0102	X7-SB584	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	6.33
X7-SS585-0001	X7-SB585	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	175.23	--	--	--	--	--	--	--	--	--	--	177.33
X7-SS585-0102	X7-SB585	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10.33
X7-SS586-0001	X7-SB586	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	386.07	--	--	--	--	--	--	--	--	--	--	360.67
X7-SS586-0102	X7-SB586	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	204 J	175.23	--	--	--	--	--	--	--	--	--	--	177.33
X7-SS587-0001	X7-SB587	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	138 J	129.62	--	--	--	--	--	--	--	--	--	--	137.67
X7-SS587-0102	X7-SB587	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	100.48	--	--	--	--	--	--	--	--	--	--	112.33
X7-SB588-0203	X7-SB588	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62.33
X7-SS588-0001	X7-SB588	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	129.62	--	--	--	--	--	--	--	--	--	--	258.67
X7-SS588-0102	X7-SB588	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	100.48	--	--	--	--	--	--	--	--	--	--	53
X7-SB589-0203	X7-SB589	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	239.63	--	--	--	--	--	--	--	--	--	--	233.33
X7-SB589-0304	X7-SB589	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	293.3	--	--	--	--	--	--	--	--	--	--	280
X7-SS589-0001	X7-SB589	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	409.45	--	--	--	--	--	--	--	--	--	--	381
X7-SS589-0102	X7-SB589	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	3.8833	--	--	--	--	--	--	--	--	--	--	28.33
X7-SS590-0001	X7-SB590	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	163.35	--	--	--	--	--	--	--	--	--	--	167
X7-SS590-0102	X7-SB590	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10.017	--	--	--	--	--	--	--	--	--	--	33.67
X7-SB591-0203	X7-SB591	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	322.43	--	--	--	--	--	--	--	--	--	--	305.33
X7-SB591-0304	X7-SB591	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	355.02	--	--	--	--	--	--	--	--	--	--	333.67
X7-SS591-0001	X7-SB591	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	173.32	--	--	--	--	--	--	--	--	--	--	175.67
X7-SS591-0102	X7-SB591	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	865.23	--	--	--	--	--	--	--	--	--	--	777.33
X7-SB592-0203	X7-SB592	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	416.35	--	--	--	--	--	--	--	--	--	--	387
X7-SB592-0304	X7-SB592	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	519.47	--	--	--	--	--	--	--	--	--	--	476.67
X7-SB592-0405	X7-SB592	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	1400.8	--	--	--	--	--	--	--	--	--	--	1243
X7-SB592-0506	X7-SB592	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	240 J	203.6	--	--	--	--	--	--	--	--	--	--	202
X7-SB592-0607	X7-SB592	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	23.05	--	--	--	--	--	--	--	--	--	--	45
X7-SB592-0708	X7-SB592	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.33

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS592-0001	X7-SB592	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	231.2	--	--	--	--	--	--	--	--	--	--	226
X7-SS592-0102	X7-SB592	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	302.5	--	--	--	--	--	--	--	--	--	--	288
X7-SB593-0203	X7-SB593	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.33
X7-SB593-0304	X7-SB593	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	19.6 J	95.5	--	--	--	--	--	--	--	--	--	--	108
X7-SS593-0001	X7-SB593	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	531.35	--	--	--	--	--	--	--	--	--	--	487
X7-SS593-0102	X7-SB593	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	393.73	--	--	--	--	--	--	--	--	--	--	367.33
X7-SB594-0203	X7-SB594	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	699.25	--	--	--	--	--	--	--	--	--	--	633
X7-SB594-0304	X7-SB594	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	78.25	--	--	--	--	--	--	--	--	--	--	93
X7-SS594-0001	X7-SB594	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	272.6	--	--	--	--	--	--	--	--	--	--	262
X7-SS594-0102	X7-SB594	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	477.3	--	--	--	--	--	--	--	--	--	--	440
X7-SS595-0001	X7-SB595	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	157 J	152.62	--	--	--	--	--	--	--	--	--	--	157.67
X7-SS595-0102	X7-SB595	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8
X7-SS596-0001	X7-SB596	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS596-0102	X7-SB596	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	9
X7-SS597-0001	X7-SB597	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	89.367	--	--	--	--	--	--	--	--	--	--	102.67
X7-SS597-0102	X7-SB597	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7.67
X7-SS598-0001	X7-SB598	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	21.133	--	--	--	--	--	--	--	--	--	--	43.33
X7-SS598-0102	X7-SB598	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.33
X7-SS599-0001	X7-SB599	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.33
X7-SS599-0102	X7-SB599	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7
X7-SS600-0001	X7-SB600	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	6.5667	--	--	--	--	--	--	--	--	--	--	30.67
X7-SS600-0102	X7-SB600	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10.33
X7-SB601-0203	X7-SB601	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	571.6	--	--	--	--	--	--	--	--	--	--	522
X7-SB601-0304	X7-SB601	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	7.3333	--	--	--	--	--	--	--	--	--	--	31.33
X7-SS601-0001	X7-SB601	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	1638.4	--	--	--	--	--	--	--	--	--	--	1449.67
X7-SS601-0102	X7-SB601	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	2139.4	--	--	--	--	--	--	--	--	--	--	1885.33
X7-SB602-0203	X7-SB602	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	128.85	--	--	--	--	--	--	--	--	--	--	137
X7-SB602-0304	X7-SB602	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	49.5	--	--	--	--	--	--	--	--	--	--	68
X7-SS602-0001	X7-SB602	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	113.52	--	--	--	--	--	--	--	--	--	--	123.67
X7-SS602-0102	X7-SB602	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	281.8	--	--	--	--	--	--	--	--	--	--	270
X7-SB603-0203	X7-SB603	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	305.57	--	--	--	--	--	--	--	--	--	--	290.67
X7-SB603-0304	X7-SB603	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	512.18	--	--	--	--	--	--	--	--	--	--	470.33
X7-SB603-0405	X7-SB603	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8
X7-SB603-0506	X7-SB603	5	6	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	5.33
X7-SS603-0001	X7-SB603	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	70.583	--	--	--	--	--	--	--	--	--	--	86.33
X7-SS603-0102	X7-SB603	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	272.6	--	--	--	--	--	--	--	--	--	--	262
X7-SB604-0203	X7-SB604	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	368.05	--	--	--	--	--	--	--	--	--	--	345
X7-SB604-0304	X7-SB604	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.33
X7-SS604-0001	X7-SB604	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	52.183	--	--	--	--	--	--	--	--	--	--	70.33
X7-SS604-0102	X7-SB604	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	369.58	--	--	--	--	--	--	--	--	--	--	346.33
X7-SB605-0203	X7-SB605	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	7741.5	--	--	--	--	--	--	--	--	--	--	6756.67
X7-SB605-0304	X7-SB605	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	34.55	--	--	--	--	--	--	--	--	--	--	55
X7-SS605-0001	X7-SB605	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	2420.4	--	--	--	--	--	--	--	--	--	--	2129.67
X7-SS605-0102	X7-SB605	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	5270.1	--	--	--	--	--	--	--	--	--	--	4607.67
X7-SS606-0001	X7-SB606	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	7
X7-SS606-0102	X7-SB606	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8
X7-SS607-0001	X7-SB607	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	11.933	--	--	--	--	--	--	--	--	--	--	35.33
X7-SS607-0102	X7-SB607	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	--	--	25
X7-SS608-0001	X7-SB608	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	166	155.68	--	--	--	--	--	--	--	--	--	--	160.33
X7-SS608-0102	X7-SB608	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	14.233	--	--	--	--	--	--	--	--	--	--	37.33
X7-SS609-0001	X7-SB609	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10.783	--	--	--	--	--	--	--	--	--	--	34.33
X7-SS609-0102	X7-SB609	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SB610-0203	X7-SB610	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	4.65	--	--	--	--	--	--	--	--	--	--	29
X7-SS610-0001	X7-SB610	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	1654.1	--	--	--	--	--	--	--	--	--	--	1463.33
X7-SS610-0102	X7-SB610	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	108.92	--	--	--	--	--	--	--	--	--	--	119.67
X7-SB611-0203	X7-SB611	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	207 J	240.4	--	--	--	--	--	--	--	--	--	--	234
X7-SB611-0304	X7-SB611	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	14.233	--	--	--	--	--	--	--	--	--	--	37.33
X7-SB611-0405	X7-SB611	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	33.4	--	--	--	--	--	--	--	--	--	--	54
X7-SS611-0001	X7-SB611	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	1813.2	--	--	--	--	--	--	--	--	--	--	1601.67
X7-SS611-0102	X7-SB611	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	2332.3	--	--	--	--	--	--	--	--	--	--	2053
X7-SB612-0203	X7-SB612	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	520.62	--	--	--	--	--	--	--	--	--	--	477.67
X7-SB612-0304	X7-SB612	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22.67
X7-SS612-0001	X7-SB612	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	317.45	--	--	--	--	--	--	--	--	--	--	301
X7-SS612-0102	X7-SB612	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	314.38	--	--	--	--	--	--	--	--	--	--	298.33
X7-SB613-0203	X7-SB613	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.33
X7-SB613-0304	X7-SB613	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	6.67
X7-SS613-0001	X7-SB613	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	199.77	--	--	--	--	--	--	--	--	--	--	198.67
X7-SS613-0102	X7-SB613	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	272.98	--	--	--	--	--	--	--	--	--	--	262.33
X7-SS614-0001	X7-SB614	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	108.15	--	--	--	--	--	--	--	--	--	--	119
X7-SS614-0102	X7-SB614	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	21.517	--	--	--	--	--	--	--	--	--	--	43.67
X7-SB615-0203	X7-SB615	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	23.433	--	--	--	--	--	--	--	--	--	--	45.33
X7-SB615-0304	X7-SB615	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	123 J	136.52	--	--	--	--	--	--	--	--	--	--	143.67
X7-SS615-0001	X7-SB615	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	335.85	--	--	--	--	--	--	--	--	--	--	317
X7-SS615-0102	X7-SB615	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	119.27	--	--	--	--	--	--	--	--	--	--	128.67
X7-SB616-0203	X7-SB616	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	5.67
X7-SB616-0304	X7-SB616	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16
X7-SS616-0001	X7-SB616	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	218.17	--	--	--	--	--	--	--	--	--	--	214.67
X7-SS616-0102	X7-SB616	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	297.9	--	--	--	--	--	--	--	--	--	--	284
X7-SS617-0001	X7-SB617	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	107	--	--	--	--	--	--	--	--	--	--	118
X7-SS617-0102	X7-SB617	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11
X7-SS618-0001	X7-SB618	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	5.33
X7-SS618-0102	X7-SB618	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS618-0203	X7-SB618	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SB619-0203	X7-SB619	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	2972.4	--	--	--	--	--	--	--	--	--	--	2609.67
X7-SB619-0304	X7-SB619	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	1075.3	--	--	--	--	--	--	--	--	--	--	960
X7-SB619-0405	X7-SB619	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SB619-0506	X7-SB619	5	6	20120911	--	--	--	--	--	--	--	--	--	--	--	--	4.65	--	--	--	--	--	--	--	--	--	--	29
X7-SS619-0001	X7-SB619	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	895.13	--	--	--	--	--	--	--	--	--	--	803.33
X7-SS619-0102	X7-SB619	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	2532.7	--	--	--	--	--	--	--	--	--	--	2227.33
X7-SB620-0203	X7-SB620	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	161 J	99.333	--	--	--	--	--	--	--	--	--	--	111.33
X7-SB620-0304	X7-SB620	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20.33
X7-SS620-0001	X7-SB620	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	2384	--	--	--	--	--	--	--	--	--	--	2098
X7-SS620-0102	X7-SB620	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	986.37	--	--	--	--	--	--	--	--	--	--	882.67
X7-SB621-0203	X7-SB621	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	507.97	--	--	--	--	--	--	--	--	--	--	466.67
X7-SB621-0304	X7-SB621	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SS621-0001	X7-SB621	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	323.97	--	--	--	--	--	--	--	--	--	--	306.67
X7-SS621-0102	X7-SB621	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	154 J	173.7	--	--	--	--	--	--	--	--	--	--	176
X7-SB622-0203	X7-SB622	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	372.27	--	--	--	--	--	--	--	--	--	--	348.67
X7-SB622-0304	X7-SB622	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	13.85	--	--	--	--	--	--	--	--	--	--	37
X7-SS622-0001	X7-SB622	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	98.95	--	--	--	--	--	--	--	--	--	--	111
X7-SS622-0102	X7-SB622	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	392.97	--	--	--	--	--	--	--	--	--	--	366.67
X7-SS623-0001	X7-SB623	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	40.3	--	--	--	--	--	--	--	--	--	--	60
X7-SS623-0102	X7-SB623	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.33
X7-SB624-0203	X7-SB624	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	4628	--	--	--	--	--	--	--	--	--	--	4049.33
X7-SB624-0304	X7-SB624	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	2821	--	--	--	--	--	--	--	--	--	--	2478
X7-SB624-0405	X7-SB624	4	5	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2144.4	--	--	--	--	--	--	--	--	--	--	1889.7
X7-SB624-0506	X7-SB624	5	6	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SB624-0607	X7-SB624	6	7	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.667
X7-SB624-0708	X7-SB624	7	8	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.333

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS624-0001	X7-SB624	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	334	248.07	--	--	--	--	--	--	--	--	--	--	240.67
X7-SS624-0102	X7-SB624	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	1145.1	--	--	--	--	--	--	--	--	--	--	1020.67
X7-SB625-0203	X7-SB625	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	483.43	--	--	--	--	--	--	--	--	--	--	445.33
X7-SB625-0304	X7-SB625	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	677.02	--	--	--	--	--	--	--	--	--	--	613.67
X7-SB625-0405	X7-SB625	4	5	20121003	--	--	--	--	--	--	--	--	--	--	--	--	13.083	--	--	--	--	--	--	--	--	--	--	36.333
X7-SB625-0506	X7-SB625	5	6	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.667
X7-SB625-0607	X7-SB625	6	7	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS625-0001	X7-SB625	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	455.45	--	--	--	--	--	--	--	--	--	--	421
X7-SS625-0102	X7-SB625	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	1126.3	--	--	--	--	--	--	--	--	--	--	1004.33
X7-SB626-0203	X7-SB626	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	8.33
X7-SB626-0304	X7-SB626	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.33
X7-SS626-0001	X7-SB626	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	148	126.55	--	--	--	--	--	--	--	--	--	--	135
X7-SS626-0102	X7-SB626	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.67
X7-SB627-0203	X7-SB627	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SB627-0304	X7-SB627	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.33
X7-SS627-0001	X7-SB627	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	105.85	--	--	--	--	--	--	--	--	--	--	117
X7-SS627-0102	X7-SB627	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	142	158.75	--	--	--	--	--	--	--	--	--	--	163
X7-SS628-0001	X7-SB628	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	35.317	--	--	--	--	--	--	--	--	--	--	55.67
X7-SS628-0102	X7-SB628	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	44.133	--	--	--	--	--	--	--	--	--	--	63.33
X7-SB629-0203	X7-SB629	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1113.6	--	--	--	--	--	--	--	--	--	--	993.33
X7-SB629-0304	X7-SB629	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1636.5	--	--	--	--	--	--	--	--	--	--	1448
X7-SB629-0405	X7-SB629	4	5	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22
X7-SB629-0506	X7-SB629	5	6	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14
X7-SS629-0001	X7-SB629	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	440.88	--	--	--	--	--	--	--	--	--	--	408.33
X7-SS629-0102	X7-SB629	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	818.85	--	--	--	--	--	--	--	--	--	--	737
X7-SB630-0203	X7-SB630	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14
X7-SB630-0304	X7-SB630	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10.333
X7-SS630-0001	X7-SB630	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	3499.1	--	--	--	--	--	--	--	--	--	--	3067.7
X7-SS630-0102	X7-SB630	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	33.4	--	--	--	--	--	--	--	--	--	--	54
X7-SB631-0203	X7-SB631	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS631-0001	X7-SB631	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	24
X7-SS631-0102	X7-SB631	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14
X7-SB632-0203	X7-SB632	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2917.6	--	--	--	--	--	--	--	--	--	--	2562
X7-SB632-0304	X7-SB632	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	4735.8	--	--	--	--	--	--	--	--	--	--	4143
X7-SB632-0405	X7-SB632	4	5	20121003	--	--	--	--	--	--	--	--	--	--	--	--	376.48	--	--	--	--	--	--	--	--	--	--	352.33
X7-SB632-0506	X7-SB632	5	6	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15
X7-SS632-0001	X7-SB632	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1758	--	--	--	--	--	--	--	--	--	--	1553.7
X7-SS632-0102	X7-SB632	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	3246.1	--	--	--	--	--	--	--	--	--	--	2847.7
X7-SB633-0203	X7-SB633	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	30.333	--	--	--	--	--	--	--	--	--	--	51.333
X7-SB633-0304	X7-SB633	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10.783	--	--	--	--	--	--	--	--	--	--	34.333
X7-SS633-0001	X7-SB633	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	6003.4	--	--	--	--	--	--	--	--	--	--	5245.3
X7-SS633-0102	X7-SB633	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	67.517	--	--	--	--	--	--	--	--	--	--	83.667
X7-SB634-0203	X7-SB634	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	3986.7	--	--	--	--	--	--	--	--	--	--	3491.7
X7-SB634-0304	X7-SB634	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.333
X7-SS634-0001	X7-SB634	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1531.9	--	--	--	--	--	--	--	--	--	--	1357
X7-SS634-0102	X7-SB634	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2338.4	--	--	--	--	--	--	--	--	--	--	2058.3
X7-SB635-0203	X7-SB635	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	5808.7	--	--	--	--	--	--	--	--	--	--	5076
X7-SB635-0304	X7-SB635	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	69.05	--	--	--	--	--	--	--	--	--	--	85
X7-SB635-0405	X7-SB635	4	5	20121003	--	--	--	--	--	--	--	--	--	--	--	--	4005.1	--	--	--	--	--	--	--	--	--	--	3507.7
X7-SB635-0506	X7-SB635	5	6	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.333
X7-SS635-0001	X7-SB635	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2572.6	--	--	--	--	--	--	--	--	--	--	2262
X7-SS635-0102	X7-SB635	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	4946.2	--	--	--	--	--	--	--	--	--	--	4326
X7-SB636-0203	X7-SB636	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2442.7	--	--	--	--	--	--	--	--	--	--	2149
X7-SB636-0304	X7-SB636	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	159.52	--	--	--	--	--	--	--	--	--	--	163.67
X7-SS636-0001	X7-SB636	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	942.28	--	--	--	--	--	--	--	--	--	--	844.33
X7-SS636-0102	X7-SB636	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	3714.9	--	--	--	--	--	--	--	--	--	--	3255.3
X7-SB637-0203	X7-SB637	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1804.4	--	--	--	--	--	--	--	--	--	--	1594
X7-SB637-0304	X7-SB637	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	189.8	--	--	--	--	--	--	--	--	--	--	190
X7-SB637-0405	X7-SB637	4	5	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22.333
X7-SB637-0506	X7-SB637	5	6	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SS637-0001	X7-SB637	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	2063.5	--	--	--	--	--	--	--	--	--	--	1819.3
X7-SS637-0102	X7-SB637	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	594.6	--	--	--	--	--	--	--	--	--	--	542
X7-SB638-0203	X7-SB638	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	463.5	--	--	--	--	--	--	--	--	--	--	428
X7-SB638-0304	X7-SB638	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	571.6	--	--	--	--	--	--	--	--	--	--	522
X7-SB638-0405	X7-SB638	4	5	20121006	--	--	--	--	--	--	--	--	--	--	--	328	246.15	--	--	--	--	--	--	--	--	--	--	239
X7-SB638-0506	X7-SB638	5	6	20121006	--	--	--	--	--	--	--	--	--	--	--	--	13.467	--	--	--	--	--	--	--	--	--	--	36.667
X7-SS638-0001	X7-SB638	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	310.55	--	--	--	--	--	--	--	--	--	--	295
X7-SS638-0102	X7-SB638	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	250.37	--	--	--	--	--	--	--	--	--	--	242.67
X7-SB639-0203	X7-SB639	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1672.5	--	--	--	--	--	--	--	--	--	--	1479.3
X7-SB639-0304	X7-SB639	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	55.25	--	--	--	--	--	--	--	--	--	--	73
X7-SS639-0001	X7-SB639	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	979.47	--	--	--	--	--	--	--	--	--	--	876.67
X7-SS639-0102	X7-SB639	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1879.9	--	--	--	--	--	--	--	--	--	--	1659.7
X7-SB640-0203	X7-SB640	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	433.98	--	--	--	--	--	--	--	--	--	--	402.33
X7-SB640-0304	X7-SB640	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.333
X7-SS640-0001	X7-SB640	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	312.85	--	--	--	--	--	--	--	--	--	--	297
X7-SS640-0102	X7-SB640	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1517.7	--	--	--	--	--	--	--	--	--	--	1344.7
X7-SB641-0203	X7-SB641	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	275.28	--	--	--	--	--	--	--	--	--	--	264.33
X7-SB641-0304	X7-SB641	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20
X7-SS641-0001	X7-SB641	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	76.333	--	--	--	--	--	--	--	--	--	--	91.333
X7-SS641-0102	X7-SB641	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	395.65	--	--	--	--	--	--	--	--	--	--	369
X7-SB642-0203	X7-SB642	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	331.25	--	--	--	--	--	--	--	--	--	--	313
X7-SB642-0304	X7-SB642	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SS642-0001	X7-SB642	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	230.82	--	--	--	--	--	--	--	--	--	--	225.67
X7-SS642-0102	X7-SB642	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	125.78	--	--	--	--	--	--	--	--	--	--	134.33
X7-SB643-0203	X7-SB643	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	62.917	--	--	--	--	--	--	--	--	--	--	79.667
X7-SB643-0304	X7-SB643	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.667
X7-SS643-0001	X7-SB643	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	166	178.68	--	--	--	--	--	--	--	--	--	--	180.33
X7-SS643-0102	X7-SB643	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	112.75	--	--	--	--	--	--	--	--	--	--	123
X7-SB644-0203	X7-SB644	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	950.33	--	--	--	--	--	--	--	--	--	--	851.33
X7-SB644-0304	X7-SB644	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.333
X7-SS644-0001	X7-SB644	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	259.95	--	--	--	--	--	--	--	--	--	--	251
X7-SS644-0102	X7-SB644	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	264.55	--	--	--	--	--	--	--	--	--	--	255
X7-SB645-0203	X7-SB645	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	15.383	--	--	--	--	--	--	--	--	--	--	38.333
X7-SB645-0304	X7-SB645	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SS645-0001	X7-SB645	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	103.55	--	--	--	--	--	--	--	--	--	--	115
X7-SS645-0102	X7-SB645	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	318.98	--	--	--	--	--	--	--	--	--	--	302.33
X7-SB646-0203	X7-SB646	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	5.8	--	--	--	--	--	--	--	--	--	--	30
X7-SB646-0304	X7-SB646	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21
X7-SS646-0001	X7-SB646	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	90.133	--	--	--	--	--	--	--	--	--	--	103.33
X7-SS646-0102	X7-SB646	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	178	167.18	--	--	--	--	--	--	--	--	--	--	170.33
X7-SB647-0203	X7-SB647	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21.667
X7-SB647-0304	X7-SB647	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21.667
X7-SS647-0001	X7-SB647	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	122.33	--	--	--	--	--	--	--	--	--	--	131.33
X7-SS647-0102	X7-SB647	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	594.6	--	--	--	--	--	--	--	--	--	--	542
X7-SB648-0203	X7-SB648	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1.5833	--	--	--	--	--	--	--	--	--	--	26.333
X7-SB648-0304	X7-SB648	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.667
X7-SS648-0001	X7-SB648	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	155.3	--	--	--	--	--	--	--	--	--	--	160
X7-SS648-0102	X7-SB648	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	425.55	--	--	--	--	--	--	--	--	--	--	395
X7-SB649-0203	X7-SB649	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1.2	--	--	--	--	--	--	--	--	--	--	26
X7-SB649-0304	X7-SB649	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																							XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS649-0001	X7-SB649	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	146.1	--	--	--	--	--	--	--	--	--	--	152
X7-SS649-0102	X7-SB649	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	318.6	--	--	--	--	--	--	--	--	--	--	302
X7-SB650-0203	X7-SB650	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.333
X7-SS650-0001	X7-SB650	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	112.37	--	--	--	--	--	--	--	--	--	--	122.67
X7-SS650-0102	X7-SB650	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10.783	--	--	--	--	--	--	--	--	--	--	34.333
X7-SB651-0203	X7-SB651	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	33.4	--	--	--	--	--	--	--	--	--	--	54
X7-SB651-0304	X7-SB651	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20
X7-SS651-0001	X7-SB651	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	102.78	--	--	--	--	--	--	--	--	--	--	114.33
X7-SS651-0102	X7-SB651	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	116	116.97	--	--	--	--	--	--	--	--	--	--	126.67
X7-SB652-0203	X7-SB652	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SS652-0001	X7-SB652	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	189	195.93	--	--	--	--	--	--	--	--	--	--	195.33
X7-SS652-0102	X7-SB652	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SB653-0203	X7-SB653	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	97.417	--	--	--	--	--	--	--	--	--	--	109.67
X7-SB653-0304	X7-SB653	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18
X7-SS653-0001	X7-SB653	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	120.03	--	--	--	--	--	--	--	--	--	--	129.33
X7-SS653-0102	X7-SB653	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	44.9	--	--	--	--	--	--	--	--	--	--	64
X7-SB654-0203	X7-SB654	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	12.317	--	--	--	--	--	--	--	--	--	--	35.667
X7-SB654-0304	X7-SB654	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.667
X7-SS654-0001	X7-SB654	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	44.133	--	--	--	--	--	--	--	--	--	--	63.333
X7-SS654-0102	X7-SB654	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	93.583	--	--	--	--	--	--	--	--	--	--	106.33
X7-SB655-0203	X7-SB655	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	95.883	--	--	--	--	--	--	--	--	--	--	108.33
X7-SB655-0304	X7-SB655	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.667
X7-SS655-0001	X7-SB655	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	185.97	--	--	--	--	--	--	--	--	--	--	186.67
X7-SS655-0102	X7-SB655	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	679.7	--	--	--	--	--	--	--	--	--	--	616
X7-SB656-0203	X7-SB656	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SB656-0304	X7-SB656	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SS656-0001	X7-SB656	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	128	121.18	--	--	--	--	--	--	--	--	--	--	130.33
X7-SS656-0102	X7-SB656	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	137	138.43	--	--	--	--	--	--	--	--	--	--	145.33
X7-SB657-0203	X7-SB657	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	281.42	--	--	--	--	--	--	--	--	--	--	269.67
X7-SB657-0304	X7-SB657	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	367.28	--	--	--	--	--	--	--	--	--	--	344.33
X7-SB657-0405	X7-SB657	4	5	20121006	--	--	--	--	--	--	--	--	--	--	--	--	51.417	--	--	--	--	--	--	--	--	--	--	69.667
X7-SB657-0506	X7-SB657	5	6	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SS657-0001	X7-SB657	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	445.87	--	--	--	--	--	--	--	--	--	--	412.67
X7-SS657-0102	X7-SB657	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	166.8	--	--	--	--	--	--	--	--	--	--	170
X7-SB658-0203	X7-SB658	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	32.633	--	--	--	--	--	--	--	--	--	--	53.333
X7-SB658-0304	X7-SB658	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	36.083	--	--	--	--	--	--	--	--	--	--	56.333
X7-SS658-0001	X7-SB658	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	669.73	--	--	--	--	--	--	--	--	--	--	607.33
X7-SS658-0102	X7-SB658	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1409.6	--	--	--	--	--	--	--	--	--	--	1250.7
X7-SB659-0203	X7-SB659	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.667
X7-SS659-0001	X7-SB659	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	227	168.33	--	--	--	--	--	--	--	--	--	--	171.33
X7-SS659-0102	X7-SB659	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	80.167	--	--	--	--	--	--	--	--	--	--	94.667
X7-SB660-0203	X7-SB660	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.667
X7-SB660-0304	X7-SB660	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.333
X7-SS660-0001	X7-SB660	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	272.22	--	--	--	--	--	--	--	--	--	--	261.67
X7-SS660-0102	X7-SB660	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	1920.6	--	--	--	--	--	--	--	--	--	--	1695
X7-SB661-0203	X7-SB661	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.333
X7-SS661-0001	X7-SB661	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	164	166.42	--	--	--	--	--	--	--	--	--	--	169.67
X7-SS661-0102	X7-SB661	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.333
X7-SB662-0203	X7-SB662	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SS662-0001	X7-SB662	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	779	228.9	--	--	--	--	--	--	--	--	--	--	224
X7-SS662-0102	X7-SB662	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SB663-0203	X7-SB663	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SS663-0001	X7-SB663	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	228.9	--	--	--	--	--	--	--	--	--	--	224
X7-SS663-0102	X7-SB663	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12
X7-SS664-0001	X7-SB664	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SS664-0102	X7-SB664	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11
X7-SS665-0001	X7-SB665	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.667
X7-SS665-0102	X7-SB665	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SS666-0001	X7-SB666	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11
X7-SS666-0102	X7-SB666	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18
X7-SB667-0203	X7-SB667	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.667
X7-SB667-0304	X7-SB667	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21.667
X7-SS667-0001	X7-SB667	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	38	--	--	--	--	--	--	--	--	--	--	58
X7-SS667-0102	X7-SB667	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	950.33	--	--	--	--	--	--	--	--	--	--	851.33
X7-SB668-0203	X7-SB668	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.667
X7-SB668-0304	X7-SB668	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22.667
X7-SS668-0001	X7-SB668	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	225	234.65	--	--	--	--	--	--	--	--	--	--	229
X7-SS668-0102	X7-SB668	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	182	185.97	--	--	--	--	--	--	--	--	--	--	186.67
X7-SB669-0203	X7-SB669	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23
X7-SB669-0304	X7-SB669	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SS669-0001	X7-SB669	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	348.12	--	--	--	--	--	--	--	--	--	--	327.67
X7-SS669-0102	X7-SB669	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	1.9667	--	--	--	--	--	--	--	--	--	--	26.667
X7-SB670-0203	X7-SB670	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.333
X7-SB670-0304	X7-SB670	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.667
X7-SS670-0001	X7-SB670	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	2814.5	--	--	--	--	--	--	--	--	--	--	2472.3
X7-SS670-0102	X7-SB670	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	3418.6	--	--	--	--	--	--	--	--	--	--	2997.7
X7-SB671-0203	X7-SB671	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.667
X7-SS671-0001	X7-SB671	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	2961.7	--	--	--	--	--	--	--	--	--	--	2600.3
X7-SS671-0102	X7-SB671	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	--	--	--	--	--	--	--	--	--	28
X7-SB672-0203	X7-SB672	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SS672-0001	X7-SB672	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	461.58	--	--	--	--	--	--	--	--	--	--	426.33
X7-SS672-0102	X7-SB672	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.667
X7-SB673-0203	X7-SB673	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.333
X7-SS673-0001	X7-SB673	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	1959.3	--	--	--	--	--	--	--	--	--	--	1728.7
X7-SS673-0102	X7-SB673	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.333
X7-SB674-0203	X7-SB674	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.667
X7-SS674-0001	X7-SB674	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	846.45	--	--	--	--	--	--	--	--	--	--	761
X7-SS674-0102	X7-SB674	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	15.767	--	--	--	--	--	--	--	--	--	--	38.667
X7-SB675-0203	X7-SB675	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	5.4167	--	--	--	--	--	--	--	--	--	--	29.667
X7-SB675-0304	X7-SB675	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.333
X7-SS675-0001	X7-SB675	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	865.62	--	--	--	--	--	--	--	--	--	--	777.67
X7-SS675-0102	X7-SB675	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	532.5	--	--	--	--	--	--	--	--	--	--	488
X7-SB676-0203	X7-SB676	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17.667
X7-SB676-0304	X7-SB676	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.667
X7-SS676-0001	X7-SB676	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	977.55	--	--	--	--	--	--	--	--	--	--	875
X7-SS676-0102	X7-SB676	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	411.37	--	--	--	--	--	--	--	--	--	--	382.67
X7-SB677-0203	X7-SB677	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	1104.4	--	--	--	--	--	--	--	--	--	--	985.33
X7-SB677-0304	X7-SB677	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	9.25	--	--	--	--	--	--	--	--	--	--	33
X7-SS677-0001	X7-SB677	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	391.05	--	--	--	--	--	--	--	--	--	--	365
X7-SS677-0102	X7-SB677	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	744.1	--	--	--	--	--	--	--	--	--	--	672
X7-SB678-0203	X7-SB678	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23
X7-SB678-0304	X7-SB678	3	4	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15
X7-SS678-0001	X7-SB678	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	107.38	--	--	--	--	--	--	--	--	--	--	118.33
X7-SS678-0102	X7-SB678	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	488.8	--	--	--	--	--	--	--	--	--	--	450
X7-SB679-0203	X7-SB679	2	3	20121006	--	--	--	--	--	--	--	--	--	--	--	--	18.833	--	--	--	--	--	--	--	--	--	--	41.333
X7-SB679-0304	X7-SB679	3	4	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.333
X7-SS679-0001	X7-SB679	0	1	20121006	--	--	--	--	--	--	--	--	--	--	--	--	236.18	--	--	--	--	--	--	--	--	--	--	230.33
X7-SS679-0102	X7-SB679	1	2	20121006	--	--	--	--	--	--	--	--	--	--	--	--	568.53	--	--	--	--	--	--	--	--	--	--	519.33
X7-SB680-0203	X7-SB680	2	3	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.667
X7-SB680-0304	X7-SB680	3	4	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.333

Appendix B: Analytical Data-UXO 7

					METALS (MG/KG)																						XRF (MG/KG)
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD (Laboratory data)	LEAD-Calculated from XRF	MAGNESIUM	MANGANESE	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC	LEAD (XRF data)
X7-SS680-0001	X7-SB680	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	159	140.73	--	--	--	--	--	--	--	--	--	--	147.33
X7-SS680-0102	X7-SB680	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	249	233.88	--	--	--	--	--	--	--	--	--	--	228.33
X7-SB681-0203	X7-SB681	2	3	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.667
X7-SS681-0001	X7-SB681	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	152	131.15	--	--	--	--	--	--	--	--	--	--	139
X7-SS681-0102	X7-SB681	1	2	20121006	--	--	--	--	--	--	--	--	--	--	--	--	29.567	--	--	--	--	--	--	--	--	--	--	50.667
X7-SB682-0203	X7-SB682	2	3	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.333
X7-SS682-0001	X7-SB682	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	161	164.5	--	--	--	--	--	--	--	--	--	--	168
X7-SS682-0102	X7-SB682	1	2	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	16.333
X7-SS683-0001	X7-SB683	0	1	20121006	--	--	--	--	--	--	--	--	--	--	--	--	70.583	--	--	--	--	--	--	--	--	--	--	86.333
X7-SS683-0102	X7-SB683	1	2	20121006	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.667
X7-SS684-0001	X7-SB684	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	11.333
X7-SS684-0102	X7-SB684	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13
X7-SS685-0001	X7-SB685	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	12.667
X7-SS685-0102	X7-SB685	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15
X7-SB686-0203	X7-SB686	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	7.3333	--	--	--	--	--	--	--	--	--	--	31.333
X7-SS686-0001	X7-SB686	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	448.93	--	--	--	--	--	--	--	--	--	--	415.33
X7-SS686-0102	X7-SB686	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	80.167	--	--	--	--	--	--	--	--	--	--	94.667
X7-SB687-0203	X7-SB687	2	3	20121004	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15.667
X7-SS687-0001	X7-SB687	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	262	254.58	--	--	--	--	--	--	--	--	--	--	246.33
X7-SS687-0102	X7-SB687	1	2	20121004	--	--	--	--	--	--	--	--	--	--	--	--	92.05	--	--	--	--	--	--	--	--	--	--	105
X7-SS688-0001	X7-SB688	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	15
X7-SS688-0102	X7-SB688	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	--	--	--	--	--	--	--	--	--	28
X7-SB689-0203	X7-SB689	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21.667
X7-SS689-0001	X7-SB689	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	17
X7-SS689-0102	X7-SB689	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21
X7-SS690-0001	X7-SB690	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	20.667
X7-SS690-0102	X7-SB690	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	29.567	--	--	--	--	--	--	--	--	--	--	50.667
X7-SB691-0203	X7-SB691	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	--	169.1	--	--	--	--	--	--	--	--	--	--	172
X7-SB691-0304	X7-SB691	3	4	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.667
X7-SS691-0001	X7-SB691	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23.667
X7-SS691-0102	X7-SB691	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	320.52	--	--	--	--	--	--	--	--	--	--	303.67
X7-SS691-0203	X7-SB691	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	117	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB692-0203	X7-SB692	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	24
X7-SB692-0304	X7-SB692	3	4	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	22
X7-SS692-0001	X7-SB692	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	1914.8	--	--	--	--	--	--	--	--	--	--	1690
X7-SS692-0102	X7-SB692	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	451.23	--	--	--	--	--	--	--	--	--	--	417.33
X7-SS693-0001	X7-SB693	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	29.183	--	--	--	--	--	--	--	--	--	--	50.333
X7-SS693-0102	X7-SB693	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	19.667
X7-SB694-0203	X7-SB694	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	10
X7-SS694-0001	X7-SB694	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	142	138.43	--	--	--	--	--	--	--	--	--	--	145.33
X7-SS694-0102	X7-SB694	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	15.383	--	--	--	--	--	--	--	--	--	--	38.333
X7-SS695-0001	X7-SB695	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	70.2	--	--	--	--	--	--	--	--	--	--	86
X7-SS695-0102	X7-SB695	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	11.167	--	--	--	--	--	--	--	--	--	--	34.667
X7-SB696-0203	X7-SB696	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	148	111.6	--	--	--	--	--	--	--	--	--	--	122
X7-SB696-0304	X7-SB696	3	4	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.667
X7-SS696-0001	X7-SB696	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	74.033	--	--	--	--	--	--	--	--	--	--	89.333
X7-SS696-0102	X7-SB696	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	853.35	--	--	--	--	--	--	--	--	--	--	767
X7-SS697-0001	X7-SB697	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	80.933	--	--	--	--	--	--	--	--	--	--	95.333
X7-SS697-0102	X7-SB697	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	18.667
X7-SS698-0001	X7-SB698	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	23.333
X7-SS698-0102	X7-SB698	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	14.667
X7-SS699-0001	X7-SB699	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	23.817	--	--	--	--	--	--	--	--	--	--	45.667
X7-SS699-0102	X7-SB699	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	5.8	--	--	--	--	--	--	--	--	--	--	30
X7-SS700-0001	X7-SB700	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	24
X7-SS700-0102	X7-SB700	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.333
X7-SB701-0203	X7-SB701	2	3	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	13.667
X7-SB701-0304	X7-SB701	3	4	20121008	--	--	--	--	--	--	--	--	--	--	--	--	17.683	--	--	--	--	--	--	--	--	--	--	40.333
X7-SS701-0001	X7-SB701	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	3444.7	--	--	--	--	--	--	--	--	--	--	3020.3
X7-SS701-0102	X7-SB701	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	346.58	--	--	--	--	--	--	--	--	--	--	326.33
X7-SS702-0001	X7-SB702	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	24.2	--	--	--	--	--	--	--	--	--	--	46
X7-SS702-0102	X7-SB702	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	16.533	--	--	--	--	--	--	--	--	--	--	39.333
X7-SS703-0001	X7-SB703	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	51.033	--	--	--	--	--	--	--	--	--	--	69.333
X7-SS703-0102	X7-SB703	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	21

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALF ND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS001-0002	X7-SB001	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS002-0002	X7-SB002	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS003-0002	X7-SB003	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS004-0002	X7-SB004	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS005-0002	X7-SB005	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS006-0002	X7-SB006	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS006-0002-D	X7-SB006	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS007-0002	X7-SB007	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS008-0002	X7-SB008	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS009-0002	X7-SB009	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS009-0002-D	X7-SB009	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS010-0002	X7-SB010	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS011-0002	X7-SB011	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS012-0002	X7-SB012	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS012-0002-D	X7-SB012	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS013-0002	X7-SB013	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS014-0002	X7-SB014	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS015-0002	X7-SB015	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS016-0002	X7-SB016	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS017-0002	X7-SB017	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS018-0002	X7-SB018	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS019-0002	X7-SB019	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS020-0002	X7-SB020	0	2	20071002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS021-0002	X7-SB021	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS022-0002	X7-SB022	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS023-0002	X7-SB023	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS024-0002	X7-SB024	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS025-0002	X7-SB025	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS026-0002	X7-SB026	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS027-0002	X7-SB027	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS028-0002	X7-SB028	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS029-0002	X7-SB029	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS030-0002	X7-SB030	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS030-0002-D	X7-SB030	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS031-0002	X7-SB031	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS032-0002	X7-SB032	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS033-0002	X7-SB033	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS034-0002	X7-SB034	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS035-0002	X7-SB035	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS036-0002	X7-SB036	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS037-0002	X7-SB037	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB038-0203	X7-SB038	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB038-0304	X7-SB038	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS038-0002	X7-SB038	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB039-0203	X7-SB039	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB039-0304	X7-SB039	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS039-0002	X7-SB039	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS040-0002	X7-SB040	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS041-0002	X7-SB041	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS042-0002	X7-SB042	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS043-0002	X7-SB043	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB044-0203	X7-SB044	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS044-0002	X7-SB044	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS044-0102	X7-SB044	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB045-0203	X7-SB045	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB045-0304	X7-SB045	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB045-0405	X7-SB045	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB045-0506	X7-SB045	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS045-0002	X7-SB045	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS045-0002-D	X7-SB045	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB046-0203	X7-SB046	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB046-0304	X7-SB046	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB046-0405	X7-SB046	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB046-0506	X7-SB046	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS046-0002	X7-SB046	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS047-0002	X7-SB047	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS048-0002	X7-SB048	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS049-0002	X7-SB049	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS050-0002	X7-SB050	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS051-0002	X7-SB051	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS052-0002	X7-SB052	0	2	20071003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS053-0002	X7-SB053	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS054-0002	X7-SB054	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB055-0203	X7-SB055	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB055-0304	X7-SB055	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS055-0002	X7-SB055	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS055-0002-D	X7-SB055	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS056-0002	X7-SB056	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS057-0002	X7-SB057	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS058-0002	X7-SB058	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS058-0002-D	X7-SB058	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS059-0002	X7-SB059	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS060-0002	X7-SB060	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS061-0002	X7-SB061	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS062-0002	X7-SB062	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS063-0002	X7-SB063	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS064-0002	X7-SB064	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS065-0002	X7-SB065	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS066-0002	X7-SB066	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS067-0002	X7-SB067	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS068-0002	X7-SB068	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS069-0002	X7-SB069	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS070-0002	X7-SB070	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS071-0002	X7-SB071	0	2	20071005	--	0.0016 U	0.0012 U	0.00064 U	0.00085 U	0.02132	0.02077	0.012	0.017	0.02	0.0071	0.008	0.013	0.0011 U	0.015	0.00065 U	0.0048 J	0.0012 U	0.0011 U	0.017
X7-SS071-0002-D	X7-SB071	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS072-0002	X7-SB072	0	2	20071004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS073-0002	X7-SB073	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS074-0002	X7-SB074	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SB075-0204	X7-SB075	2	4	20120906	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00373 U	0.00224 U	0.00373 U	0.00373 U
X7-SB075-0406	X7-SB075	4	6	20120906	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00462	0.00222	0.00396 U	0.00198 J	0.00238 J	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00238 U	0.00396 U	0.00396 U
X7-SS075-0002	X7-SB075	0	2	20071005	--	0.0018 U	0.0049 J	0.00071 U	0.0072	0.23208	0.23208	0.14	0.17	0.23	0.048	0.092	0.16	0.018	0.18	0.0046 J	0.06	0.0013 U	0.03	0.2
X7-SS076-0002	X7-SB076	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS077-0002	X7-SB077	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS078-0002	X7-SB078	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS079-0002	X7-SB079	0	2	20071005	--	0.0016 U	0.0011 U	0.00063 U	0.00083 U	0.00096 U	0.00096 U	0.00087 U	0.00096 U	0.00087 U	0.00096 U	0.00045 U	0.00083 U	0.001 U	0.00083 U	0.00064 U	0.0012 U	0.0011 U	0.001 U	0.001 U
X7-SS079-0002-D	X7-SB079	0	2	20071005	--	0.0016 U	0.0012 U	0.00064 U	0.00085 U	0.00098 U	0.00098 U	0.00089 U	0.00098 U	0.00089 U	0.00098 U	0.00046 U	0.00085 U	0.0011 U	0.00085 U	0.00065 U	0.0013 U	0.0012 U	0.0011 U	0.0011 U
X7-SS080-0002	X7-SB080	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS081-0002	X7-SB081	0	2	20071005	--	0.0016 U	0.0011 U	0.00064 U	0.00084 U	0.00097 U	0.00097 U	0.00088 U	0.00097 U	0.00088 U	0.00097 U	0.00046 U	0.00084 U	0.0011 U	0.00084 U	0.00064 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U
X7-SS082-0002	X7-SB082	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS082-0002-D	X7-SB082	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS083-0002	X7-SB083	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS084-0002	X7-SB084	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS085-0002	X7-SB085	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS086-0002	X7-SB086	0	2	20071005	--	0.0017 U	0.0012 U	0.00068 U	0.0009 U	0.001 U	0.001 U	0.00095 UJ	0.001 UJ	0.00095 UJ	0.001 UJ	0.00049 UJ	0.0009 UJ	0.0011 UJ	0.0009 U	0.00069 U	0.0013 UJ	0.0012 U	0.0011 U	0.0011 UJ
X7-SS087-0002	X7-SB087	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS088-0002	X7-SB088	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS089-0002	X7-SB089	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS090-0002	X7-SB090	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS091-0002	X7-SB091	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS092-0002	X7-SB092	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS093-0002	X7-SB093	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS094-0002	X7-SB094	0	2	20071005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS095-0002	X7-SB095	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS096-0002	X7-SB096	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS097-0002	X7-SB097	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS098-0002	X7-SB098	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS099-0002	X7-SB099	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS100-0002	X7-SB100	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS101-0002	X7-SB101	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS102-0002	X7-SB102	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS103-0002	X7-SB103	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS104-0002	X7-SB104	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS105-0002	X7-SB105	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS106-0002	X7-SB106	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS107-0002	X7-SB107	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS108-0002	X7-SB108	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS109-0002	X7-SB109	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS110-0002	X7-SB110	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS111-0002	X7-SB111	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS112-0002	X7-SB112	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS112-0002-D	X7-SB112	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS113-0002	X7-SB113	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS114-0002	X7-SB114	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS115-0002	X7-SB115	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB116-0204	X7-SB116	2	4	20120907	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.00288 J	0.1335	0.1317	0.0698	0.105	0.132	0.067	0.0457	0.0817	0.0036 U	0.0835	0.0036 U	0.0598	0.00216 U	0.014	0.081
X7-SB116-0406	X7-SB116	4	6	20120907	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00508	0.00269	0.00395 U	0.00237 J	0.00316 J	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00276 J	0.00395 U	0.00395 U	0.00237 U	0.00395 U	0.00276 J
X7-SS116-0002	X7-SB116	0	2	20071006	--	0.0039 J	0.03	0.00064 J8	0.064	1.20163	1.20163	0.64	0.89 J	1.4 J	0.34 J	0.49 J	0.73	0.069 J	0.78	0.016	0.33 J	0.0012 U	0.28	1.2
X7-SS117-0002	X7-SB117	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS118-0002	X7-SB118	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS119-0002	X7-SB119	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS120-0002	X7-SB120	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB121-0204	X7-SB121	2	4	20120907	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00219 U	0.00364 U	0.00364 U
X7-SB121-0406	X7-SB121	4	6	20120907	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00448 U	0.00269 U	0.00448 U	0.00448 U
X7-SS121-0002	X7-SB121	0	2	20071006	--	0.04	0.55 J	0.00075 U	0.97	11.2544	11.2544	6.4	8.1 J	12 J	2.9 J	4.7 J	7.4	0.97 J	8.7	0.27	2.9 J	0.0014 U	4.9	14
X7-SS122-0002	X7-SB122	0	2	20071006	--	0.0018 U	0.0013 U	0.00073 U	0.00096 U	0.01815	0.01755	0.01	0.014	0.02	0.0057 J	0.0064 J	0.013	0.0012 U	0.014	0.00074 U	0.0047 J	0.0013 U	0.0012 U	0.015
X7-SB123-0204	X7-SB123	2	4	20120907	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00418 U	0.00251 U	0.00418 U	0.00418 U
X7-SB123-0406	X7-SB123	4	6	20120907	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00237 U	0.00395 U	0.00395 U
X7-SS123-0002	X7-SB123	0	2	20071006	--	0.007	0.095	0.027	0.17	2.2173	2.2173	1.2	1.6 J	2.7 J	0.73 J	0.88 J	1.5	0.15 J	1.3	0.042	0.67 J	0.001 U	0.68	2.7
X7-SS124-0002	X7-SB124	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS125-0002	X7-SB125	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS126-0002	X7-SB126	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS127-0002	X7-SB127	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS127-0002-D	X7-SB127	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS128-0002	X7-SB128	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS129-0002	X7-SB129	0	2	20071006	--	0.0016 U	0.0012 U	0.00065 U	0.0042 J	0.11151	0.11096	0.055	0.088	0.13	0.036	0.048	0.076	0.0011 U	0.076	0.00066 U	0.039	0.0012 U	0.021	0.086
X7-SS130-0002	X7-SB130	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS131-0002	X7-SB131	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS132-0002	X7-SB132	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS133-0002	X7-SB133	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS134-0002	X7-SB134	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS135-0002	X7-SB135	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS136-0002	X7-SB136	0	2	20071006	--	0.0017 U	0.0012 U	0.00068 U	0.0009 U	0.001 U	0.001 U	0.00095 U	0.001 U	0.00095 U	0.001 U	0.00049 U	0.0009 U	0.0011 U	0.0009 U	0.00069 U	0.0013 U	0.0012 U	0.0011 U	0.0032 J
X7-SS137-0002	X7-SB137	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS138-0002	X7-SB138	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS139-0002	X7-SB139	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS140-0002	X7-SB140	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS141-0002	X7-SB141	0	2	20071006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS142-0002	X7-SB142	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS143-0002	X7-SB143	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS143-0002-D	X7-SB143	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS144-0002	X7-SB144	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS144-0002-D	X7-SB144	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS145-0002	X7-SB145	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS146-0002	X7-SB146	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS147-0002	X7-SB147	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS148-0002	X7-SB148	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS149-0002	X7-SB149	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS150-0002	X7-SB150	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS151-0002	X7-SB151	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS152-0002	X7-SB152	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS153-0002	X7-SB153	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS154-0002	X7-SB154	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS155-0002	X7-SB155	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS155-0002-D	X7-SB155	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS156-0002	X7-SB156	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS157-0002	X7-SB157	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS158-0002	X7-SB158	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS159-0002	X7-SB159	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS160-0002	X7-SB160	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS161-0002	X7-SB161	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS162-0002	X7-SB162	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS163-0002	X7-SB163	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS164-0002	X7-SB164	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS165-0002	X7-SB165	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS166-0002	X7-SB166	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS167-0002	X7-SB167	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS168-0002	X7-SB168	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS169-0002	X7-SB169	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS170-0002	X7-SB170	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS171-0002	X7-SB171	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS173-0002	X7-SB173	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB174-0203	X7-SB174	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB174-0304	X7-SB174	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS174-0002	X7-SB174	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS175-0002	X7-SB175	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS176-0002	X7-SB176	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS177-0002	X7-SB177	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS178-0002	X7-SB178	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS179-0002	X7-SB179	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS180-0002	X7-SB180	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB181-0203	X7-SB181	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB181-0304	X7-SB181	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS181-0002	X7-SB181	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS182-0002	X7-SB182	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS183-0002	X7-SB183	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS184-0002	X7-SB184	0	2	20071007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS185-0002	X7-SB185	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS186-0002	X7-SB186	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS187-0002	X7-SB187	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS188-0002	X7-SB188	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS189-0002	X7-SB189	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB190-0203	X7-SB190	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB190-0304	X7-SB190	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS190-0002	X7-SB190	0	2	20071009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS200-0001	X7-SB200	0	1	20111110	0.00441 U	0.00441 U	0.00224 J	0.00441 U	0.003 J	0.07073	0.07073	0.0325	0.0463	0.0627	0.0536	0.0226	0.0436	0.0102	0.0467	0.00441 U	0.0444	0.00441 U	0.0166	0.045
X7-SS200-0102	X7-SB200	1	2	20111110	0.00478 U	0.00478 U	0.00478 U	0.00478 U	0.00478 U	0.02543	0.02543	0.00938 J	0.0163	0.0198	0.0176	0.00776 J	0.0121	0.00454 J	0.0155	0.00478 U	0.0158	0.00478 U	0.0073 J	0.0147
X7-SS201-0001	X7-SB201	0	1	20111110	0.318	0.362	2.3	0.0403 U	2.56	85.2068	85.2068	52.3	56.6	79.4	48.3	23	66.8	10.3	61.4	1.24	48.4	1.43	13.7	62.6
X7-SS201-0102	X7-SB201	1	2	20111110	0.0043 U	0.0043 U	0.0043 U	0.0043 U	0.0043 U	0.0068	0.00463	0.00285 J	0.00349 J	0.0047 J	0.00357 J	0.0043 U	0.00309 J	0.0043 U	0.00395 J	0.0043 U	0.00378 J	0.0043 U	0.0027 J	0.00398 J
X7-SS202-0001	X7-SB202	0	1	20111110	0.00261 J	0.00261 J	0.0156	0.00408 U	0.0212	0.86973	0.86973	0.474	0.589	0.731	0.531	0.294	0.593	0.105	0.584	0.00408 U	0.515	0.00797 J	0.122	0.598
X7-SS202-0102	X7-SB202	1	2	20111110	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.00805	0.00805	0.0033 J	0.00414 J	0.00514 J	0.00483 J	0.00294 J	0.00373 J	0.00266 J	0.00329 J	0.00414 U	0.0037 J	0.00414 U	0.00215 J	0.00317 J
X7-SB203-0204	X7-SB203	2	4	20120907	0.00444 U	0.00444 U	0.00444 U	0.00444 U	0.00444 U	0.0057	0.00302	0.00444 U	0.00266 J	0.00355 J	0.00444 U	0.00444 U	0.00444 U	0.00444 U	0.00311 J	0.00444 U	0.00444 U	0.00266 U	0.00444 U	0.00266 J
X7-SB203-0406	X7-SB203	4	6	20120907	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00963	0.00759	0.00691 J	0.00569 J	0.00854	0.00366 J	0.00285 J	0.00447 J	0.00407 U	0.00488 J	0.00407 U	0.00325 J	0.00244 U	0.00407 U	0.00488 J
X7-SS203-0001	X7-SB203	0	1	20111110	0.00839	0.00969	0.0557	0.00391 U	0.0616	2.33583	2.33583	1.32	1.54	2.05	1.48	0.707	1.76	0.307	1.57	0.0288	1.43	0.0386	0.347	1.6
X7-SS203-0102	X7-SB203	1	2	20111110	0.00418 U	0.00418 U	0.00584 J	0.00418 U	0.00653	0.19395	0.19395	0.107	0.127	0.166	0.117	0.0634	0.138	0.0272	0.125	0.00349 J	0.117	0.00698 J	0.0354	0.128
X7-SS204-0001	X7-SB204	0	1	20111110	0.00393 U	0.00393 U	0.00811	0.00393 U	0.0111	0.2854	0.2854	0.157 J	0.187 J	0.241 J	0.19 J	0.091 J	0.193 J	0.0397	0.21 J	0.004 J	0.178 J	0.00393 U	0.0657 J	0.211 J
X7-SS204-0102	X7-SB204	1	2	20111110	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
X7-SS205-0001	X7-SB205	0	1	20111110	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.03301	0.03089	0.019	0.0234	0.0311	0.0251	0.0117	0.024	0.00424 U	0.0258	0.00424 U	0.0234	0.00424 U	0.00904	0.0256
X7-SS205-0102	X7-SB205	1	2	20111110	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.0055	0.00329	0.00398 U	0.00265 J	0.00349 J	0.00256 J	0.00398 U	0.00244 J	0.00398 U	0.00304 J	0.00398 U	0.00287 J	0.00398 U	0.00211 J	0.00289 J
X7-SS205-0102-D	X7-SB205	1	2	20111110	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U
X7-SS206-0001	X7-SB206	0	1	20111110	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00425 U	0.00222 J	0.00425 U
X7-SS206-0102	X7-SB206	1	2	20111110	0.00446 U	0.00446 U	0.00446 U	0.00446 U	0.00446 U	0.00688	0.00463	0.00228 J	0.00373 J	0.00396 J	0.00348 J	0.00446 U	0.00303 J	0.00446 U	0.00405 J	0.00446 U	0.0027 J	0.00446 U	0.00297 J	0.00369 J
X7-SS207-0001	X7-SB207	0	1	20111110	0.00237 J	0.00268 J	0.0134	0.00395 U	0.0208	0.61075	0.61075	0.35	0.419	0.55	0.344	0.22	0.451	0.0658	0.457	0.00682 J	0.333	0.00727 J	0.122	0.449
X7-SS207-0102	X7-SB207	1	2	20111110	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00945	0.00742	0.00412 J	0.00585 J	0.00655 J	0.0051 J	0.00276 J	0.00502 J	0.00406 U	0.00692 J	0.00406 U	0.00475 J	0.00406 U	0.00419 J	0.00651 J
X7-SS208-0001	X7-SB208	0	1	20111110	0.00517 J	0.00617 J	0.0308	0.00416 U	0.0361	1.31365	1.31365	0.873	1.24	1.24	0.764	0.382	0.933	0.168	0.886	0.0145	0.744	0.02	0.204	0.907
X7-SS208-0102	X7-SB208	1	2	20111110	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.01113	0.0091	0.00555 J	0.00686 J	0.0092	0.00668 J	0.00371 J	0.00645 J	0.00405 U	0.00695 J	0.00405 U	0.00726 J	0.00405 U	0.00273 J	0.00661 J
X7-SS209-0001	X7-SB209	0	1	20111110	0.00413 U	0.00413 U	0.00588 J	0.00413 U	0.00774 J	0.2545	0.2545	0.135	0.169	0.226	0.161	0.0823	0.173	0.0335	0.171	0.00296 J	0.149	0.00413 U	0.0435	0.173
X7-SS209-0102	X7-SB209	1	2	20111110	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.01686	0.01686	0.00781 J	0.0108	0.0139	0.00976	0.00591 J	0.0108	0.00286 J	0.0103	0.00393 U	0.00959	0.00393 U	0.00351 J	0.0103
X7-SS210-0001	X7-SB210	0	1	20111110	0.00211 J	0.0026 J	0.00971	0.00401 U	0.0126	0.48632	0.48632	0.287 J	0.324 J	0.442	0.291 J	0.157 J	0.354	0.0589	0.342	0.00401 U	0.286 J	0.00819	0.0717	0.348
X7-SS210-0102	X7-SB210	1	2	20111110	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00987	0.00794	0.00507 J	0.00591 J	0.00865	0.00638 J	0.00357 J	0.00615 J	0.00387 U	0.0059 J	0.00387 U	0.00613 J	0.00387 U	0.00201 J	0.00546 J
X7-SS211-0001	X7-SB211	0	1	20111110	0.00718 J	0.00874	0.0472	0.00416 U	0.0588	1.71729	1.71729	1.03	1.14	1.59	1.02	0.491	1.38	0.209	1.3	0.0235	1	0.0247	0.337	1.3
X7-SS211-0102	X7-SB211	1	2	20111110	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.01332	0.01332	0.00672 J	0.00795 J	0.0102	0.0075 J	0.00397 J	0.00784 J	0.00298 J	0.00839	0.00417 U	0.00653 J	0.00417 U	0.00341 J	0.00807 J
X7-SS212-0001	X7-SB212	0	1	20111110	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00481	0.0005	0.00408 U	0.00408 U	0.00271 J	0.00286 J	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.0023 J	0.00408 U	0.00408 U	0.00408 U
X7-SS212-0102	X7-SB212	1	2	20111110	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U
X7-SS213-0001	X7-SB213	0	1	20111110	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.03002	0.03002	0.0146	0.0174	0.0248	0.0191	0.00929	0.0189	0.00662 J	0.0183	0.00408 U	0.0195	0.00408 U	0.00529 J	0.0183
X7-SS213-0102	X7-SB213	1	2	20111110	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U
X7-SS214-0001	X7-SB214	0	1	20111110	0.0777 J	0.102	0.535	0.0394 U	0.719	35.0757	35.0757	24	23.5	30.2	18.8	12.8	27.7	4.08	23.2	0.303	19.2	0.309	3.73	24.2
X7-SS214-0102	X7-SB214	1	2	20111110	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U
X7-SS215-0001	X7-SB215	0	1	20111110	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.00552	0.0034	0.00288 J	0.00258 J	0.00246 J	0.00264 J	0.0042 U	0.00212 J	0.0042 U	0.00268 J	0.0042 U	0.00283 J	0.0042 U	0.0042 U	0.00259 J
X7-SS215-0102	X7-SB215	1	2	20111110	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U
X7-SS215-0102-D	X7-SB215	1	2	20111110	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U
X7-SS216-0001	X7-SB216	0	1	20111110	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U
X7-SS216-0102	X7-SB216	1	2	20111110	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U
X7-SS217-0001	X7-SB217	0	1	20111110	0.00499 J	0.00574 J	0.0326	0.00402 U	0.0434	1.46853	1.46853	0.907	0.968	1.26	0.893	0.513	1.2	0.191	1.07	0.0166	0.865	0.0204	0.239	1.09
X7-SS217-0102	X7-SB217	1	2	20111110	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00208 J	0.04983	0.04983	0.028	0.0324	0.0444	0.0322	0.0161	0.0365	0.00692 J	0.0334	0.00406 U	0.0307	0.00406 U	0.00921	0.0336
X7-SS218-0001	X7-SB218	0	1	20111110	0.00505 J	0.00605 J	0.03	0.00417 U	0.0387	1.44773	1.44773	0.862	0.958	1.36	0.852	0.406	1.17	0.178	1	0.0151	0.843	0.02	0.217	1.03
X7-SS218-0102	X7-SB218	1	2	20111110	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00922	0.00723	0.00428 J	0.00562 J	0.0064 J	0.00572 J	0.00314 J	0.00558 J	0.00398 U	0.00604 J	0.00398 U	0.00507 J	0.00398 U	0.00289 J	0.00551 J
X7-SS219-0001	X7-SB219	0	1	20111110	0.004 U	0.004 U	0.00324 J	0.004 U	0.00454 J	0.12897	0.12897	0.0657	0.0872	0.115	0.0821	0.0492	0.0921	0.0151	0.0927	0.004 U	0.0802	0.004 U	0.0248	0.0926
X7-SS219-0102	X7-SB219	1	2	20111110	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U
X7-SS220-0001	X7-SB220	0	1	20111110	0.00409 U	0.00409 U	0.00944	0.00409 U	0.015	0.28441	0.28441	0.157	0.19	0.237	0.186	0.101	0.198	0.0364	0.247	0.00433 J	0.174	0.00409 U	0.0848	0.241
X7-SS220-0102	X7-SB220	1	2	20111110	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.01	0.00789	0.00384 U	0.00646 J	0.00869	0.006 J	0.00346 J	0.00384 U	0.00384 U	0.00587 J	0.00384 U	0.00527 J	0.00384 U	0.00228 J	0.00596 J
X7-SS221-0001	X7-SB221	0	1	20111110	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.0047	0.00034	0.00395 U	0.00395 U	0.00336 J	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00256 J	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00269 J
X7-SS221-0102	X7-SB221	1	2	20111110	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U
X7-SS222-0001	X7-SB222	0	1	20111110	0.004 U	0.004 U	0.00562 J	0.004 U	0.00873	0.24615	0.24615	0.119 J	0.168 J	0.207 J	0.155 J	0.0796 J	0.151 J	0.0294	0.164 J	0.00296 J	0.152 J	0.004 U	0.0484	0.156 J
X7-SS222-0001-D	X7-SB222	0	1	20111110	0.00384 U	0.00215 J	0.00864	0.00384 U	0.0121	0.36331	0.36331	0.172	0.248	0.328	0.229	0.118	0.225	0.0418	0.253	0.00451 J	0.221	0.00384 U	0.0664	0.249
X7-SS222-0102	X7-SB222	1	2	20111110	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.00932	0.00692	0.004 U	0.00617 J	0.0071 J	0.00562 J	0.00382 J	0.004 U	0.004 U	0.00683 J	0.004 U	0.004 U	0.004 U	0.00402 J	0.00655 J
X7-SS223-0001	X7-SB223	0	1	20111110	0.00408 U	0.00213 J	0.00321 J	0.00408 U	0.00438 J	0.10681	0.10681	0.0498	0.072	0.0923	0.067	0.0308	0.0639	0.0139	0.0816	0.00408 U	0.0633	0.00408 U	0.0277	0.0788
X7-SS223-0102	X7-SB223	1	2	20111110	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00627	0.00389	0.00393 U	0.00352 J	0.00366 J	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00326 J	0.00393 U	0.00393 U	0.00393 U	0.00257 J	0.00311 J
X7-SS224-0001	X7-SB224	0	1	20111110	0.00423 U	0.00423 U	0.00423 U	0.00423 U	0.00423 U	0.0211	0.01898	0.0105	0.014	0.0216	0.0159	0.00699 J	0.0143	0.00423 U	0.0184	0.00423 U	0.0169	0.00423 U	0.00895	0.0172
X7-SS225-0001	X7-SB225	0	1	20111110	0.00369 U	0.00369 U	0.00232 J	0.00369 U	0.00194 J	0.05631	0.05447	0.0273	0.0423	0.0579	0.0377	0.0183	0.0367	0.00369 U	0.0425	0.00369 U	0.0343	0.00369 U	0.0132	0.0416
X7-SS225-0102	X7-SB225	1	2	20111110	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00455	0.00052	0.00384 U	0.00384 U	0.00295 J	0.00384 U	0.00229 J	0.00384 U	0.00384 U	0.00218 J	0.00384 U	0.002 J	0.00384 U	0.00203 J	0.00225 J
X7-SS226-0001	X7-SB226	0	1	20111110	0.00395 U	0.00395 U	0.00451 J	0.00395 U	0.00613 J	0.29638	0.29638	0.136	0.2	0.252	0.177	0.101	0.165	0.0391	0.167	0.00395 U	0.173	0.00395 U	0.0311	0.169

Appendix B: Analytical Data-UXO 7

SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
					1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS226-0102	X7-SB226	1	2	20111110	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U
X7-SB227-0204	X7-SB227	2	4	20120907	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00222 U	0.00371 U	0.00371 U
X7-SB227-0406	X7-SB227	4	6	20120907	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00241 U	0.00402 U	0.00402 U
X7-SS227-0001	X7-SB227	0	1	20111110	0.00406 U	0.00406 U	0.00432 J	0.00406 U	0.00545 J	0.16794	0.16794	0.0735	0.111	0.148	0.113	0.0489	0.0994	0.0238	0.111	0.00246 J	0.104	0.00406 U	0.0322	0.109
X7-SS228-0001	X7-SB228	0	1	20111110	0.00412 U	0.00412 U	0.00262 J	0.00412 U	0.00363 J	0.11889	0.11889	0.0553	0.079	0.102	0.0821	0.0355	0.0703	0.0161	0.0776	0.00412 U	0.0763	0.00412 U	0.02	0.0767
X7-SS228-0102	X7-SB228	1	2	20111110	0.00389 U	0.00389 U	0.00389 U	0.00389 U	0.00389 U	0.01293	0.01293	0.00583 J	0.00847	0.00992	0.00842	0.00325 J	0.00759 J	0.00211 J	0.00827	0.00389 U	0.00734 J	0.00389 U	0.00348 J	0.00776 J
X7-SS229-0001	X7-SB229	0	1	20111110	0.0259 J	0.0294 J	0.141	0.039 U	0.147	5.49382	5.49382	2.79	3.66	4.79	3.54	1.73	3.52	0.729	3.57	0.0733 J	3.26	0.0949	0.832	3.65
X7-SS229-0102	X7-SB229	1	2	20111110	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00871	0.00669	0.00394 J	0.00513 J	0.00627 J	0.00525 J	0.00243 J	0.00452 J	0.00405 U	0.00583 J	0.00405 U	0.00509 J	0.00405 U	0.00317 J	0.0052 J
X7-SS230-0001	X7-SB230	0	1	20111110	0.00413 U	0.00413 U	0.00805 J	0.00413 U	0.00946	0.29237	0.29237	0.144	0.193	0.251	0.191	0.0895	0.176	0.0405	0.185	0.00445 J	0.183	0.00413 U	0.0557	0.183
X7-SS230-0102	X7-SB230	1	2	20111110	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.01612	0.01612	0.00755 J	0.0101	0.014	0.0121	0.00502 J	0.00883	0.00275 J	0.0101	0.00392 U	0.0106	0.00392 U	0.00402 J	0.01
X7-SS231-0001	X7-SB231	0	1	20111110	0.00389 U	0.00389 U	0.00389 U	0.00389 U	0.00389 U	0.00998	0.00784	0.00389 U	0.00649 J	0.00759 J	0.00594 J	0.003 J	0.00389 U	0.00389 U	0.00541 J	0.00389 U	0.0056 J	0.00389 U	0.00281 J	0.00473 J
X7-SS232-0001	X7-SB232	0	1	20111110	0.0968	0.139	1.18	0.041 U	3.33	9.09369	9.09369	8.11	5.93	7.62	4.25	3.22	7.49	1.08	16.4	1.3	4.71	0.313	11.3	13.1
X7-SS232-0102	X7-SB232	1	2	20111110	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00454	0.00068	0.00193 J	0.00384 U	0.00276 J	0.00235 J	0.00384 U	0.00384 U	0.00384 U	0.00208 J	0.00384 U	0.00212 J	0.00384 U	0.00384 U	0.00197 J
X7-SS233-0001	X7-SB233	0	1	20111110	0.00401 U	0.00401 U	0.00318 J	0.00401 U	0.00433 J	0.13613	0.13613	0.0683	0.0901	0.121	0.0883	0.0426	0.0829	0.0179	0.0886	0.00401 U	0.0869	0.00401 U	0.0252	0.0877
X7-SS233-0102	X7-SB233	1	2	20111110	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U
X7-SS234-0001	X7-SB234	0	1	20111110	0.0039 U	0.0039 U	0.00447 J	0.0039 U	0.0069 J	0.13774	0.13774	0.0763 J	0.0914 J	0.124 J	0.0993 J	0.0451 J	0.0862 J	0.0175	0.115 J	0.0039 U	0.0827 J	0.0039 U	0.0418 J	0.111 J
X7-SS234-0102	X7-SB234	1	2	20111110	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.02855	0.02652	0.0152	0.0203	0.0256	0.0224	0.00955	0.0187	0.00405 U	0.0258	0.00405 U	0.0203	0.00405 U	0.0103	0.0231
X7-SS237-0001	X7-SB237	0	1	20111110	0.00438 U	0.00438 U	0.00438 U	0.00438 U	0.00438 U	0.0082	0.00577	0.00438 U	0.00467 J	0.00644 J	0.00526 J	0.00438 U	0.00438 U	0.00438 U	0.00588 J	0.00438 U	0.00456 J	0.00438 U	0.00381 J	0.00465 J
X7-SS238-0001	X7-SB238	0	1	20111110	0.00411 U	0.00411 U	0.00411 U	0.00411 U	0.00411 U	0.01633	0.01428	0.00747 J	0.0112	0.0134	0.0105	0.00565 J	0.00897	0.00411 U	0.0128	0.00411 U	0.00923	0.00411 U	0.00597 J	0.0127
X7-SS239-0001	X7-SB239	0	1	20111110	0.00434 U	0.00434 U	0.00434 U	0.00434 U	0.00434 U	0.0144	0.01223	0.00671 J	0.00939	0.0123	0.0091	0.00518 J	0.00878	0.00434 U	0.0102	0.00434 U	0.00881	0.00434 U	0.00536 J	0.00944
X7-SS240-0001	X7-SB240	0	1	20111110	0.00395 U	0.00395 U	0.00251 J	0.00395 U	0.00386 J	0.07255	0.07255	0.0379	0.0486	0.0621	0.0492	0.0248	0.0458	0.00907	0.0597	0.00395 U	0.0459	0.00395 U	0.0233	0.058
X7-SS240-0102	X7-SB240	1	2	20111110	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00612	0.00419	0.00221 J	0.00323 J	0.00427 J	0.00381 U	0.00381 U	0.00267 J	0.00381 U	0.00342 J	0.00381 U	0.00313 J	0.00381 U	0.00208 J	0.0033 J
X7-SS241-0001	X7-SB241	0	1	20111110	0.00278 J	0.00338 J	0.0137	0.00388 U	0.0203	0.66645	0.66645	0.342	0.444	0.624	0.406	0.193	0.424	0.0845	0.451	0.00716 J	0.39	0.00718 J	0.111	0.451
X7-SS241-0102	X7-SB241	1	2	20111110	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.03276	0.03276	0.0139	0.0212	0.0304	0.0196	0.00854	0.0174	0.00503 J	0.0192	0.00405 U	0.02	0.00405 U	0.00591 J	0.0194
X7-SB242-0204	X7-SB242	2	4	20120906	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.05584	0.0538	0.0326	0.0427	0.0505	0.0305	0.0199	0.0334	0.00407 U	0.035	0.00407 U	0.0256	0.00244 U	0.00489 J	0.0326
X7-SB242-0406	X7-SB242	4	6	20120906	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00244 U	0.00407 U	0.00407 U
X7-SS242-0001	X7-SB242	0	1	20111109	0.00495 U	0.00495 U	0.00389 J	0.00495 U	0.00643 J	0.25702	0.25702	0.145	0.175	0.219	0.145	0.0934	0.182	0.0296	0.172	0.00272 J	0.149	0.00495 U	0.0291	0.172
X7-SS242-0102	X7-SB242	1	2	20111109	0.0038 U	0.0038 U	0.00476 J	0.0038 U	0.00712 J	0.21626	0.21626	0.123	0.146	0.187	0.13	0.0803	0.154	0.0251	0.152	0.00263 J	0.132	0.0029 J	0.0321	0.153
X7-SB243-0204	X7-SB243	2	4	20120906	0.0223 J	0.0315 J	0.217	0.0186 U	0.347	18.4455	18.4362	10.3	14.7	18.4	9.11	6.16	12.6	0.0186 U	11.6	0.0928	7.92	0.115	1.54	10.7
X7-SB243-0406	X7-SB243	4	6	20120906	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.08405	0.08207	0.0471	0.0649	0.0843	0.0444	0.0289	0.057	0.00396 U	0.0495	0.00396 U	0.0368	0.00238 U	0.00634 J	0.0471
X7-SS243-0001	X7-SB243	0	1	20111109	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.02105	0.02084	0.00414 U	0.0135	0.0201	0.0136	0.00779 J	0.00414 U	0.00381 J	0.0142	0.00414 U	0.0144	0.00414 U	0.00424 J	0.0143
X7-SS243-0102	X7-SB243	1	2	20111109	0.00401 U	0.00401 U	0.00556 J	0.00401 U	0.0104	0.34381	0.34381	0.201	0.233	0.273	0.205	0.126	0.253	0.0415	0.191	0.00389 J	0.204	0.00494 J	0.0405	0.203
X7-SS244-0001	X7-SB244	0	1	20111109	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.05851	0.05851	0.0341	0.0391	0.0522	0.0311	0.018	0.0438	0.00721 J	0.0451	0.00401 U	0.0335	0.00401 U	0.0133	0.043
X7-SS244-0102	X7-SB244	1	2	20111109	0.00395 U	0.00395 U	0.00395 U	0.00395 U	0.00543 J	0.03129	0.03129	0.0184	0.0199	0.0252	0.0175	0.00985	0.0207	0.00544 J	0.0223	0.00395 U	0.0147	0.00395 U	0.00533 J	0.0217
X7-SS245-0001	X7-SB245	0	1	20111109	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.0067 J	0.02693	0.02672	0.00414 U	0.018	0.0263	0.0183	0.00968	0.00414 U	0.00412 J	0.0206	0.00414 U	0.0187	0.00414 U	0.00684 J	0.0191
X7-SS245-0102	X7-SB245	1	2	20111109	0.0385 U	0.0385 U	0.0385 U	0.0385 U	0.0385 U	0.04922	0.02591	0.0385 U	0.0227 J	0.0321 J	0.0385 U	0.0385 U	0.0385 U	0.0385 U	0.0275 J	0.0385 U	0.0385 U	0.0385 U	0.0385 U	0.0271 J
X7-SS246-0001	X7-SB246	0	1	20111109	0.00397 U	0.00397 U	0.00397 U	0.00397 U	0.00397 U	0.04037	0.04037	0.0176	0.0268	0.0347	0.0255	0.0147	0.0208	0.00556 J	0.0236	0.00397 U	0.0261	0.00397 U	0.00397 U	0.0229
X7-SS246-0102	X7-SB246	1	2	20111109	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00242 J	0.10501	0.10501	0.0594	0.0708	0.0894	0.0619	0.035	0.0683	0.0128	0.0688	0.00386 U	0.0611	0.00386 U	0.0118	0.0685
X7-SB247-0204	X7-SB247	2	4	20120906	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00587	0.00567	0.00361 U	0.00289 J	0.00289 J	0.00361 J	0.00361 U	0.00361 U	0.00217 J	0.0018 J	0.00361 U	0.00325 J	0.00217 U	0.00361 U	0.00361 U
X7-SB247-0406	X7-SB247	4	6	20120906	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00239 U	0.00398 U	0.00398 U
X7-SS247-0001	X7-SB247	0	1	20111109	0.00409 U	0.00409 U	0.00208 J	0.00409 U	0.0049 J	0.15317	0.15317	0.087	0.103	0.136	0.0851	0.0503	0.102	0.0182	0.109	0.00409 U	0.0906	0.00409 U	0.0224	0.108
X7-SS247-0102	X7-SB247	1	2	20111109	0.0385 U	0.0385 U	0.0932	0.0385 U	0.198	5.69607	5.69607	3.07	3.86	5.36	3.5	1.79	4.17	0.643	4.22	0.0385 U	3.28	0.0589 J	0.933	4.18
X7-SS248-0001	X7-SB248	0	1	20111109	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00852	0.00648	0.0037 J	0.00497 J	0.00673 J	0.00542 J	0.00245 J	0.00527 J	0.00408 U	0.00687 J	0.00408 U	0.00439 J	0.00408 U	0.00408 U	0.00653 J
X7-SS248-0001-D	X7-SB248	0	1	20111109	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00643	0.00424	0.00399 U	0.00347 J	0.00436 J	0.00368 J	0.0033 J	0.00399 U	0.00399 U	0.00501 J	0.00399 U	0.00299 J	0.00399 U	0.00339 J	0.00456 J
X7-SS248-0102	X7-SB248	1	2	20111109	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U	0.0414 U
X7-SS249-0001	X7-SB249	0	1	20111109	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0022 J	0.01301	0.0107	0.0042 U	0.00882	0.0101	0.0087	0.00522 J	0.0042 U	0.0042 U	0.00932	0.0042 U	0.00815 J	0.0042 U	0.00492 J	0.00924
X7-SS249-0102	X7-SB249	1	2	20111109	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.02663	0.02644	0.00393 U	0.0189	0.027	0.0164	0.0125	0.00393 U	0.003 J	0.0232	0.00393 U	0.0171	0.00393 U	0.00671 J	0.0219
X7-SS250-0001	X7-SB250	0	1	20111109	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00892	0.00676	0.00392 U	0.00531 J	0.00816	0.00611 J	0.0043 J	0.00392 U	0.00392 U	0.0104	0.00392 U	0.00593 J	0.00392 U	0.00864	0.00842
X7-SS250-0001-D	X7-SB250	0	1	20111109	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.01337	0.01133	0.00672 J	0.00869	0.0119	0.0072 J	0.00476 J	0.00901	0.00409 U	0.01	0.00409 U	0.00721 J	0.00409 U	0.00442 J	0.0095
X7-SS250-0102	X7-SB250	1	2	20111109	0.00399 U	0.00399 U	0.00235 J	0.00399 U	0.00481 J	0.13195	0.13195	0.0724	0.0904	0.113	0.0753	0.0456	0.0891	0.0146	0.0887	0.00399 U	0.0786	0.00399 U	0.0219	0.0881
X7-SS251-0001	X7-SB251	0	1	20111109	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.01887	0.01887	0.00912	0.0117	0.0147	0.0108	0.00735 J	0.0121	0.00364 J	0.0124	0.00417 U	0.0106	0.00417 U	0.00415 J	0.0115
X7-SS251-0102	X7-SB251	1	2	20111109	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.01965	0.01965	0.00858	0.0115	0.0185	0.0118	0.0057 J	0.0116	0.004 J	0.0126	0.00399 U	0.0137	0.00399 U	0.00595 J	0.012
X7-SS252-0001	X7-SB252	0	1	20111109	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.01174	0.0095	0.00406 U	0.00767 J	0.0102	0.0075 J	0.00487 J	0.00406 U	0.00406 U	0.00776 J	0.00406 U	0.00763 J	0.00406 U	0.00376 J	0.0076 J
X7-SS252-0102	X7-SB252	1	2	20111109	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.03618	0.03415	0.0211	0.0258	0.0362	0.026	0.0161	0.0239	0.00406 U	0.0272	0.00406 U	0.0244	0.00406 U	0.00523 J	0.0281
X7-SS253-0001	X7-SB253	0	1	20111109	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00212 J	0.00935	0.00671	0.00403 U	0.00671 J	0.00403 U	0.00507 J	0.00403 U	0.00403 U	0.00403 U	0.00836	0.00403 U	0.00403 U	0.00403 U	0.0048 J	0.00725 J
X7-SS253-0102	X7-SB253	1	2	20111109	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00255 J	0.06295	0.06295	0.0291	0.0426	0.0525	0.0343	0.02	0.0358	0.00822	0.0329	0.00403 U	0.0373	0.00403 U	0.0066 J	0.0335
X7-SB254-0204	X7-SB254	2	4	20120906	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00332 J	0.07531	0.07347	0.0417	0.058	0.0731	0.0443	0.0244	0.0517	0.00369 U	0.0476	0.00369 U	0.0369	0.00222 U	0.0159	0.0432
X7-SB254-0406	X7-SB254	4	6	20120906	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.0024 U	0.00399 U	0.00399 U
X7-SS254-0001	X7-SB254	0	1	20111109	0.00413 U	0.00413 U	0.00681 J	0.00413 U	0.0114	0.6998	0.6998	0.409	0.488	0.639	0.331	0.24	0.499	0.0691	0.428	0.0036 J	0.35	0.00413 U	0.0598	0.455
X7-SS254-0102	X7-SB254	1	2	20111109	0.00393 U	0.00393 U	0.00378 J	0.00393 U	0.00554 J	0.26536	0.26536	0.152	0.182	0.245	0.136	0.0876	0.182	0.0287	0.171	0.00393 U	0.139	0.00393 U	0.0257	0.178
X7-SB255-0204	X7-SB255	2	4	20120906	0.00224 J	0.00374 J	0.0202 J	0.00374 U	0.0265 J	1.4774	1.47553	0.729 J	1.18 J	1.45 J	0.887 J	0.467 J	0.964 J	0.00374 U	0.801 J	0.0142	0.72 J	0.00897	0.129 J	0.721 J
X7-SB255-0204-D	X7-SB255	2	4	20120906	0.00359 U	0.00359 U	0.00359 J	0.00359 U	0.00538 J	0.3377	0.33591	0.17 J	0.267 J	0.35 J	0.181 J	0.13 J	0.206 J	0.00359 U	0.183 J	0.00287 J	0.154 J	0.00215 U	0.0273 J	0.192 J
X7-SB255-0406	X7-SB255	4	6	20120906	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00551	0.00291	0.00429 U	0.00257 J	0.00343 J	0.00257 J	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00429 U	0.00257 U	0.00429 U	0.00429 U
X7-SS255-0001	X7-SB255	0	1	20111109	0.00489 J	0.00764 J	0.0283	0.004 U	0.0381	1.7376	1.7376	1.12	1.22	1.58	0.713	0.689	1.21	0.16	1.2	0.0138	0.795	0.0331	0.179	1.23
X7-SS255-0102	X7-SB255	1	2	20111109	0.0382 U	0.0382 U	0.119	0.0382 U	0.213	9.4851	9.4851	5.88	6.55	8.08	4.32	3.2	7.1	1.03	7.26	0.0382 U	4.7	0.0582 J	1.12	7.36
X7-SB256-0204	X7-SB256	2	4	20120906	0.00364 U	0.00364 U	0.00255 J	0.00364 U	0.00473 J	0.2771	0.27528	0.144	0.218	0.281	0.164	0.08	0.18	0.00364 U	0.168	0.00364 U	0.138	0.00218 U	0.0276	0.157
X7-SB256-0406	X7-SB256	4	6	20120906	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00232 U	0.00387 U	0.00387 U
X7-SS256-0001	X7-SB256	0	1	20111109	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.02781	0.02781	0.0162	0.0178	0.0246	0.0162	0.0084	0.0203	0.00438 J	0.0182	0.00417 U	0.0145	0.00417 U	0.00562 J	0.018
X7-SS256-0102	X7-SB256	1	2	20111109	0.00411 U	0.00411 U	0.00304 J	0.00411 U	0.00511 J	0.16645	0.16645	0.104	0.112	0.149	0.0812	0.0545	0.129	0.0204	0.112	0.00411 U	0.0808	0.00411 U	0.0224	0.112
X7-SS257-0001	X7-SB257	0	1	20111109	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.03589	0.03589	0.0185	0.0243	0.0328	0.0214	0.0119	0.0236	0.00437 J	0.0229	0.00417 U	0.0195	0.00417 U	0.00542 J	0.0237
X7-SS257-0001-D	X7-SB257	0	1	20111109	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00301 J	0.05363	0.05363	0.0236	0.0364	0.0439	0.033	0.0151	0.0293	0.00689 J	0.0341	0.00399 U	0.0341	0.00399 U	0.00901	0.0324
X7-SS257-0102	X7-SB257	1	2	20111109	0.00421 U	0.00421 U	0.00437 J	0.00421 U	0.00691 J	0.3454	0.3454	0.203	0.238 J	0.312 J	0.175 J	0.115 J	0.249 J	0.0363	0.213 J	0.00266 J	0.182 J	0.00421 U	0.0315	0.225 J
X7-SS258-0001	X7-SB258	0	1	20111109	0.00446 U	0.00446 U	0.00446 U	0.00446 U	0.00446 U	0.0103	0.00784	0.00446 U	0.00616 J	0.01	0.00618 J	0.00373 J	0.00446 U	0.00446 U	0.00781 J	0.00446 U	0.00647 J	0.00446 U	0.00286 J	0.00724 J
X7-SS258-0102	X7-SB258	1	2	20111109	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U
X7-SS259-0001	X7-SB259	0	1	20111109	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U	0.00442 U
X7-SS259-0102	X7-SB259	1	2	20111109	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U
X7-SS260-0001	X7-SB260	0	1	20111109	0.00375 U	0.00375 U	0.00375 U	0.00375 U	0.00375 U	0.01225	0.01206	0.00375 U	0.00762	0.0119	0.00707 J	0.00426 J	0.00375 U	0.00256 J	0.00902	0.00375 U	0.00647 J	0.00375 U	0.00384 J	0.00861
X7-SS260-0102	X7-SB260	1	2	20111109	0.00399 U	0.00399 U	0.00271 J	0.00399 U	0.00473 J	0.14745	0.14745	0.0786	0.0997	0.139	0.076	0.0483	0.0973	0.0176	0.0889	0.00201 J	0.0781	0.00399 U	0.0199	0.0903
X7-SB261-0204	X7-SB261	2	4	20120906	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00441	0.00212	0.00378 U	0.00189 J	0.00227 J	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00227 U	0.00378 U	0.00378 U
X7-SB261-0406	X7-SB261	4	6	20120906	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.03071	0.02869	0.0193	0.0225	0.0278	0.0161	0.00966	0.0181	0.00403 U	0.0169	0.00403 U	0.0137	0.00242 U	0.00403 U	0.0161
X7-SS261-0001	X7-SB261	0	1	20111109	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.02982	0.02982	0.0173	0.0199	0.0281	0.0161	0.0108	0.0216	0.00358 J	0.0199	0.00398 U	0.0167	0.00398 U	0.00437 J	0.0204
X7-SS261-0102	X7-SB261	1	2	20111109	0.0395 U	0.0395 U	0.0395 U	0.0395 U	0.0395 U	0.29309	0.29309	0.124	0.191	0.262	0.156	0.0916	0.171	0.0452 J	0.158	0.0395 U	0.172	0.0395 U	0.0282 J	0.159
X7-SS262-0001	X7-SB262	0	1	20111109	0.00405 U	0.00405 U	0.00765 J	0.00405 U	0.0115	0.49805	0.49805	0.3	0.345	0.473	0.229	0.169	0.362	0.0493	0.336	0.00389 J	0.244	0.00405 U	0.0549	0.345
X7-SS262-0102	X7-SB262	1	2	20111109	0.00397 U	0.00397 U	0.00397 U	0.00397 U	0.00275 J	0.09023	0.09023	0.0458	0.0604	0.0814	0.0525	0.0283	0.0594	0.0112	0.0544	0.00397 U	0.0557	0.00397 U	0.0113	0.0551
X7-SS263-0001	X7-SB263	0	1	20111109	0.00389 U	0.00389 U	0.00587 J	0.00389 U	0.0119	0.41523	0.41523	0.248	0.283	0.372	0.218	0.133	0.3	0.0468	0.301	0.00368 J	0.218	0.00389 U	0.0559	0.301
X7-SS263-0102	X7-SB263	1	2	20111109	0.00388 U	0.00388 U	0.00388 U	0.00388 U	0.00388 U	0.00583	0.0037	0.00388 U	0.00305 J	0.00345 J	0.00274 J	0.00196 J	0.00388 U	0.00388 U	0.00286 J	0.00388 U	0.00283 J	0.00388 U	0.00388 U	0.00282 J
X7-SS265-0001	X7-SB265	0	1	20111109	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.01842	0.01617	0.00408 U	0.0133	0.0189	0.00976	0.00652 J	0.00408 U	0.00408 U	0.0199	0.00408 U	0.00917	0.00408 U	0.00895	0.0183
X7-SS265-0102	X7-SB265	1	2	20111109	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00585	0.00334	0.00415 U	0.00287 J	0.00467 J	0.00221 J	0.00415 U	0.00415 U	0.00415 U	0.00642 J	0.00415 U	0.00415 U	0.00415 U	0.0061 J	0.00455 J
X7-SS266-0001	X7-SB266	0	1	20111109	0.00413 U	0.00413 U	0.00413 U	0.00413 U	0.00413 U	0.01354	0.01147	0.00644 J	0.00893	0.0126	0.00668 J	0.00497 J	0.00776 J	0.00413 U	0.00867	0.00413 U	0.0058 J	0.00413 U	0.00327 J	0.00824 J
X7-SS266-0102	X7-SB266	1	2	20111109	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.0428	0.0428	0.0201	0.0269	0.0406	0.0225	0.0158	0.0264	0.00726 J	0.0237	0.00404 U	0.0239	0.00404 U	0.00441 J	0.0229
X7-SS267-0001	X7-SB267	0	1	20111109	0.00397 U	0.00397 U	0.00397 U	0.00397 U	0.00397 U	0.01389	0.01171	0.00397 U	0.00957	0.0136	0.0069 J	0.00561 J	0.00397 U	0.00397 U	0.009	0.00397 U	0.00723 J	0.00397 U	0.0032 J	0.00904
X7-SS267-0102	X7-SB267	1	2	20111109	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.02216	0.02216	0.0117	0.0141	0.0185	0.0119	0.00785 J	0.0129	0.00378 J	0.0132	0.00405 U	0.0117	0.00405 U	0.00408 J	0.013
X7-SS270-0001	X7-SB270	0	1	20111109	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.01184	0.00981	0.00642 J	0.00758 J	0.00949	0.00585 J	0.00463 J	0.00773 J	0.00406 U	0.00983	0.00406 U	0.00588 J	0.00406 U	0.00483 J	0.00835
X7-SS270-0102	X7-SB270	1	2	20111109	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
X7-SS270-0102-D	X7-SB270	1	2	20111109	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U
X7-SS271-0001	X7-SB271	0	1	20111109	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.08336	0.08336	0.0414	0.0559	0.079	0.0412	0.0279	0.0547	0.0106	0.0491	0.00422 U	0.0449	0.00422 U	0.00948	0.0488
X7-SS271-0102	X7-SB271	1	2	20111109	0.00398 U	0.00398 U	0.00297 J	0.00398 U	0.00403 J	0.15333	0.15333	0.0832	0.106	0.145	0.0723	0.0546	0.102	0.0162	0.0961	0.00398 U	0.0766	0.00398 U	0.0169	0.0975
X7-SS272-0001	X7-SB272	0	1	20111109	0.00409 U	0.00409 U	0.00275 J	0.00409 U	0.00403 J	0.13957	0.13957	0.0743	0.0932	0.131	0.0691	0.0488	0.0935	0.0181	0.0865	0.00214 J	0.0716	0.00409 U	0.0215	0.0839
X7-SS272-0102	X7-SB272	1	2	20111109	0.00412 U	0.00412 U	0.00272 J	0.00412 U	0.00537 J	0.17711	0.17711	0.0974	0.121	0.163	0.086	0.0641	0.117	0.021	0.114	0.00412 U	0.0831	0.00412 U	0.0208	0.116

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SB274-0203	X7-SB274	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB274-0304	X7-SB274	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS274-0001	X7-SB274	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS274-0102	X7-SB274	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB275-0203	X7-SB275	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB275-0304	X7-SB275	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS275-0001	X7-SB275	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS275-0102	X7-SB275	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS276-0001	X7-SB276	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS276-0102	X7-SB276	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB277-0203	X7-SB277	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB277-0304	X7-SB277	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS277-0001	X7-SB277	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS277-0102	X7-SB277	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB278-0203	X7-SB278	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB278-0304	X7-SB278	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS278-0001	X7-SB278	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS278-0102	X7-SB278	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB279-0203	X7-SB279	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS279-0001	X7-SB279	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS279-0102	X7-SB279	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS280-0001	X7-SB280	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS280-0102	X7-SB280	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS281-0001	X7-SB281	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS281-0102	X7-SB281	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB282-0203	X7-SB282	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS282-0001	X7-SB282	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS282-0102	X7-SB282	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB283-0203	X7-SB283	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB283-0304	X7-SB283	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS283-0001	X7-SB283	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS283-0001-D	X7-SB283	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS283-0102	X7-SB283	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS284-0001	X7-SB284	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS284-0102	X7-SB284	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB285-0203	X7-SB285	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB285-0304	X7-SB285	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS285-0001	X7-SB285	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS286-0001	X7-SB286	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS287-0001	X7-SB287	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS288-0001	X7-SB288	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS289-0001	X7-SB289	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS290-0001	X7-SB290	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS290-0102	X7-SB290	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB291-0203	X7-SB291	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB291-0304	X7-SB291	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB291-0405	X7-SB291	4	5	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS291-0001	X7-SB291	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS291-0102	X7-SB291	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS292-0001	X7-SB292	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS292-0102	X7-SB292	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS293-0001	X7-SB293	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS294-0001	X7-SB294	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS294-0102	X7-SB294	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB295-0203	X7-SB295	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB295-0304	X7-SB295	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB295-0405	X7-SB295	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS295-0001	X7-SB295	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS295-0102	X7-SB295	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB296-0203	X7-SB296	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB296-0304	X7-SB296	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB296-0405	X7-SB296	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB296-0506	X7-SB296	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB296-0607	X7-SB296	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS296-0001	X7-SB296	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS296-0102	X7-SB296	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB297-0203	X7-SB297	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB297-0304	X7-SB297	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB297-0405	X7-SB297	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS297-0001	X7-SB297	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS297-0102	X7-SB297	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB298-0203	X7-SB298	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB298-0304	X7-SB298	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB298-0405	X7-SB298	4	5	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB298-0506	X7-SB298	5	6	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS298-0001	X7-SB298	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS298-0102	X7-SB298	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB299-0203	X7-SB299	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB299-0203-D	X7-SB299	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS299-0001	X7-SB299	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS299-0102	X7-SB299	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB300-0405	X7-SB300	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB301-0203	X7-SB301	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB301-0304	X7-SB301	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB301-0405	X7-SB301	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS301-0102	X7-SB301	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS303-0001	X7-SB303	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS303-0102	X7-SB303	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS304-0001	X7-SB304	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS305-0001	X7-SB305	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS305-0102	X7-SB305	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB306-0203	X7-SB306	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB310-0304	X7-SB310	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB310-0405	X7-SB310	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS310-0001	X7-SB310	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB312-0203	X7-SB312	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB312-0304	X7-SB312	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS312-0001	X7-SB312	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB313-0405	X7-SB313	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS316-0001	X7-SB316	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS316-0102	X7-SB316	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS317-0001	X7-SB317	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS319-0001	X7-SB319	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB320-0203	X7-SB320	2	3	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS320-0001	X7-SB320	0	1	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS320-0102	X7-SB320	1	2	20111107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS321-0001	X7-SB321	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS321-0102	X7-SB321	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS323-0001	X7-SB323	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS323-0102	X7-SB323	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS325-0001	X7-SB325	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS325-0102	X7-SB325	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS327-0001	X7-SB327	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS333-0102	X7-SB333	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS337-0001	X7-SB337	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB342-0203	X7-SB342	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB342-0304	X7-SB342	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS345-0102	X7-SB345	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB351-0607	X7-SB351	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB351-0708	X7-SB351	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS351-0001	X7-SB351	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS351-0102	X7-SB351	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS357-0102	X7-SB357	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS361-0102	X7-SB361	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS363-0001	X7-SB363	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS363-0102	X7-SB363	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SB365-0203	X7-SB365	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB365-0304	X7-SB365	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS365-0001	X7-SB365	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS365-0102	X7-SB365	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB368-0203	X7-SB368	2	3	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB368-0304	X7-SB368	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS368-0001	X7-SB368	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS368-0102	X7-SB368	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB369-0203	X7-SB369	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB369-0304	X7-SB369	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB369-0405	X7-SB369	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB369-0506	X7-SB369	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS369-0001	X7-SB369	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS369-0102	X7-SB369	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS371-0001	X7-SB371	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS371-0102	X7-SB371	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS371-0102D	X7-SB371	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS371-0203	X7-SB371	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS373-0001	X7-SB373	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS376-0001	X7-SB376	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS376-0102	X7-SB376	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS377-0001	X7-SB377	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS377-0102	X7-SB377	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS377-0102-D	X7-SB377	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS379-0001	X7-SB379	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS383-0001	X7-SB383	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS385-0001	X7-SB385	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS385-0102	X7-SB385	1	2	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS387-0001	X7-SB387	0	1	20111112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB391-0203	X7-SB391	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS391-0001	X7-SB391	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS391-0102	X7-SB391	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS392-0001	X7-SB392	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB394-0203	X7-SB394	2	3	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB395-0304	X7-SB395	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB395-0405	X7-SB395	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB395-0506	X7-SB395	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB395-0607	X7-SB395	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS396-0001-D	X7-SB396	0	1	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS396-0102	X7-SB396	1	2	20111108	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB398-0203	X7-SB398	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB398-0304	X7-SB398	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB398-0405	X7-SB398	4	5	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB398-0506	X7-SB398	5	6	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS398-0001	X7-SB398	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS398-0102	X7-SB398	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS400-0001	X7-SB400	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB401-0203	X7-SB401	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB401-0304	X7-SB401	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS401-0001	X7-SB401	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS401-0102	X7-SB401	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS402-0001	X7-SB402	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS404-0001	X7-SB404	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS404-0102	X7-SB404	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS404-0102-D	X7-SB404	1	2	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS406-0001	X7-SB406	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS406-0001-D	X7-SB406	0	1	20111111	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS407-0001	X7-SB407	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS408-0001	X7-SB408	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS408-0102	X7-SB408	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB409-0304	X7-SB409	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB409-0405	X7-SB409	4	5	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB409-0506	X7-SB409	5	6	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS410-0001	X7-SB410	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB411-0304	X7-SB411	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS412-0001	X7-SB412	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS412-0102	X7-SB412	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB413-0304	X7-SB413	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS414-0001	X7-SB414	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS414-0102	X7-SB414	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS415-0001	X7-SB415	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS415-0102	X7-SB415	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS416-0001	X7-SB416	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB417-0304	X7-SB417	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB417-0405	X7-SB417	4	5	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB417-0506	X7-SB417	5	6	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB417-0607	X7-SB417	6	7	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS418-0001	X7-SB418	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS420-0001	X7-SB420	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS420-0102	X7-SB420	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS420-0203	X7-SB420	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS421-0001	X7-SB421	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS421-0102	X7-SB421	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB422-0203	X7-SB422	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS422-0001	X7-SB422	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS422-0102	X7-SB422	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS422-0102-D	X7-SB422	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS422-0203	X7-SB422	2	3	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS423-0001	X7-SB423	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS423-0102	X7-SB423	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
					1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS424-0001	X7-SB424	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS424-0102	X7-SB424	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS425-0001	X7-SB425	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS425-0102	X7-SB425	1	2	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB426-0304	X7-SB426	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB427-0304	X7-SB427	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB428-0304	X7-SB428	3	4	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS429-0001	X7-SB429	0	1	20111114	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB430-0304	X7-SB430	3	4	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB430-0405	X7-SB430	4	5	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB430-0506	X7-SB430	5	6	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB432-0304	X7-SB432	3	4	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB432-0405	X7-SB432	4	5	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS434-0001	X7-SB434	0	1	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS434-0102	X7-SB434	1	2	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS434-0102-D	X7-SB434	1	2	20111115	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS439-0001	X7-SB439	0	1	20120907	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00245 U	0.00409 U	0.00409 U
X7-SS439-0102	X7-SB439	1	2	20120907	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00232 U	0.00386 U	0.00386 U
X7-SS441-0001	X7-SB441	0	1	20121003	0.00426 U	0.00426 U	0.00938 J	0.00426 U	0.0145	0.37283	0.37283	0.18	0.285	0.402	0.191	0.139	0.242	0.0119	0.267	0.00512 J	0.161	0.00256 U	0.0865	0.315
X7-SS441-0102	X7-SB441	1	2	20121003	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00415 U	0.00249 U	0.00415 U	0.00415 U
X7-SS442-0001	X7-SB442	0	1	20121003	0.00411 U	0.00411 U	0.00247 J	0.00411 U	0.00411 J	0.15605	0.15605	0.081	0.121 J	0.17 J	0.0786	0.0596 J	0.0971 J	0.00247 J	0.107 J	0.00411 U	0.0679	0.00247 U	0.0259	0.129
X7-SS442-0001-D	X7-SB442	0	1	20121003	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00242 J	0.09083	0.09083	0.0504	0.0689 J	0.0959 J	0.0492	0.0318 J	0.0548 J	0.00282 J	0.0608 J	0.00403 U	0.0411	0.00242 U	0.0157	0.0778
X7-SS442-0102	X7-SB442	1	2	20121003	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00242 U	0.00404 U	0.00404 U
X7-SS442-0102-D	X7-SB442	1	2	20121003	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00242 U	0.00404 U	0.00404 U
X7-SS443-0001	X7-SB443	0	1	20121003	0.00413 U	0.00413 U	0.00413 U	0.00413 U	0.00206 J	0.04697	0.04491	0.0289 J	0.0351 J	0.0462 J	0.0239 J	0.0206 J	0.0293 J	0.00413 U	0.0318 J	0.00413 UJ	0.0206 J	0.00248 U	0.012 J	0.0417 J
X7-SS443-0102	X7-SB443	1	2	20121003	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00246 U	0.0041 U	0.0041 U
X7-SS445-0001	X7-SB445	0	1	20120907	0.00406 U	0.00406 U	0.00203 J	0.00406 U	0.011	0.05776	0.05573	0.0435	0.0435	0.0536	0.0248	0.0207	0.0467	0.00406 U	0.0808	0.00365 J	0.0227	0.00244 U	0.0447	0.0589
X7-SS445-0102	X7-SB445	1	2	20120907	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00227 U	0.00378 U	0.00378 U
X7-SB446-0204	X7-SB446	2	4	20120907	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00937	0.00937	0.00646 J	0.00485 J	0.00525 J	0.00525 U	0.00283 J	0.00242 J	0.00283 J	0.00283 J	0.00404 U	0.00485 J	0.00525 J	0.00404 U	0.00242 J
X7-SB446-0406	X7-SB446	4	6	20120907	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00444	0.00192	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00192 J	0.00384 U	0.00384 U	0.00384 U	0.00346 J	0.00384 U	0.00384 U
X7-SS446-0001	X7-SB446	0	1	20120907	0.0134	0.0162	0.079	0.00405 U	0.0907	3.06	3.05797	1.77	2.43	3.17	1.33	0.968	2.29	0.00405 U	2.61	0.0421	1.22	0.0547	0.432	2.5
X7-SS446-0102	X7-SB446	1	2	20120907	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.04291	0.04101	0.0216	0.0326	0.0399	0.0247	0.0148	0.0254	0.0038 U	0.0247	0.0038 U	0.0209	0.00228 U	0.00342 J	0.0197
X7-SS447-0001	X7-SB447	0	1	20120907	0.00405 U	0.00405 U	0.013	0.00405 U	0.0215	0.3525	0.35047	0.202	0.28	0.33	0.179	0.134	0.232	0.00405 U	0.367	0.00567 J	0.157	0.00243 U	0.117	0.265
X7-SS447-0102	X7-SB447	1	2	20120907	0.00379 U	0.00379 U	0.00379 U	0.00379 U	0.00379 U	0.00647	0.00437	0.00569 J	0.00342 J	0.00379 J	0.00228 J	0.00379 U	0.00228 J	0.00379 U	0.00455 J	0.00379 U	0.00379 U	0.00228 U	0.00228 J	0.00342 J
X7-SS448-0001	X7-SB448	0	1	20120907	0.0042 U	0.0042 U	0.0105	0.0042 U	0.013	0.19661	0.19451	0.101	0.156	0.197	0.0915	0.0655	0.126	0.0042 U	0.192	0.00294 J	0.0793	0.00252 U	0.0751	0.175
X7-SS448-0102	X7-SB448	1	2	20120907	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00231 U	0.00385 U	0.00385 U
X7-SS449-0001	X7-SB449	0	1	20120907	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.00417 U	0.04615	0.04407	0.0246	0.0346	0.0458	0.0263	0.015	0.0279	0.00417 U	0.0325	0.00417 U	0.0225	0.0025 U	0.00917	0.03
X7-SS449-0102	X7-SB449	1	2	20120907	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00229 U	0.00382 U	0.00382 U
X7-SS451-0001	X7-SB451	0	1	20120906	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.01548	0.01341	0.0103	0.0103	0.0141	0.00703 J	0.00455 J	0.00703 J	0.00414 U	0.00952	0.00414 U	0.00621 J	0.00248 U	0.00248 J	0.00869
X7-SS451-0102	X7-SB451	1	2	20120906	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00214 U	0.00357 U	0.00357 U
X7-SS453-0001	X7-SB453	0	1	20120906	0.00401 U	0.00401 U	0.00401 UJ	0.00401 UJ	0.00401 U	0.01787	0.01586	0.0112	0.0124	0.016	0.00802	0.00521 J	0.01	0.00401 U	0.0128	0.00401 UJ	0.00682 J	0.00241 UJ	0.00361 J	0.01
X7-SS453-0102	X7-SB453	1	2	20120906	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.00416	2.5E-06	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.00252 J	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.00216 U	0.0036 U	0.0036 U
X7-SS455-0001	X7-SB455	0	1	20120906	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.01952	0.01747	0.0123	0.0135	0.0181	0.0103	0.00574 J	0.00944	0.0041 U	0.0127	0.0041 U	0.00862	0.00246 U	0.0041 J	0.0115
X7-SS455-0102	X7-SB455	1	2	20120906	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00357 U	0.00214 U	0.00357 U	0.00357 U
X7-SS457-0001	X7-SB457	0	1	20120906	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.03819	0.03626	0.02	0.0285	0.0369	0.0235	0.0131	0.0219	0.00385 U	0.0215	0.00385 U	0.0192	0.00231 U	0.00577 J	0.0238
X7-SS457-0102	X7-SB457	1	2	20120907	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00215 U	0.00359 U	0.00359 U
X7-SS459-0001	X7-SB459	0	1	20120907	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00253 U	0.00422 U	0.00422 U
X7-SS459-0102	X7-SB459	1	2	20120907	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00424 U	0.00254 U	0.00424 U	0.00424 U
X7-SS460-0001	X7-SB460	0	1	20120907	0.00401 U	0.00401 U	0.00281 J	0.00401 U	0.00361 J	0.11119	0.10918	0.0689	0.0834	0.136	0.0621	0.0373	0.0677	0.00401 U	0.0846	0.00401 U	0.0485	0.00281 J	0.0277	0.0798
X7-SS460-0102	X7-SB460	1	2	20120907	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00226 U	0.00376 U	0.00376 U
X7-SB462-0204	X7-SB462	2	4	20120907	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00427 U	0.00341 J	0.00427 U	0.00427 U
X7-SB462-0406	X7-SB462	4	6	20120907	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00329 J	0.00412 U	0.00412 U
X7-SS462-0001	X7-SB462	0	1	20120907	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00236 J	0.07423	0.07226	0.0417	0.0566	0.0806	0.037	0.0264	0.057	0.00393 U	0.0531	0.00393 U	0.0311	0.00236 U	0.0173	0.0523
X7-SS462-0102	X7-SB462	1	2	20120907	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00545	0.00341	0.00513 J	0.00257 J	0.0033 J	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.0022 J	0.00367 U	0.00367 U	0.0022 U	0.00367 U	0.00257 J
X7-SB463-0204	X7-SB463	2	4	20120907	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00358 J	0.00398 U	0.00398 U
X7-SB463-0406	X7-SB463	4	6	20120907	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00237 J	0.00394 U	0.00394 U
X7-SS463-0001	X7-SB463	0	1	20120907	0.163	0.195	1.04	0.0406 U	1.11	21.8317	21.8114	13.1	17.2	23.3	10.1	6.91	18.3	0.0406 U	19.7	0.577	8.84	0.784	5.48	18.5
X7-SS463-0102	X7-SB463	1	2	20120907	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.00376 U	0.03686	0.03498	0.0207	0.0267	0.0413	0.0225	0.0109	0.0203	0.00376 U	0.0225	0.00376 U	0.0195	0.00225 U	0.00639 J	0.0218
X7-SB464-0204	X7-SB464	2	4	20120907	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00231 J	0.00386 U	0.00386 U
X7-SB464-0406	X7-SB464	4	6	20120907	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.00399 U	0.01279	0.01079	0.00998	0.00799	0.0112	0.00759 U	0.00399 J	0.00599 J	0.00399 U	0.00679 J	0.00399 U	0.00639 J	0.00319 J	0.00399 U	0.00599 J
X7-SS464-0001	X7-SB464	0	1	20120907	0.0071 J	0.00793 J	0.109	0.00417 U	0.122	1.87775	1.87566	1.21	1.47	1.97	0.943	0.651	1.45	0.00417 U	2.21	0.0451	0.797	0.00793 J	1	1.9
X7-SS464-0102	X7-SB464	1	2	20120907	0.00382 U	0.00382 U	0.00497 J	0.00382 U	0.00727 J	0.29279	0.29088	0.158	0.228	0.324	0.164	0.0972	0.204	0.00382 U	0.209	0.00268 J	0.135	0.00306 J	0.0516	0.2
X7-SS465-0001	X7-SB465	0	1	20120907	0.00394 U	0.00394 U	0.00592 J	0.00394 U	0.00868	0.20919	0.20722	0.119	0.16	0.25	0.12	0.0667	0.146	0.00394 U	0.177 J	0.00316 J	0.0951	0.00276 J	0.0643	0.165
X7-SS465-0102	X7-SB465	1	2	20120907	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.00367 U	0.0022 U	0.00367 U	0.00367 U
X7-SS466-0001	X7-SB466	0	1	20120907	0.00398 U	0.00398 U	0.00239 J	0.00398 U	0.00279 J	0.12498	0.12299	0.0586	0.0964	0.141	0.0777	0.0382	0.0821	0.00398 U	0.0852	0.00398 U	0.0617	0.00239 U	0.0251	0.0821
X7-SS466-0102	X7-SB466	1	2	20120907	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 UJ	0.00361 UJ	0.00361 UJ	0.00361 UJ	0.00361 UJ	0.00361 UJ	0.00361 U	0.00361 UJ	0.00361 U	0.00361 UJ	0.00217 U	0.00361 U	0.00361 UJ
X7-SS466-0102-D	X7-SB466	1	2	20120907	0.00383 U	0.00383 U	0.00383 U	0.00383 U	0.00268 J	0.11237	0.11046	0.0598 J	0.0866 J	0.122 J	0.0651 J	0.0391 J	0.0751 J	0.00383 U	0.0713 J	0.00383 U	0.0521 J	0.0023 U	0.0157	0.0694 J
X7-SS469-0001	X7-SB469	0	1	20121003	0.00326 J	0.00367 J	0.0147	0.00407 U	0.0196	0.57266	0.57266	0.341	0.451	0.579	0.218	0.202	0.425	0.00611 J	0.429	0.00856	0.211	0.00244 U	0.113	0.497
X7-SS469-0102	X7-SB469	1	2	20121003	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00382 U	0.00229 U	0.00382 U	0.00382 U
X7-SS470-0001	X7-SB470	0	1	20121003	0.00563 J	0.00683 J	0.0816	0.00402 U	0.121	2.33318	2.33318	1.3	1.85	2.33	1.03	0.697	1.51	0.0237	2.21	0.0386	0.88	0.00241 U	0.718	2.57
X7-SS470-0102	X7-SB470	1	2	20121003	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00232 J	0.04406	0.04213	0.0255	0.0332	0.0441	0.022	0.0158	0.0274	0.00387 U	0.0383	0.00387 U	0.0178	0.00232 U	0.0155	0.0336
X7-SS471-0001	X7-SB471	0	1	20120907	0.00398 U	0.00398 U	0.00518 J	0.00398 U	0.00757 J	0.23171	0.22972	0.127 J	0.18 J	0.256 J	0.13 J	0.0761 J	0.161 J	0.00398 U	0.169 J	0.00239 J	0.105 J	0.00319 J	0.0438 J	0.156 J
X7-SS471-0001-D	X7-SB471	0	1	20120907	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00289 J	0.09633	0.09427	0.054 J	0.0738 J	0.105 J	0.0524 J	0.0346 J	0.0651 J	0.00412 U	0.0668 J	0.00412 U	0.0416 J	0.00247 U	0.0181 J	0.0639 J
X7-SS471-0102	X7-SB471	1	2	20120907	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00215 U	0.00359 U	0.00359 U
X7-SS472-0001	X7-SB472	0	1	20121003	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.00222 U	0.0037 U	0.0037 U
X7-SS472-0102	X7-SB472	1	2	20121003	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00381 U	0.00228 U	0.00381 U	0.00381 U
X7-SS491-0001	X7-SB491	0	1	20120906	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.01349	0.0115	0.00995	0.00875	0.0119	0.00676 J	0.00398 J	0.00637 J	0.00398 U	0.00756 J	0.00398 U	0.00517 J	0.00239 U	0.00239 J	0.00836
X7-SS491-0102	X7-SB491	1	2	20120906	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00359 U	0.00215 U	0.00359 U	0.00359 U
X7-SS492-0001	X7-SB492	0	1	20120906	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.06065	0.05863	0.0373	0.0458	0.062	0.0308	0.0186	0.0417	0.00405 U	0.0413	0.00405 U	0.0267	0.00243 U	0.0081	0.0385
X7-SS492-0102	X7-SB492	1	2	20120906	0.00365 U	0.00365 U	0.00365 U	0.00365 U	0.00365 U	0.00674	0.00489	0.00548 J	0.00365 J	0.00475 J	0.00365 U	0.00365 U	0.00256 J	0.00365 U	0.00256 J	0.00365 U	0.00219 J	0.00219 U	0.00365 U	0.00256 J
X7-SS493-0001	X7-SB493	0	1	20120906	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00281 J	0.1202	0.11819	0.0751	0.0916	0.13	0.0679	0.0422	0.0715	0.00402 U	0.0759	0.00402 U	0.0559	0.00241 U	0.0141	0.0751
X7-SS493-0102	X7-SB493	1	2	20120906	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00361 U	0.00216 U	0.00361 U	0.00361 U
X7-SS494-0001	X7-SB494	0	1	20120906	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.02297	0.02096	0.0157	0.0161	0.0226	0.0117	0.00847	0.0133	0.00403 U	0.0141	0.00403 U	0.00927	0.00242 U	0.00363 J	0.0137
X7-SS494-0102	X7-SB494	1	2	20120906	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00378 U	0.00227 U	0.00378 U	0.00378 U
X7-SS497-0001	X7-SB497	0	1	20121003	0.00437 U	0.00437 U	0.00437 U	0.00437 U	0.00437 U	0.01818	0.016	0.0136	0.0122	0.0166	0.00875	0.00656 J	0.00962	0.00437 U	0.0153	0.00437 U	0.007 J	0.00262 U	0.00743 J	0.0149
X7-SS497-0102	X7-SB497	1	2	20121003	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.00405 U	0.03423	0.03221	0.0219	0.0251	0.0353	0.0146	0.0105	0.0231	0.00405 U	0.0227	0.00405 U	0.0126	0.00243 U	0.00649 J	0.0243
X7-SS498-0001	X7-SB498	0	1	20120906	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00522	0.00277	0.00406 U	0.00244 J	0.00325 J	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00284 J	0.00406 U	0.00406 U	0.00244 U	0.00406 U	0.00244 J
X7-SS498-0102	X7-SB498	1	2	20120906	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00385 U	0.00231 U	0.00385 U	0.00385 U
X7-SS502-0001	X7-SB502	0	1	20120906	0.00416 U	0.00416 U	0.00416 U	0.00416 U	0.00416 U	0.03513	0.03305	0.0212	0.0258	0.0349	0.0183	0.0121	0.0212	0.00416 U	0.02	0.00416 U	0.015	0.0025 U	0.00499 J	0.0196
X7-SS502-0102	X7-SB502	1	2	20120906	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00774	0.00592	0.00655 J	0.00437 J	0.00618 J	0.00291 J	0.00218 J	0.00327 J	0.00364 U	0.004 J	0.00364 U	0.00255 J	0.00218 U	0.00364 U	0.004 J
X7-SS503-0001	X7-SB503	0	1	20120906	0.00425 U	0.00425 U	0.00255 J	0.00425 U	0.00638 J	0.16352	0.16139	0.0906	0.128	0.167	0.0795	0.0591	0.112	0.00425 U	0.106	0.00255 J	0.0693	0.00255 U	0.0323	0.1
X7-SS503-0102	X7-SB503	1	2	20120906	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.0117	0.00966	0.00897	0.00734 J	0.0102	0.00449 J	0.00326 J	0.00571 J	0.00408 U	0.00897	0.00408 U	0.00367 J	0.00245 U	0.00408 J	0.00856
X7-SS504-0001	X7-SB504	0	1	20121003	0.00413 U	0.00413 U	0.00413 U	0.00413 U	0.00413 U	0.00738	0.00532	0.00744 J	0.00372 J	0.00579 J	0.00289 J	0.00248 J	0.00331 J	0.00413 U	0.0062 J	0.00413 U	0.00248 J	0.00248 U	0.00372 J	0.00579 J
X7-SS504-0102	X7-SB504	1	2	20121003	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00235 U	0.00392 U	0.00392 U
X7-SB505-0204	X7-SB505	2	4	20120906	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00391 U	0.00235 U	0.00391 U	0.00391 U
X7-SB505-0406	X7-SB505	4	6	20120906	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.00401 U	0.0024 U	0.00401 U	0.00401 U
X7-SS505-0001	X7-SB505	0	1	20120906	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.01232	0.01028	0.00979	0.00775 J	0.011	0.00489 J	0.00408 J	0.00571 J	0.00408 U	0.00693 J	0.00408 U	0.00408 J	0.00245 U	0.00408 U	0.00693 J
X7-SS505-0102	X7-SB505	1	2	20120906	0.0329 J	0.0542	0.292	0.0194 U	0.372	19.3934	19.3837	10.6	15.4	20.9	8.65	6.93	13.4	0.0194 U	11.8	0.19	7.51	0.134	1.97	12.7
X7-SS506-0001	X7-SB506	0	1	20121003	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00474	0.00021	0.0041 U	0.0041 U	0.00205 J	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00246 U	0.0041 U	0.0041 U
X7-SS506-0102	X7-SB506	1	2	20121003	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00513	0.0029	0.00564 J	0.00201 J	0.00322 J	0.00403 U	0.00403 U	0.00201 J	0.00403 U	0.00403 J	0.00403 U	0.00403 U	0.00242 U	0.00403 U	0.00362 J
X7-SS507-0001	X7-SB507	0	1	20120906	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00473	0.00024	0.00406 U	0.00406 U	0.00244 J	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00244 U	0.00406 U	0.00406 U

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS507-0102	X7-SB507	1	2	20120906	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00455	0.00223	0.00384 U	0.00192 J	0.00307 J	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.0023 J	0.00384 U	0.00384 U	0.0023 U	0.00384 U	0.0023 J
X7-SS510-0001	X7-SB510	0	1	20120906	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.01098	0.00899	0.00835	0.00676 J	0.00954	0.00477 J	0.00358 J	0.00477 J	0.00398 U	0.00676 J	0.00398 U	0.00398 J	0.00239 U	0.00398 U	0.00636 J
X7-SS510-0102	X7-SB510	1	2	20120906	0.00363 U	0.00363 U	0.00363 U	0.00363 U	0.00363 U	0.05405	0.05224	0.0316	0.0411	0.0545	0.0269	0.0204	0.0352	0.00363 U	0.0327	0.00363 U	0.0229	0.00218 U	0.00581 J	0.0323
X7-SS511-0001	X7-SB511	0	1	20120906	0.00409 U	0.00286 J	0.00695 J	0.00409 U	0.009 J	0.50172	0.49968	0.272	0.4	0.494	0.242	0.185	0.328	0.00409 U	0.302	0.00409 J	0.209	0.0119	0.0503	0.315
X7-SS511-0102	X7-SB511	1	2	20120906	0.00388 U	0.00388 U	0.00388 U	0.00388 U	0.00388 U	0.00978	0.00784	0.00776 J	0.00582 J	0.00854	0.00388 J	0.00349 J	0.00466 J	0.00388 U	0.00738 J	0.00388 U	0.00349 J	0.00233 U	0.00311 J	0.00621 J
X7-SS511-0102-D	X7-SB511	1	2	20120906	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.01828	0.01635	0.0123	0.0127	0.0174	0.00694 J	0.00578 J	0.00964	0.00386 U	0.0127	0.00386 U	0.00617 J	0.00231 U	0.00347 J	0.0127
X7-SS513-0001	X7-SB513	0	1	20121003	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00407 U	0.00666	0.00461	0.00692 J	0.00326 J	0.00448 J	0.00285 J	0.00407 U	0.00285 J	0.00407 U	0.00488 J	0.00407 U	0.00204 J	0.00244 U	0.00285 J	0.00529 J
X7-SS513-0102	X7-SB513	1	2	20121003	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00235 U	0.00392 U	0.00392 U
X7-SS518-0001	X7-SB518	0	1	20120906	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.00404 U	0.03834	0.03632	0.0234	0.0283	0.0388	0.0198	0.0121	0.023	0.00404 U	0.0198	0.00404 U	0.0166	0.00242 U	0.00444 J	0.0194
X7-SS518-0102	X7-SB518	1	2	20120906	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00369 U	0.00878	0.00694	0.00702 J	0.00517 J	0.00738 J	0.00369 J	0.00295 J	0.00369 U	0.00369 U	0.0048 J	0.00369 U	0.00295 J	0.00222 U	0.00369 U	0.00443 J
X7-SS519-0001	X7-SB519	0	1	20120906	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.02949	0.02754	0.0179	0.0214	0.0288	0.016	0.00974	0.0171	0.0039 U	0.0183	0.0039 U	0.0136	0.00234 U	0.00468 J	0.0195
X7-SS519-0102	X7-SB519	1	2	20120906	0.00366 U	0.00366 U	0.00366 U	0.00366 U	0.00366 U	0.02274	0.02091	0.0161	0.0161	0.0212	0.0121	0.00769	0.0132	0.00366 U	0.0132	0.00366 U	0.00988	0.0022 U	0.00366 J	0.0132
X7-SS521-0001	X7-SB521	0	1	20120906	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.00394 U	0.01261	0.01064	0.0102	0.00788	0.0114	0.0067 J	0.00394 J	0.0067 J	0.00394 U	0.00788	0.00394 U	0.00551 J	0.00236 U	0.00236 J	0.00709 J
X7-SS521-0102	X7-SB521	1	2	20120906	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.00496	0.00266	0.0038 U	0.00228 J	0.0038 J	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.00304 J	0.0038 U	0.0038 U	0.00228 U	0.0038 U	0.00228 J
X7-SS521-0102-D	X7-SB521	1	2	20120906	0.00379 U	0.00379 U	0.00379 U	0.00379 U	0.00379 U	0.00446	0.00027	0.00379 U	0.00379 U	0.0066 J	0.00379 U	0.00379 U	0.00379 U	0.00379 U	0.0019 J	0.00379 U	0.00379 U	0.00228 U	0.00379 U	0.00379 U
X7-SS522-0001	X7-SB522	0	1	20120906	0.00411 U	0.00411 U	0.00411 U	0.00411 U	0.00411 U	0.01109	0.00904	0.00945	0.00657 J	0.0103	0.00534 J	0.00329 J	0.00616 J	0.00411 U	0.00986	0.00411 U	0.00452 J	0.00247 U	0.00534 J	0.0074 J
X7-SS522-0102	X7-SB522	1	2	20120906	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00458	0.00224	0.00386 U	0.00193 J	0.00309 J	0.00386 U	0.00386 U	0.00386 U	0.00386 U	0.00231 J	0.00386 U	0.00386 U	0.00231 U	0.00386 U	0.00193 J
X7-SS525-0001	X7-SB525	0	1	20120906	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00572	0.00344	0.0041 U	0.00287 J	0.00369 J	0.00287 J	0.0041 U	0.0041 U	0.0041 U	0.00328 J	0.0041 U	0.00205 J	0.00246 U	0.0041 U	0.00287 J
X7-SS525-0102	X7-SB525	1	2	20120906	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00387 U	0.00232 U	0.00387 U	0.00387 U
X7-SB526-0204	X7-SB526	2	4	20120906	0.00372 U	0.00372 U	0.00372 U	0.00372 U	0.00372 U	0.00739	0.00553	0.00632 J	0.00409 J	0.00521 J	0.00335 J	0.00223 J	0.00298 J	0.00372 U	0.00298 J	0.00372 U	0.0026 J	0.00223 U	0.00372 U	0.00298 J
X7-SB526-0406	X7-SB526	4	6	20120906	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00637	0.0042	0.00392 U	0.00353 J	0.00432 J	0.00275 J	0.00392 U	0.00235 J	0.00392 U	0.00314 J	0.00392 U	0.00235 J	0.00235 U	0.00392 U	0.00314 J
X7-SS526-0001	X7-SB526	0	1	20120906	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00815	0.00592	0.00406 U	0.00487 J	0.0069 J	0.00446 J	0.00284 J	0.00365 J	0.00406 U	0.00487 J	0.00406 U	0.00325 J	0.00243 U	0.00406 U	0.00446 J
X7-SS526-0102	X7-SB526	1	2	20120906	0.00373 U	0.00373 U	0.00633 J	0.00373 U	0.0134	0.30244	0.30057	0.168	0.237	0.325	0.162	0.116	0.213	0.00373 U	0.227	0.00522 J	0.129	0.00447 J	0.0663	0.223
X7-SB527-0204	X7-SB527	2	4	20120906	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00377 U	0.00226 U	0.00377 U	0.00377 U
X7-SB527-0406	X7-SB527	4	6	20120906	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.01032	0.00837	0.00857	0.00623 J	0.00818	0.00506 J	0.00351 J	0.00506 J	0.0039 U	0.00467 J	0.0039 U	0.00428 J	0.00234 U	0.0039 U	0.00467 J
X7-SS527-0001	X7-SB527	0	1	20120906	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00529	0.0028	0.00412 U	0.00247 J	0.00329 J	0.00412 U	0.00412 U	0.00412 U	0.00412 U	0.00288 J	0.00412 U	0.00412 U	0.00247 U	0.00412 U	0.00247 J
X7-SS527-0102	X7-SB527	1	2	20120906	0.00381 U	0.00381 U	0.00191 J	0.00381 U	0.00381 J	0.18349	0.18158	0.106	0.144	0.182	0.0926	0.0762	0.13	0.00381 U	0.116	0.00381 U	0.0789	0.00229 U	0.0191	0.112
X7-SB528-0204	X7-SB528	2	4	20120906	0.00373 J	0.00523 J	0.0384	0.00373 U	0.0429	1.93857	1.9367	1.17	1.51	2.03	1.22	0.726	1.24	0.00373 U	1.2	0.019	0.982	0.0119	0.201	1.1
X7-SB528-0406	X7-SB528	4	6	20120906	0.00397 U	0.00278 J	0.0206	0.00397 U	0.0246	1.3748	1.37282	0.764	1.08	1.41	0.871	0.568	0.936	0.00397 U	0.791	0.0135	0.688	0.00674 J	0.142	0.768
X7-SS528-0001	X7-SB528	0	1	20120906	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.01226	0.0103	0.00864	0.00785	0.011	0.00511 J	0.00471 J	0.00668 J	0.00393 U	0.00707 J	0.00393 U	0.00432 J	0.00236 U	0.00275 J	0.00746 J
X7-SS528-0102	X7-SB528	1	2	20120906	0.0507	0.0598	0.545	0.0181 U	0.502	17.5821	17.573	10.2	13.8	19.1	8.5	6.72	12.8	0.0181 U	11.8	0.192	7.63	0.154	1.91	11.4
X7-SS529-0001	X7-SB529	0	1	20120906	0.00426 U	0.00426 U	0.00426 U	0.00426 U	0.00426 U	0.03341	0.03128	0.0221	0.0243	0.0328	0.0149	0.0149	0.0226	0.00426 U	0.0226	0.00426 U	0.0132	0.00256 U	0.00554 J	0.0226
X7-SS529-0102	X7-SB529	1	2	20120906	0.00383 U	0.00383 U	0.00383 U	0.00383 U	0.00383 U	0.08844	0.08653	0.0505	0.0681	0.0919	0.0459	0.0337	0.062	0.00383 U	0.0544	0.00383 U	0.0379	0.0023 U	0.00766	0.0547
X7-SS530-0001	X7-SB530	0	1	20120906	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.00414 U	0.01321	0.01114	0.0103	0.00827	0.0124	0.00703 J	0.00538 J	0.00786 J	0.00414 U	0.00703 J	0.00414 U	0.00538 J	0.00248 U	0.00414 U	0.00662 J
X7-SS530-0102	X7-SB530	1	2	20120906	0.00393 U	0.00393 U	0.00393 U	0.00393 U	0.00314 J	0.13247	0.1305	0.0762	0.103	0.14	0.0589	0.0483	0.0896	0.00393 U	0.0762	0.00393 U	0.0531	0.00393 J	0.0145	0.0794
X7-SS531-0001	X7-SB531	0	1	20120906	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.00398 U	0.0111	0.00911	0.00955	0.00676 J	0.00995	0.00438 J	0.00318 J	0.00597 J	0.00398 U	0.00835	0.00398 U	0.00358 J	0.00239 U	0.00318 J	0.00756 J
X7-SS531-0102	X7-SB531	1	2	20120906	0.0406 U	0.0406 U	0.0406 U	0.0406 U	0.0406 U	0.06103	0.03848	0.0406 U	0.0324 J	0.0365 J	0.0243 J	0.0406 U	0.0406 U	0.0406 U	0.0406 U	0.0406 U	0.0243 J	0.0243 U	0.0406 U	0.0406 U
X7-SS533-0001	X7-SB533	0	1	20121003	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00403 U	0.00242 U	0.00403 U	0.00403 U
X7-SS533-0102	X7-SB533	1	2	20121003	0.00416 U	0.00416 U	0.00416 U	0.00416 U	0.00416 U	0.12542	0.12542	0.0741	0.092	0.123	0.0475	0.0421	0.0849	0.00874	0.0787	0.00416 U	0.0446	0.0025 U	0.0104	0.0879
X7-SB535-0204	X7-SB535	2	4	20120906	0.00364 U	0.00364 U	0.00364 U	0.00364 U	0.00473 J	0.12398	0.12216	0.0768	0.0961	0.12	0.0685	0.0437	0.0867	0.00364 U	0.0987	0.00364 U	0.0586	0.00219 U	0.0189	0.0856
X7-SB535-0406	X7-SB535	4	6	20120906	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00665	0.00438	0.00409 U	0.00368 J	0.0045 J	0.00286 J	0.00409 U	0.00245 J	0.00409 U	0.00286 J	0.00409 U	0.00245 J	0.00245 U	0.00409 U	0.00245 J
X7-SS535-0001	X7-SB535	0	1	20120906	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.00396 U	0.03606	0.03408	0.0214	0.0266	0.0373	0.0178	0.0159	0.0218	0.00396 U	0.021	0.00396 U	0.0143	0.00238 U	0.00594 J	0.0262
X7-SS535-0102	X7-SB535	1	2	20120906	0.00622 J	0.00895	0.0521	0.00389 U	0.158	3.0933	3.09135	1.99	2.46	3.05	1.22	1.13	2.05	0.00389 U	2.86	0.0323	1.14	0.0362	6.19	2.97
X7-SS536-0001	X7-SB536	0	1	20120906	0.00422 U	0.00422 U	0.00422 U	0.00422 U	0.00211 J	0.00977	0.00766	0.00928	0.00548 J	0.00808	0.00402 J	0.00211 J	0.00464 J	0.00422 U	0.0148	0.00422 U	0.00337 J	0.00253 U	0.00928	0.0114
X7-SS536-0102	X7-SB536	1	2	20120906	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00465	0.00227	0.00392 U	0.00196 J	0.00314 J	0.00392 U	0.00392 U	0.00392 U	0.00392 U	0.00314 J	0.00392 U	0.00392 U	0.00235 U	0.00392 U	0.00275 J
X7-SS540-0001	X7-SB540	0	1	20121003	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00409 U	0.00678	0.00678	0.00573 J	0.00327 J	0.00532 J	0.00368 J	0.00287 J	0.00205 J	0.00205 J	0.00287 J	0.00409 U	0.00327 J	0.00246 U	0.00409 U	0.00327 J
X7-SS540-0102	X7-SB540	1	2	20121003	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.01065	0.00864	0.00844	0.00643 J	0.00924	0.00442 J	0.00321 J	0.00522 J	0.00402 U	0.00563 J	0.00402 U	0.00402 J	0.00241 U	0.00402 U	0.00683 J
X7-SB541-0204	X7-SB541	2	4	20120906	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.00406 U	0.02112	0.01909	0.0166	0.0146	0.0187	0.00893	0.00893	0.0142	0.00406 U	0.0142	0.00406 U	0.00853	0.00244 U	0.00406 U	0.0122
X7-SB541-0406	X7-SB541	4	6	20120906	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00371 U	0.00223 U	0.00371 U	0.00371 U
X7-SS541-0001	X7-SB541	0	1	20120906	0.00331 J	0.00497 J	0.0174	0.00414 U	0.0501	2.18781	2.18574	1.36	1.74	2.22	0.834	0.824	1.5	0.00414 U	1.77	0.00828	0.78	0.00207 J	0.281	2.13
X7-SS541-0102	X7-SB541	1	2	20120906	0.00373 U	0.00373 U	0.00598 J	0.00373 U	0.0198	0.78732	0.78546	0.434	0.631	0.732	0.39	0.277	0.485	0.00373 U	0.542	0.00299 J	0.346	0.00224 U	0.0975	0.578
X7-SS542-0001	X7-SB542	0	1	20120906	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.0072	0.00514	0.00612 J	0.00367 J	0.00571 J	0.00367 J	0.00408 U	0.00326 J	0.00408 U	0.00449 J	0.00408 U	0.00286 J	0.00245 U	0.00408 U	0.00408 J
X7-SS542-0102	X7-SB542	1	2	20120906	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00448	0.00023	0.00384 U	0.00384 U	0.00231 J	0.00384 U	0.00384 U	0.00384 U	0.00384 U	0.00346 J	0.00384 U	0.00384 U	0.00231 U	0.00231 J	0.00269 J
X7-SS546-0001	X7-SB546	0	1	20121003	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.00408 U	0.02819	0.02819	0.0184	0.02	0.0298	0.0147	0.00898	0.0171	0.00204 J	0.0167	0.00408 U	0.0122	0.00245 U	0.00326 J	0.0163
X7-SS546-0102	X7-SB546	1	2	20121003	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00402 U	0.00241 U	0.00402 U	0.00402 U
X7-SB551-0203	X7-SB551	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB551-0304	X7-SB551	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB551-0405	X7-SB551	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB551-0506	X7-SB551	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS551-0001	X7-SB551	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS551-0102	X7-SB551	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB552-0203	X7-SB552	2	3	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB552-0304	X7-SB552	3	4	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB552-0405	X7-SB552	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB552-0506	X7-SB552	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS552-0001	X7-SB552	0	1	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS552-0102	X7-SB552	1	2	20120907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB553-0203	X7-SB553	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB553-0304	X7-SB553	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS553-0001	X7-SB553	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS553-0102	X7-SB553	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB554-0203	X7-SB554	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB554-0304	X7-SB554	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB554-0405	X7-SB554	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB554-0506	X7-SB554	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS554-0001	X7-SB554	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS554-0102	X7-SB554	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB555-0203	X7-SB555	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB555-0304	X7-SB555	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS555-0001	X7-SB555	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS555-0102	X7-SB555	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0203	X7-SB556	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0304	X7-SB556	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0405	X7-SB556	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0506	X7-SB556	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0607	X7-SB556	6	7	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB556-0708	X7-SB556	7	8	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS556-0001	X7-SB556	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS556-0102	X7-SB556	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB557-0203	X7-SB557	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB557-0304	X7-SB557	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB557-0405	X7-SB557	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB557-0506	X7-SB557	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS557-0001	X7-SB557	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS557-0102	X7-SB557	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0203	X7-SB558	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0304	X7-SB558	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0405	X7-SB558	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0506	X7-SB558	5	6	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0607	X7-SB558	6	7	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB558-0708	X7-SB558	7	8	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS558-0001	X7-SB558	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS558-0102	X7-SB558	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB559-0203	X7-SB559	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB559-0304	X7-SB559	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS559-0001	X7-SB559	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS559-0102	X7-SB559	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB560-0203	X7-SB560	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB560-0304	X7-SB560	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS560-0001	X7-SB560	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS560-0102	X7-SB560	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB561-0203	X7-SB561	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB561-0304	X7-SB561	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB561-0405	X7-SB561	4	5	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS561-0001	X7-SB561	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS561-0102	X7-SB561	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB562-0203	X7-SB562	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB562-0304	X7-SB562	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS562-0001	X7-SB562	0	1	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS562-0102	X7-SB562	1	2	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB563-0203	X7-SB563	2	3	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB563-0304	X7-SB563	3	4	20120908	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB569-0304	X7-SB569	3	4	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS569-0001	X7-SB569	0	1	20120909	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS592-0001	X7-SB592	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS592-0102	X7-SB592	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB601-0304	X7-SB601	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS601-0001	X7-SB601	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS601-0102	X7-SB601	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB602-0203	X7-SB602	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB602-0304	X7-SB602	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS602-0001	X7-SB602	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB603-0304	X7-SB603	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB603-0405	X7-SB603	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB603-0506	X7-SB603	5	6	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS603-0001	X7-SB603	0	1	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS603-0102	X7-SB603	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB604-0304	X7-SB604	3	4	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS604-0102	X7-SB604	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB605-0203	X7-SB605	2	3	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS606-0102	X7-SB606	1	2	20120910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB610-0203	X7-SB610	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS611-0001	X7-SB611	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS611-0102	X7-SB611	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB612-0203	X7-SB612	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB612-0304	X7-SB612	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS612-0102	X7-SB612	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB616-0304	X7-SB616	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS617-0102	X7-SB617	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS618-0203	X7-SB618	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB619-0203	X7-SB619	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB619-0304	X7-SB619	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB619-0405	X7-SB619	4	5	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB619-0506	X7-SB619	5	6	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS619-0102	X7-SB619	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB620-0203	X7-SB620	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB620-0304	X7-SB620	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS620-0001	X7-SB620	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS620-0102	X7-SB620	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB621-0203	X7-SB621	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB621-0304	X7-SB621	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS621-0001	X7-SB621	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS621-0102	X7-SB621	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB622-0203	X7-SB622	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB622-0304	X7-SB622	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS622-0001	X7-SB622	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS622-0102	X7-SB622	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS623-0001	X7-SB623	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS623-0102	X7-SB623	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB624-0203	X7-SB624	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB624-0506	X7-SB624	5	6	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB624-0607	X7-SB624	6	7	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB624-0708	X7-SB624	7	8	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS624-0001	X7-SB624	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS624-0102	X7-SB624	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB625-0203	X7-SB625	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB625-0304	X7-SB625	3	4	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB625-0405	X7-SB625	4	5	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS626-0001	X7-SB626	0	1	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS626-0102	X7-SB626	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB627-0203	X7-SB627	2	3	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS628-0102	X7-SB628	1	2	20120911	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS632-0102	X7-SB632	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB633-0203	X7-SB633	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB633-0304	X7-SB633	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS633-0001	X7-SB633	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS633-0102	X7-SB633	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB634-0203	X7-SB634	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB634-0304	X7-SB634	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS634-0102	X7-SB634	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB635-0203	X7-SB635	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB635-0304	X7-SB635	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB637-0304	X7-SB637	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB637-0506	X7-SB637	5	6	20121006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB638-0304	X7-SB638	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB638-0405	X7-SB638	4	5	20121006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB649-0304	X7-SB649	3	4	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS649-0001	X7-SB649	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS649-0102	X7-SB649	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SB650-0203	X7-SB650	2	3	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS650-0001	X7-SB650	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS650-0102	X7-SB650	1	2	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS662-0001	X7-SB662	0	1	20121003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SB680-0304	X7-SB680	3	4	20121006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B: Analytical Data-UXO 7

					POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
SAMPLE ID	LOCATION ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BAP EQUIVALENT-HALFND	BAP EQUIVALENT-POS	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE
X7-SS680-0001	X7-SB680	0	1	20121004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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X7-SS702-0001	X7-SB702	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS702-0102	X7-SB702	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS703-0001	X7-SB703	0	1	20121008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
X7-SS703-0102	X7-SB703	1	2	20121008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C

EMAC SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SPECIFICATIONS
INTERIM MEASURES WORK PLAN
UXO 7 – OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

Contractor Requirements

The Contractor will be responsible for performing the following work:

1. Attend pre-Interim Measures Work Plan (IMWP) implementation conference.
2. Submit documentation in accordance with the "Basic Contract" 30 days prior to beginning work to allow the Navy sufficient time to review and comment. The Contractor will then incorporate Navy comments into the documents. These documents include the following:
    - Work Plan
        - Excavation and Handling Plan
        - Hazardous/Waste Management Plan
        - Environmental Protection Plan
        - Erosion and Sediment Control Plan
        - Stormwater Pollution Prevention Plan
        - Transportation and Disposal Plan
    - Site Specific Health and Safety Plan (SSHSP) and Activity Hazard Analysis
    - Project Quality Control Plan (QCP)
3. Acquire Facility-specific permits, including but not limited to the following:
    - Safety & Building Availability Permit (ESO 8020/11)
    - Digging Permit (NWSCC 11000/3)
4. Mobilize required equipment and personnel to excavate the indicated contaminated soil.
5. Construct and maintain the required erosion and sediment control devices for the duration of the project.
6. Construct required support facilities including, but not limited to, dewatering pad, decontamination pad(s), and material storage areas.
7. Excavate, transport, and dispose lead and polychlorinated aromatic hydrocarbon (PAH)-contaminated soils.
8. Restore surface soil excavation area to meet surrounding grades.
9. Remove all temporary support facilities, leaving perimeter erosion and sediment controls in place until revegetation is complete and as instructed by the Navy.
10. Restore areas used for temporary support facilities (regrading and revegetation).
11. Demobilize equipment and personnel.

In addition to the Quality Control (QC) submittals and Safety and Health submittals required by the NSA Crane Contractor's Operations Manual and the Basic Contract, the Contractor shall submit the following to the Navy:

- Fieldwork reports in accordance with Part 6.4 Section C of the Basic Contract.
- Contractor 29 Code of Federal Regulation (CFR) 1910.120 Employee Training Certificates for all Contractor employees scheduled to be on-site.
- Erosion and Sediment (E&S) Control installation and inspection logs.
- Copies of NSA Crane specific permits.
- Certification and sampling results for backfill material and topsoil. The need for backfill should be kept to a minimum, especially for raised areas that were already higher than the surrounding grade. A minimum of one sample per borrow source is required.
- Waste transportation subcontractor name, address, contact name, telephone number, and United States Department of Transportation (USDOT) number.

- Hazardous waste disposal facility name, address, contact name, telephone number, and United States Environmental Protection Agency (USEPA) and State identification numbers, if required.
- Solid waste disposal facility name, address, contact name, telephone number, USEPA and State identification numbers.
- Copies of Treatment/Disposal Facility Permits.
- Waste profiles, complete waste characterization results, and any waste disposal facility pre-approval or approval documentation.
- Work Site Decontamination Certificates (verification that all vehicles equipment and containers were properly decontaminated prior to leaving the work site).
- Disposal Site Decontamination Certificates (verification that vehicles and containers were decontaminated prior to leaving the disposal facility).
- Shipment Manifests (manifests and other documents required to ship waste).
- Delivery Certificates (verification that waste was received at identified waste disposal facility).
- Treatment and Disposal Certificates (verification that waste was successfully received and disposed).
- Decontamination Log.

The Contractor-provided information will be compiled in the project Contract Task Order (CTO) Closure Report to be prepared by the Navy.

Supplemental Specifications

In addition to the performance specifications presented in the NSA Crane Contractor's Operation Manual and in the Basic Contract, the Contractor shall perform the activities in accordance with the supplemental specifications provided below.

General Requirements

The Contractor is advised that this project is subject to Federal, State, and local regulatory agency inspections and review for compliance with environmental laws and regulations. The Contractor shall fully cooperate with any representative from any Federal, State, or local regulatory agency who may visit the job site and shall provide immediate notification to the Officer in Charge of Construction (OICC), who shall accompany them on any subsequent site inspections. The Contractor shall complete, maintain, and make available to the OICC, Facility, or regulatory agency personnel all documentation relating to environmental compliance under applicable Federal, State, and local laws and regulations. The Contractor shall immediately notify the OICC if a Notice of Violation (NOV), Notice of Deficiency (NOD), or similar regulatory notice is issued to the Contractor.

The Contractor shall be responsible for all damages to persons or property resulting from Contractor fault or negligence as well as for the payment of any civil fines or penalties which may be assessed by any Federal, State, or local regulatory agency as a result of the Contractor's or any subcontractor's violation of an applicable Federal, State, or local environmental law or regulation. Should an NOV, Notice of Noncompliance, NOD, or similar regulatory agency notice be issued to the Government or Facility owner/operator on account of the actions or inactions of the Contractor or one if its subcontractors in the performance of work under this contract, the Contractor shall fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

After approval of the Contractor's Work Plan and before commencement of the work, the Contractor shall submit to the OICC the required certifications. As requested by the OICC, the Navy Representative for this project may review and provide surveillance for the OICC to determine if Contractor's submittals comply with the contract requirements.

The Contractor shall be required to commence work on the approved Contractor's Work Plan within 5-calendar days after receiving the notice to proceed and to prosecute the work diligently after receiving the notice to proceed.

NSA Crane will remain in operation during the entire construction period. The Contractor shall schedule the work as to cause the least amount of interference with the Facility. Work schedules shall be subject to the approval of the OICC. Permission to interrupt Facility road services shall be requested in writing a minimum of 15-calendar days prior to the desired date of interruption. The OICC shall be notified 48 hours prior to starting excavation activities.

Regular work hours shall consist of an 8½ hour daily period established by the OICC, Monday through Friday, excluding Government holidays. The Contractor should assume an 8½ hour daily period. Working outside of the 8½ hour daily period will require approval by the OICC. Work hours shall be established during the pre-IMWP implementation conference.

On-site storage, laydown, material handling, and decontamination activities shall be limited to areas approved by the OICC.

During the progress of construction activities, the work area and adjacent areas shall be kept clean and free of rubbish, surplus materials, and unneeded construction equipment. No material or debris shall be allowed to flow or wash into watercourses, ditches, gutters, drains, or pipes. Upon completion of the work, the Contractor shall sweep paved areas and rake clean landscaped areas, and remove waste and surplus materials, rubbish, and construction facilities from the site.

Work Restrictions

Contractor personnel employed at the Facility shall become familiar with and obey Facility regulations and keep within the limits of the work and avenues of ingress and egress as directed. Personnel shall not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be clearly marked for identification.

The Contractor shall indicate on the construction schedule any activity that could potentially interrupt Facility operations. The Contractor shall notify the OICC in writing 15-calendar days prior to the required interruption.

Facilities and Services

Provide utility permits in accordance with Part 4.13 Section C of the Basic Contract.

NSA Crane shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as indicated. The amount of each utility service consumed shall be charged to or paid for by the Contractor at the prevailing rates charged to NSA Crane or shall be furnished at no charge as indicated. The Contractor shall carefully conserve any utilities furnished without charge.

The point at which NSA Crane will deliver such utilities or services and the quantity available will be identified by NSA Crane.

The Contractor, at its expense and in a workman-like manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

Electric – Electrical power available, primary voltage is [2400 volt 3 phase, 3 wire, 60 cycle AC. Secondary voltages may be 120/208 or 120/240 volts.] Final taps and tie-ins to the NSA Crane utility grid will be made by NSA Crane electric shop.

Potable Water – Potable water is not available. Contractor shall provide potable water for use by all personnel.

Water – A reasonable quantity of water is available at NSA Crane at the Building 10 Fire Station at no charge. Provide backflow prevention devices on connections to potable water supplies. Under no circumstances will taps to NSA Crane fire hydrants be allowed for obtaining water.

Telephone – Telephone service is not available.

Sanitary Facilities - Provide temporary sanitary facilities for use by all personnel in accordance with Part 3.10 Section C of the Basic Contract.

Municipal Waste – Municipal waste storage and disposal is not available.

Sewer – Water resulting from personnel and equipment decontamination, excavation dewatering, and water from materials handling pad may be discharged to the NSA Crane sanitary sewer system, subject to approval of the NSA Crane based on characterization samples of water to be discharged.

Site Personnel Qualifications

Site Superintendent - The Contractor shall designate a Site Superintendent who shall have responsibility and authority to direct work performed. The Site Superintendent shall be responsible for the management and execution of all site activities in accordance with the IMWP, approved Contractor's Work Plan, and all Federal, State, and local laws and regulations. The Site Superintendent may not act in the dual role as the Project Quality Control Manager or Site Health and Safety Specialist (SHSS). The Site Superintendent shall have, as a minimum, the following qualifications:

- A minimum of 6-years site superintendent experience.
- Familiar with the requirements of the U.S. Army Corps of Engineers Safety - Safety and Health Requirements (EM 385-1-1).
- Experience in the areas of hazard identification and safety compliance.

Project Quality Control Manager - The Contractor shall designate a Project QC Manager who shall assist and represent the QC Program Manager in continued implementation and enforcement of the approved Project QC Plan. The QC Program Manager or Project QC Manager shall be physically present at the project site whenever work is in progress. The Project QC Manager may be dual hatted with the SHSS if qualified. The Project QC Manager shall have, as a minimum, the following qualifications:

- A minimum 2-years experience as a Project QC Manager.
- A minimum of 10-years combined experience in the following positions: project superintendent, QC manager, project manager, project engineer or construction manager on similar size and type of construction contracts which included the major trades that are part of this IM.
- Alternatively, the above 10-year combined experience requirement may be satisfied by providing a professional engineer registered in the State of Indiana having at least 2-years experience as a Project QC Manager.
- Familiar with the requirements of the U.S. Army Corps of Engineers Safety - Safety and Health Requirements (EM 385-1-1).
- Experience in the areas of hazard identification and safety compliance.

Site Health and Safety Specialist - The Contractor shall designate a Site Health and Safety Specialist (SHSS) who shall assist and represent the Contractor's Health and Safety (H&S) Manager in continued implementation and enforcement of the approved Site Health and Safety Plan (SSHSP). The SHSS shall have the on-site responsibility and authority to modify and stop work, or remove personnel from the site if working conditions change that may affect on-site and off-site health and safety. The SHSS shall be physically present at the project site at all times. The SHSS may be dual hatted with the Project QC Manager. The SHSS shall have, as a minimum, the following qualifications:

- A minimum of 5-years safety work on similar projects.
- 30-hour OSHA construction safety class or equivalent within the last 5-years.
- An average of at least 24 hours of formal safety training each year for the last 5-years.
- Competent person status for at least the following:
    - excavation,
    - health hazard recognition, evaluation and control of chemical, physical and biological agents, and
    - personal protective equipment and clothing to include selection, use and maintenance.
- First aid and cardiopulmonary resuscitation qualified.

Quality Control

Approval of the QC Plan is required prior to the start of construction. The OICC reserves the right to require changes in the QC Plan and operations as necessary to ensure the specified quality of work. The Contracting Officer reserves the right to interview the QC Manager at any time in order to verify his/her submitted qualifications.

The OICC shall be notified, in writing, of any proposed changes to the QC Plan, at a minimum of 7-calendar days prior to the implementation of the proposed change. Proposed changes must be approved by the OICC.

Combined Contractor Production Report/Contractor Quality Control Report (CPR/CQCR) is required for each day that work is performed. CPR/CQCRs are to be prepared, signed, and dated by the Project QC Manager.

Safety and Occupational Health Requirements

The SHSS and Contractor representatives who have a responsibility or significant role in accident prevention shall attend the pre-IMWP implementation conference. The purpose of the conference is for the Contractor and the OICC to become acquainted and explain the functions and operating procedures of their respective organizations and to reach mutual understanding relative to the administration of the overall project before the initiation of work. The Contractor shall discuss the details of the work identified in the approved Contractor's Work Plan and discuss which construction phases will require significant or additional activity hazard analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of additional hazard analysis shall be established to preclude project delays. Lastly, deficiencies in the submitted accident prevention report will be brought to the attention of the Contractor at the conference. The Contractor shall revise the plan to correct deficiencies and resubmit the plan for acceptance.

New employees (prime or subcontractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

If unforeseen materials hazardous to human health are encountered during operations, then that portion of the work shall be stopped and the OICC shall be notified immediately. Within 14-days, the Navy will determine if the material is hazardous. If the material is not hazardous or poses no danger, the OICC will direct the Contractor to proceed without change. If the material is determined to be hazardous or to pose danger, and handling of the material is necessary to accomplish the work, the Contracting Officer will issue modifications to the proposed work.

Equipment shall be operated by designated qualified operators. Proof of qualifications shall be kept on the project site for review. Manufacturer's specifications or owner's manual for the equipment shall be on site and reviewed for additional safety precautions or requirements. Such additional safety precautions or requirements shall be incorporated into the activity hazard analysis. Mechanized equipment shall be inspected in accordance with manufacturer's recommendations for safe operations by a competent person prior to being placed into use. Daily checks or tests shall be conducted and documented on mechanized equipment by designated competent persons.

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

Environmental Controls

The need for an E&S Control Plan is included in the IMWP. The E&S Control Plan will describe the location and description of all erosion and sediment control measures, a sequence of construction to be followed, graphic details of all E&S control measures to be used, and an approval sign-off block containing the names of the Facility and Contractor contacts, whose signatures indicate plan acceptance/approval.

The Contractor shall adhere to and strictly follow the E&S Control Plan and maintain all measures used during construction. Modifications to the E&S Control Plan shall be submitted to the OICC, and as required, to the Indiana Department of Environmental Management (IDEM) for approval. No modifications to the E&S Control Plan will be allowed until these changes have been approved by the OICC and IDEM and three copies of the approved modifications have been submitted to the OICC and one copy of the approved modifications have been submitted to IDEM.

Transportation and Disposal of Contaminated Material

The Contractor shall be solely responsible for complying with all Federal, State, and local requirements for decontamination of vehicles, equipment, and containers and shall bear all responsibility and cost for any noncompliance. In addition to these requirements, the Contractor shall perform the following:

- Visually inspect all vehicles, equipment, and containers leaving the work site for proper decontamination.
- Prepare and maintain a written decontamination log.

The Contractor shall be solely responsible for complying with all Federal, State, and local requirements for transporting contaminated materials through the applicable jurisdictions and shall bear all responsibility and cost for any noncompliance. In addition to these requirements, the Contractor shall perform the following:

- Inspect and document all vehicles and containers for proper operation and covering.
- Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.

All contaminated materials removed from the site shall be disposed in a treatment/disposal facility permitted to accept such material.

The Contractor shall properly dispose of Investigation-Derived Waste (IDW), personnel protective equipment, and miscellaneous wastes associated with implementation of the IMWP, including sampling and analysis that are generated by the Navy representatives.

APPENDIX D

POST-EXCAVATION COMPOSITE SOIL SAMPLING PROCESS AND RATIONALE (FIELD TASK MODIFICATION REQUEST NO. 3)

Tetra Tech, Inc.
FIELD TASK MODIFICATION REQUEST FORM

Project/Installation Name: UXO 7 – Old Rifle Range and Trap Ranges	**CTO & Project Number:** CTO F271; 112IG05608	**Task Modification Number:** 003
Modification to: Tetra Tech NUS, (August) 2007. Resource Conservation and Recovery Act Addendum No. 2 to the Quality Assurance Project Plan for SWMUs 8, 15, 18, 19, 20, and the Old Gun Tub Storage Lot for UXO 5 (Building 2044 Drop Tower/Test Rail Site) and UXO 7 (Ranges). Technical Memoranda Work Plans for Supplemental Sampling at UXO 7 Round 1 (October 2011) / Round 2 (August 2012).	**Site Location:** NSA Crane	**Date of Request:** September 20, 2013

Background: The Navy is conducting an interim measures removal action at Naval Support Activity (NSA) Crane at UXO 7 to address unacceptable human health and ecological risks. UXO 7 is an area at NSA Crane consisting of several small arms ranges including a 500-yard rifle range, pistol range, east trap range, and west trap range (**Figure 1**). These former small arms ranges have been the subject of multiple investigations for contaminants commonly associated with rifle and pistol range ammunition, primarily lead and also trap range target contaminants, which are primarily PAHs. The UXO 7 Interim Measures Work Plan (IMWP) has identified the discrete soil areas/volumes to be excavated to address excess risk. In many cases the boundaries have been established at locations which are intermediate between two sample locations. There are two objective of the sampling described in this FTMR. The first is to obtain data on the residual contamination of lead and/or PAHs at excavation sidewalls and floor, where the boundary of the excavation is for use in the risk evaluations. The second is to obtain data that can be preliminarily assessed, while the excavations are ongoing to determine whether sidewall and/or boundary residual concentrations are likely to result in a determination of excess risk.

The fieldwork described in this FTMR will be in accordance with the procedures and methodologies described in the United States Environmental Protection Agency (USEPA)-approved Resource Conservation and Recovery Act (RCRA) Facility Investigation Quality Assurance Project Plan (QAPP for multiple sites at NSA Crane (Tetra Tech NUS, 2004), as well as subsequent updates to that document as presented in QAPP Addendum No. 1 (Tetra Tech NUS, 2006) and QAPP Addendum No. 2 (Tetra Tech NUS, 2007).

This FTMR (No. 3) for the UXO 7 project describes the soil sampling process and the presents the rationale for collecting the environmental data to support the human health and ecological risk screening that will be conducted for the post-excavation soil at UXO 7, as part of the Interim Measures Report.

Field Procedures: The fieldwork described in this FTMR will be in accordance with the procedures and methodologies described in the United States Environmental Protection Agency (USEPA)-approved Resource Conservation and Recovery Act (RCRA) Facility Investigation Quality Assurance Project Plan (QAPP for multiple sites at NSA Crane (Tetra Tech NUS, 2004), as well as subsequent updates to that document as presented in QAPP Addendum No. 1 (Tetra Tech NUS, 2006) and QAPP Addendum No. 2 (Tetra Tech NUS, 2007).

The equipment and procedures to be used for collecting, handling, preserving, recording, logging, and shipping, samples to an analytical laboratory are presented in QAPP Addendum No. 1 (Tetra Tech NUS, 2006) and QAPP Addendum No. 2 (Tetra Tech NUS, 2007) to the original RCRA QAPP for multiple sites at NSA Crane (Tetra Tech NUS, 2004). More recent documents have been prepared to refocus the RCRA program at UXO 7 regarding the performance of supplemental sampling to better delineate the vertical and horizontal extent of soil with excess exposure risks at UXO 7. These include UXO 7 Technical Memorandum - FTMR No. 1 (Tetra Tech NUS, 2011) and UXO 7 Technical Memorandum - FTMR No. 2 (Tetra Tech, 2012). This FTMR (No. 3) includes ten project standard operating procedures (SOPs) that are presented in Appendix A and are based primarily on the SOPs that were developed for use in the delineation sampling at UXO 7. However, for FTMR No. 3, SOP-05 has been modified to address the collection of composite soil samples as indicated below:

- SOP-01 Sample Labeling
- SOP-02 Sample Identification Nomenclature
- SOP-03 Sample Custody and Documentation of Field Activities
- SOP-04 Sample Preservation, Packaging, and Shipping
- SOP-05 Composite Soil Sampling
- SOP-06 Soil Sample Logging
- SOP-07 Decontamination of Field Sampling Equipment
- SOP-08 Management of Investigation-Derived Waste
- SOP-09 Global Positioning System
- SOP-10 Field Portable X-Ray Fluorescence Analysis of Soil and Sediment Samples Using the INNOV-X Alpha Series Instrument.

Composite soil sampling will generally be performed using trowels and buckets and composited in accordance with the practices and procedures presented in SOP-05 Composite Soil Sampling, and as summarized in the following sections.

Sample Collection: Samples will be collected at all excavation sidewalls in all cases where data are not available at the horizontal boundary of the excavation. The sidewalls will be sampled so that a single soil composite will represent a segment of up to 50 linear feet (plus or minus 10 percent) of excavation sidewall. For each two-foot high vertical section within a sidewall segment, six individual aliquots will be collected from various elevations within that two-foot horizon from the sidewall segment and composited into a single representative sample for that sidewall segment. For excavations that are greater than two feet high, the same sidewall length will be sampled in a similar fashion so that an additional composite soil sample is collected for the next overlying soil horizon. In those instances where the side wall is only one foot high, or the remaining sidewall height that has not been sampled is only one-foot thick, then the composite sample will be collected from the sidewall segment along the unsampled one-foot horizon. If

there are already sufficient data to characterize the lead or PAH soil concentrations along a specific length of sidewall for a proposed excavation subarea, then additional sidewall soil samples will not need to be collected for that discrete sidewall section.

Samples will be collected from all excavation floors in all cases where data are not available at the vertical boundary of the excavation. A minimum of one soil composite sample will be collected from each subarea (as needed) and consist of six discrete soil sample aliquots collected from the excavation floor. One composite soil sample will be collected for each 1,200 square feet of excavation floor (an area roughly covering about 35 feet by 35 feet). For larger excavation floors, multiple composite soil samples will need to be collected, with the total number dependent upon the overall size of the excavation (i.e., 800 square feet = 1 composite sample, 2,800 square feet = 3 composite samples, 4,000 square feet = 4 composite samples, etc.). If there are already sufficient data to characterize the lead or PAH soil concentrations at the base of the proposed excavation subarea, then additional floor samples will not be collected.

Table 1 lists sample names and numbers for proposed composited soil lead samples to be collected during the Interim Measures removal action field effort. **Figures 2** and **3** show the approximate locations where the samples will be collected for lead analysis. The information below provides details on the composite sampling effort to collect residual soil lead concentration data to support the re-evaluation of exposures risks at UXO 7. **Table 2** provides a list of the composited soil PAH samples to be collected during the Interim Measures removal action field effort. **Figures 4** and **5** show the approximate locations where samples will be collected for the PAH subareas on the former Trap Ranges.

Analysis: PAH samples will be submitted to a laboratory for expedited analysis. BAP equivalents will be calculated. The soil PAH data (as BaP equivalents) collected from excavation sidewalls and floors during the IM will be evaluated by the Navy to determine whether additional excavations may be warranted to address excess risk.

Lead samples will be initially analyzed in the field by XRF techniques. The field XRF data will be converted to laboratory-equivalent data using historical field/laboratory correlation data for UXO 7. The correlation between field XRF readings and laboratory-derived lead concentrations for previous soil samples collected at UXO 7 is presented in **Table 3**. The data from **Table 3** will be used only until sufficient data is available from the interim measures sampling to establish new correlations or verify the existing correlations. If new correlations are established based on interim measures data then comparisons made to the existing **Table 3** will be reevaluated. The soil lead concentration data collected from excavation sidewalls and floors during the IM will be evaluated by the Navy to determine whether additional excavations may be warranted to address excess risk.

REFERENCES

Tetra Tech NUS, (Tetra Tech NUS, Inc.), 2004. Quality Assurance Project Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) 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, Crane, Indiana, September.

Tetra Tech NUS, 2006. Resource Conservation and Recovery Act Facility Investigation Addendum No. 1 to the Quality Assurance Project Plan for SWMUs 8, 15, 18, 19, 20 and The Old Gun Tub Storage Lot for Interim Measures at SWMU 7 (Old Rifle Range), SWMU 8 (Building 106 Pond), SWMU 13 (Mine Fill B), and SWMU 17 (PCB Burial/Pole Yard). Naval Surface Warfare Center, Crane Division, Crane, Indiana, November.

Tetra Tech NUS, 2007. Resource Conservation and Recovery Act Facility Investigation Addendum No. 2 to the QAPP for SWMUs 8, 15, 18, 19, 20 and the Old Gun Tub Storage Lot for UXO 5 (Building 2044 Drop Tower/Test Rail Site) and UXO 7 (Ranges). Naval Surface Warfare Center, Crane Division, Crane, Indiana. August.

Tetra Tech NUS, 2011. Resource Conservation and Recovery Act Technical Memorandum – NSA Crane UXO 7 – Small Arms Ranges – Supplemental Work Plan (Field Task Modification Request No. 1). Naval Support Activity Crane, Crane, Indiana. October.

Tetra Tech, (Tetra Tech, Inc.), 2012. Resource Conservation and Recovery Act Technical Memorandum – NSA Crane UXO 7 – Small Arms Ranges – Supplemental Work Plan (Field Task Modification Request No. 2). Naval Support Activity Crane, Crane, Indiana, August.

Table 1

Proposed Composite Soil Samples and Rationale
UXO 7 – Old Rifle Range
NSA Crane, Indiana

Sub-Area	Sample ID	Pb[1]	Sample Rationale
400-YARD BERM AREA (BA)			
BA-1	X7-BA1-A-SOCW001-0002	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW002-0204	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW003-0406	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW004-0002	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW005-0204	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW006-0406	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW007-0002	1	Provides Wall A (No. 3) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW008-0204	1	Provides Wall A (No. 3) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW009-0406	1	Provides Wall A (No. 3) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW010-0002	1	Provides Wall A (No. 4) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW011-0204	1	Provides Wall A (No. 4) Soil Lead Concentration for Risk Assessment
	X7-BA1-A-SOCW012-0406	1	Provides Wall A (No. 4) Soil Lead Concentration for Risk Assessment
	X7-BA1-B-SOCW004-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA1-B-SOCW005-0204	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA1-B-SOCW006-0406	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW007-0002	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW008-0204	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW009-0406	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW010-0002	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW011-0204	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-C-SOCW012-0406	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW013-0002	1	Provides Wall D (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW014-0204	1	Provides Wall D (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW015-0406	1	Provides Wall D (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW016-0002	1	Provides Wall D (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW017-0204	1	Provides Wall D (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-D-SOCW018-0406	1	Provides Wall D (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA1-E-SOCW019-0406	1	Provides Wall E Soil Lead Concentration for Risk Assessment
	X7-BA1-F-SOCW020-0002	1	Provides Wall F Soil Lead Concentration for Risk Assessment
	X7-BA1-F-SOCW021-0204	1	Provides Wall F Soil Lead Concentration for Risk Assessment
	X7-BA1-F-SOCW022-0406	1	Provides Wall F Soil Lead Concentration for Risk Assessment

Table 1

Proposed Composite Soil Samples and Rationale
UXO 7 – Old Rifle Range
NSA Crane, Indiana

Sub-Area	Sample ID	Pb[(1)]	Sample Rationale
BA-1	X7-BA1-A-SOCF001	1	Provides BA-1 Floor Soil Lead Data (Area No. 1A) for Risk Assessment
	X7-BA1-A-SOCF002	1	Provides BA-1 Floor Soil Lead Data (Area No. 1B) for Risk Assessment
	X7-BA1-A-SOCF003	1	Provides BA-1 Floor Soil Lead Data (Area No. 1C) for Risk Assessment
	X7-BA1-A-SOCF004	1	Provides BA-1 Floor Soil Lead Data (Area No. 1D) for Risk Assessment
BA-2	X7-BA2-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA2-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA2-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA2-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA2-A-SOCF001	1	Provides BA-2 Floor Soil Lead Data for Risk Assessment
BA-3	X7-BA3-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA3-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA3-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA3-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA3-A-SOCF001	1	Provides BA-3 Floor Soil Lead Data for Risk Assessment
BA-4	X7-BA4-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA4-A-SOCW002-0204	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA4-B-SOCW003-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA4-B-SOCW004-0204	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA4-C-SOCW005-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA4-C-SOCW005-0204	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA4-A-SOCF001	1	Provides BA-4 Floor Soil Lead Data (Area No. 4A) for Risk Assessment
	X7-BA4-B-SOCF002	1	Provides BA-4 Floor Soil Lead Data (Area No. 4B) for Risk Assessment
BA-5	X7-BA5-A-SOCW001-0002	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCW002-0204	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCW003-0405	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCW004-0002	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCW005-0204	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCW006-0405	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA5-B-SOCW007-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA5-B-SOCW008-0204	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA5-B-SOCW009-0405	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA5-C-SOCW010-0204	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment

Table 1

Proposed Composite Soil Samples and Rationale
UXO 7 – Old Rifle Range
NSA Crane, Indiana

Sub-Area	Sample ID	Pb[(1)]	Sample Rationale
BA-5	X7-BA5-C-SOCW011-0405	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA5-C-SOCW012-0204	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA5-C-SOCW013-0405	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA5-D-SOCW014-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA5-D-SOCW015-0204	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA5-D-SOCW016-0405	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA5-E-SOCW017-0305	1	Provides Wall E Soil Lead Concentration for Risk Assessment
	X7-BA5-F-SOCW018-0002	1	Provides Wall F Soil Lead Concentration for Risk Assessment
	X7-BA5-F-SOCW019-0204	1	Provides Wall F Soil Lead Concentration for Risk Assessment
	X7-BA5-F-SOCW020-0405	1	Provides Wall F Soil Lead Concentration for Risk Assessment
	X7-BA5-G-SOCW021-0405	1	Provides Wall G Soil Lead Concentration for Risk Assessment
	X7-BA5-A-SOCF001	1	Provides BA-5 Floor Soil Lead Data (Area No. 5A) for Risk Assessment
	X7-BA5-B-SOCF002	1	Provides BA-5 Floor Soil Lead Data (Area No. 5B) for Risk Assessment
	X7-BA5-C-SOCF003	1	Provides BA-5 Floor Soil Lead Data (Area No. 5C)for Risk Assessment
BA-6	X7-BA6-A-SOCW001-0002	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA6-A-SOCW002-0002	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA6-B-SOCW003-0002	1	Provides Wall B (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA6-B-SOCW004-0002	1	Provides Wall B (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA6-C-SOCW005-0002	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA6-C-SOCW006-0002	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA6-A-SOCF001	1	Provides BA-6 Floor Soil Lead Data (Area No. 6A) for Risk Assessment
	X7-BA6-B-SOCF002	1	Provides BA-6 Floor Soil Lead Data (Area No. 6B) for Risk Assessment
	X7-BA6-C-SOCF003	1	Provides BA-6 Floor Soil Lead Data (Area No. 6C)for Risk Assessment
	X7-BA6-D-SOCF004	1	Provides BA-6 Floor Soil Lead Data (Area No. 6D) for Risk Assessment
BA-7	X7-BA7-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA6-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA7-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA7-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA7-A-SOCF001	1	Provides BA-7 Floor Soil Lead Data for Risk Assessment
BA-8	X7-BA8-A-SOCW001-0002	1	Provides Wall A (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA8-A-SOCW002-0203	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA8-B-SOCW003-0002	1	Provides Wall B (No. 1) Soil Lead Concentration for Risk Assessment

Table 1

Proposed Composite Soil Samples and Rationale
UXO 7 – Old Rifle Range
NSA Crane, Indiana

Sub-Area	Sample ID	Pb[1]	Sample Rationale
BA-8	X7-BA8-B-SOCW004-0203	1	Provides Wall B (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA8-B-SOCW005-0002	1	Provides Wall B (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA8-B-SOCW006-0203	1	Provides Wall A (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA8-C-SOCW007-0002	1	Provides Wall C (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA8-C-SOCW008-0203	1	Provides Wall C (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA8-D-SOCW009-0002	1	Provides Wall D (No. 1) Soil Lead Concentration for Risk Assessment
	X7-BA8-D-SOCW010-0203	1	Provides Wall D (No. 2) Soil Lead Concentration for Risk Assessment
	X7-BA8-A-SOCF001	1	Provides BA-8 Floor Soil Lead Data (Area No. 8A) for Risk Assessment
	X7-BA8-B-SOCF002	1	Provides BA-8 Floor Soil Lead Data (Area No. 8B) for Risk Assessment
BA-9	X7-BA9-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA9-A-SOCW002-0203	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA9-B-SOCW003-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA9-B-SOCW004-0203	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA9-C-SOCW005-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA9-B-SOCW006-0203	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA9-D-SOCW007-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA9-B-SOCW008-0203	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA9-A-SOCF001	1	Provides BA-9 Floor Soil Lead Data for Risk Assessment
BA-10	X7-BA10-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-BA10-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-BA10-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-BA10-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-BA10-A-SOCF001	1	Provides BA-10 Floor Soil Lead Data for Risk Assessment
Total Number of Berm Area Samples		**118**	
NORTHERN DRAINAGE AREA (DA)			
DA-1	X7-DA1-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-DA1-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-DA1-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-DA1-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-DA1-E-SOCW005-0002	1	Provides Wall E Soil Lead Concentration for Risk Assessment
	X7-DA1-A-SOCF001	1	Provides DA-1 Excavation Floor Soil Lead Data for Risk Assessment

Table 1

Proposed Composite Soil Samples and Rationale
UXO 7 – Old Rifle Range
NSA Crane, Indiana

Sub-Area	Sample ID	Pb[1]	Sample Rationale
DA-2	X7-DA2-A-SOCW001-0002	1	Provides Wall A Soil Lead Concentration for Risk Assessment
	X7-DA2-B-SOCW002-0002	1	Provides Wall B Soil Lead Concentration for Risk Assessment
	X7-DA2-C-SOCW003-0002	1	Provides Wall C Soil Lead Concentration for Risk Assessment
	X7-DA2-D-SOCW004-0002	1	Provides Wall D Soil Lead Concentration for Risk Assessment
	X7-DA2-A-SOCF001	1	Provides DA-2 Excavation Floor Soil Lead Data for Risk Assessment
Total Number of Drainage Area Samples		**11**	

(1) All samples designated for Pb analysis will initially undergo field XRF analysis with a subset of those samples from each subarea (minimum of 20%) shipped to the fixed-base laboratory for Pb analysis.

Table 2

Proposed Composite Soil Samples and Rationale
UXO 7 – Trap Ranges
NSA Crane, Indiana

Sub-Area	Sample ID	PAHs	Sample Rationale
EAST TRAP RANGE			
ETR-1	X7-ETR1-A-SOCW001-0001	1	Provides Wall A (ETR-1) Soil PAH Concentration for Risk Assessment
	X7-ETR1-B-SOCW002-0001	1	Provides Wall B (ETR-1) Soil PAH Concentration for Risk Assessment
	X7-ETR1-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-1) for Risk Assessment
ETR-2	X7-ETR2-A-SOCW001-0102	1	Provides Wall A (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-A-SOCW002-0102	1	Provides Wall A (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-B-SOCW003-0002	1	Provides Wall B (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-C-SOCW004-0002	1	Provides Wall C (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-D-SOCW005-0002	1	Provides Wall D (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-E-SOCW006-0002	1	Provides Wall E (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-F-SOCW007-0002	1	Provides Wall F (ETR-2) Soil PAH Concentration for Risk Assessment
	X7-ETR2-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-2) for Risk Assessment
ETR-3	X7-ETR3-A-SOCW001-0204	1	Provides Wall A (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-B-SOCW002-0002	1	Provides Wall B (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-B-SOCW003-0204	1	Provides Wall B (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-C-SOCW004-0102	1	Provides Wall C (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-C-SOCW005-0204	1	Provides Wall C (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-D-SOCW006-0102	1	Provides Wall D (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-D-SOCW007-0204	1	Provides Wall D (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-E-SOCW008-0002	1	Provides Wall E (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-E-SOCW009-0204	1	Provides Wall E (ETR-3) Soil PAH Concentration for Risk Assessment
	X7-ETR3-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-3) for Risk Assessment
ETR-4	X7-ETR4-A-SOCW001-0001	1	Provides Wall A (ETR-4) Soil PAH Concentration for Risk Assessment
	X7-ETR4-B-SOCW002-0001	1	Provides Wall B (ETR-4) Soil PAH Concentration for Risk Assessment
	X7-ETR4-C-SOCW003-0001	1	Provides Wall C (ETR-4) Soil PAH Concentration for Risk Assessment
	X7-ETR4-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-4) for Risk Assessment
ETR-5	X7-ETR5-A-SOCW001-0002	1	Provides Wall A (ETR-5) Soil PAH Concentration for Risk Assessment
	X7-ETR5-B-SOCW002-0002	1	Provides Wall B (ETR-5) Soil PAH Concentration for Risk Assessment
	X7-ETR5-C-SOCW003-0002	1	Provides Wall C (ETR-5) Soil PAH Concentration for Risk Assessment
	X7-ETR5-D-SOCW004-0002	1	Provides Wall D (ETR-5) Soil PAH Concentration for Risk Assessment
	X7-ETR5-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-5) for Risk Assessment

Table 2

Proposed Composite Soil Samples and Rationale
UXO 7 – Trap Ranges
NSA Crane, Indiana

Sub-Area	Sample ID	PAHs	Sample Rationale
ETR-6	X7-ETR6-A-SOCW001-0002	1	Provides Wall A (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-B-SOCW002-0002	1	Provides Wall B (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-C-SOCW003-0002	1	Provides Wall C (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-D-SOCW004-0002	1	Provides Wall D (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-E-SOCW005-0002	1	Provides Wall E (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-F-SOCW006-0002	1	Provides Wall F (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-G-SOCW007-0002	1	Provides Wall G (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-H-SOCW008-0002	1	Provides Wall H (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-I-SOCW009-0002	1	Provides Wall I (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-J-SOCW010-0002	1	Provides Wall J (ETR-6) Soil PAH Concentration for Risk Assessment
	X7-ETR6-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-6 / Area 1) for Risk Assessment
	X7-ETR6-B-SOCF002	1	Provides Floor Soil PAH Data (ETR-6 / Area 2) for Risk Assessment
ETR-7	X7-ETR7-A-SOCW001-0002	1	Provides Wall A (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-A-SOCW002-0204	1	Provides Wall A (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-A-SOCW003-0406	1	Provides Wall A (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-B-SOCW005-0204	1	Provides Wall B (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-B-SOCW006-0406	1	Provides Wall B (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-C-SOCW008-0204	1	Provides Wall C (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-C-SOCW009-0406	1	Provides Wall C (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-D-SOCW011-0204	1	Provides Wall D (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-D-SOCW012-0406	1	Provides Wall D (ETR-7) Soil PAH Concentration for Risk Assessment
	X7-ETR7-A-SOCF001	1	Provides Floor Soil PAH Data (ETR-7) for Risk Assessment
Total Number of East Trap Range Samples		**52**	
WEST TRAP RANGE			
WTR-1	X7-WTR1-A-SOCW001-0001	1	Provides Wall A (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-B-SOCW002-0001	1	Provides Wall B (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-B-SOCW003-0001	1	Provides Wall B (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-C-SOCW004-0001	1	Provides Wall C (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-C-SOCW005-0001	1	Provides Wall C (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-C-SOCW006-0001	1	Provides Wall C (WTR-1) Soil PAH Concentration for Risk Assessment

Table 2

Proposed Composite Soil Samples and Rationale
UXO 7 – Trap Ranges
NSA Crane, Indiana

Sub-Area	Sample ID	PAHs	Sample Rationale
	X7-WTR1-D-SOCW007-0001	1	Provides Wall D (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-D-SOCW008-0001	1	Provides Wall D (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-E-SOCW009-0001	1	Provides Wall E (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-E-SOCW010-0001	1	Provides Wall E (WTR-1) Soil PAH Concentration for Risk Assessment
WTR-1	X7-WTR1-F-SOCW011-0001	1	Provides Wall F (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-G-SOCW012-0001	1	Provides Wall G (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-H-SOCW013-0001	1	Provides Wall H (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-H-SOCW014-0001	1	Provides Wall H (WTR-1) Soil PAH Concentration for Risk Assessment
	X7-WTR1-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-1 / Area 1) for Risk Assessment
	X7-WTR1-B-SOCF002	1	Provides Floor Soil PAH Data (WTR-1 / Area 2) for Risk Assessment
	X7-WTR1-C-SOCF003	1	Provides Floor Soil PAH Data (WTR-1 / Area 3) for Risk Assessment
	X7-WTR1-D-SOCF004	1	Provides Floor Soil PAH Data (WTR-1 / Area 4) for Risk Assessment
	X7-WTR1-E-SOCF005	1	Provides Floor Soil PAH Data (WTR-1 / Area 5) for Risk Assessment
	X7-WTR1-F-SOCF006	1	Provides Floor Soil PAH Data (WTR-1 / Area 6) for Risk Assessment
	X7-WTR1-G-SOCF007	1	Provides Floor Soil PAH Data (WTR-1 / Area 7) for Risk Assessment
	X7-WTR1-H-SOCF008	1	Provides Floor Soil PAH Data (WTR-1 / Area 8) for Risk Assessment
	X7-WTR1-I-SOCF009	1	Provides Floor Soil PAH Data (WTR-1 / Area 9) for Risk Assessment
WTR-2	X7-WTR2-A-SOCW001-0002	1	Provides Wall A (WTR-2) Soil PAH Concentration for Risk Assessment
	X7-WTR2-B-SOCW002-0002	1	Provides Wall B (WTR-2) Soil PAH Concentration for Risk Assessment
	X7-WTR2-C-SOCW003-0102	1	Provides Wall C (WTR-2) Soil PAH Concentration for Risk Assessment
	X7-WTR2-D-SOCW004-0102	1	Provides Wall D (WTR-2) Soil PAH Concentration for Risk Assessment
	X7-WTR2-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-2) for Risk Assessment
WTR-3	X7-WTR3-A-SOCW001-0102	1	Provides Wall A (WTR-3) Soil PAH Concentration for Risk Assessment
	X7-WTR3-B-SOCW002-0102	1	Provides Wall B (WTR-3) Soil PAH Concentration for Risk Assessment
	X7-WTR3-C-SOCW003-0102	1	Provides Wall C (WTR-3) Soil PAH Concentration for Risk Assessment
	X7-WTR3-D-SOCW004-0102	1	Provides Wall D (WTR-3) Soil PAH Concentration for Risk Assessment
	X7-WTR3-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-3) for Risk Assessment

Table 2

Proposed Composite Soil Samples and Rationale
UXO 7 – Trap Ranges
NSA Crane, Indiana

Sub-Area	Sample ID	PAHs	Sample Rationale
WTR-4	X7-WTR4-A-SOCW001-0102	1	Provides Wall A (WTR-4) Soil PAH Concentration for Risk Assessment
	X7-WTR4-B-SOCW002-0102	1	Provides Wall B (WTR-4) Soil PAH Concentration for Risk Assessment
	X7-WTR4-C-SOCW003-0102	1	Provides Wall C (WTR-4) Soil PAH Concentration for Risk Assessment
	X7-WTR4-D-SOCW004-0102	1	Provides Wall D (WTR-4) Soil PAH Concentration for Risk Assessment
	X7-WTR4-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-4) for Risk Assessment
WTR-5	X7-WTR5-A-SOCW001-0102	1	Provides Wall A (WTR-5) Soil PAH Concentration for Risk Assessment
	X7-WTR5-B-SOCW002-0102	1	Provides Wall B (WTR-5) Soil PAH Concentration for Risk Assessment
	X7-WTR5-C-SOCW003-0102	1	Provides Wall C (WTR-5) Soil PAH Concentration for Risk Assessment
	X7-WTR5-D-SOCW004-0102	1	Provides Wall D (WTR-5) Soil PAH Concentration for Risk Assessment
	X7-WTR5-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-5) for Risk Assessment
WTR-6	X7-WTR6-A-SOCW001-0102	1	Provides Wall A (WTR-6) Soil PAH Concentration for Risk Assessment
	X7-WTR6-B-SOCW002-0002	1	Provides Wall B (WTR-6) Soil PAH Concentration for Risk Assessment
	X7-WTR6-C-SOCW003-0002	1	Provides Wall C (WTR-6) Soil PAH Concentration for Risk Assessment
	X7-WTR6-D-SOCW004-0102	1	Provides Wall D (WTR-6) Soil PAH Concentration for Risk Assessment
	X7-WTR6-A-SOCF001	1	Provides Floor Soil PAH Data (WTR-6) for Risk Assessment
Total Number of West Trap Range Samples		**48**	

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
5	78.8	-	38	110	-	71	142
6	79.8	-	39	111	-	72	143
7	80.7	-	40	112	-	73	144
8	81.7	-	41	113	-	74	145
9	82.7	-	42	114	-	75	146
10	83.6	-	43	115	-	76	147
11	84.6	-	44	116	-	77	148
12	85.5	-	45	117	-	78	149
13	86.5	-	46	118	-	79	150
14	87.4	-	47	119	-	80	151
15	88.4	-	48	120	-	81	152
16	89.3	-	49	121	-	82	153
17	90.3	-	50	122	-	83	154
18	91.3	-	51	123	-	84	154
19	92.2	-	52	124	-	85	155
20	93.2	-	53	125	-	86	156
21	94.1	-	54	126	-	87	157
22	95.1	-	55	127	-	88	158
23	96	-	56	128	-	89	159
24	97	-	57	129	-	90	160
25	97.9	-	58	130	-	91	161
26	98.9	-	59	131	-	92	162
27	99.9	-	60	131	-	93	163
28	101	-	61	132	-	94	164
29	102	-	62	133	-	95	165
30	103	-	63	134	-	96	166
31	104	-	64	135	-	97	167
32	105	-	65	136	-	98	168
33	106	-	66	137	-	99	169

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
34	107	-	67	138	-	100	170
35	108	-	68	139	-	101	171
36	108	-	69	140	-	102	172
37	109	-	70	141	-	103	173
104	174	-	137	206	-	170	237
105	175	-	138	206	-	171	238
106	176	-	139	207	-	172	239
107	177	-	140	208	-	173	240
108	178	-	141	209	-	174	241
109	179	-	142	210	-	175	242
110	180	-	143	211	-	176	243
111	180	-	144	212	-	177	244
112	181	-	145	213	-	178	245
113	182	-	146	214	-	179	246
114	183	-	147	215	-	180	247
115	184	-	148	216	-	181	248
116	185	-	149	217	-	182	249
117	186	-	150	218	-	183	250
118	187	-	151	219	-	184	251
119	188	-	152	220	-	185	252
120	189	-	153	221	-	186	253
121	190	-	154	222	-	187	254
122	191	-	155	223	-	188	255
123	192	-	156	224	-	189	256
124	193	-	157	225	-	190	257
125	194	-	158	226	-	191	258
126	195	-	159	227	-	192	259
127	196	-	160	228	-	193	260
128	197	-	161	229	-	194	261

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
129	198	-	162	230	-	195	262
130	199	-	163	231	-	196	263
131	200	-	164	232	-	201	267
132	201	-	165	233	-	202	268
133	202	-	166	234	-	203	269
134	203	-	167	235	-	204	270
135	204	-	168	235	-	205	271
136	205	-	169	236	-	206	272
207	273	-	240	305	-	273	338
208	274	-	241	306	-	274	338
209	275	-	242	307	-	275	339
210	276	-	243	308	-	276	340
211	277	-	244	309	-	277	341
212	278	-	245	310	-	278	342
213	279	-	246	311	-	279	343
214	280	-	247	312	-	280	344
215	281	-	248	313	-	281	345
216	282	-	249	314	-	282	346
217	283	-	250	315	-	283	347
218	284	-	251	316	-	284	348
219	285	-	252	317	-	285	349
220	286	-	253	318	-	286	350
221	287	-	254	319	-	287	351
222	288	-	255	320	-	288	352
223	289	-	256	321	-	289	353
224	290	-	257	322	-	290	354
225	291	-	258	323	-	291	355
226	292	-	259	324	-	292	356
227	293	-	260	325	-	293	357

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
228	294	-	261	326	-	294	358
229	295	-	262	327	-	295	359
230	296	-	263	328	-	296	360
231	297	-	264	329	-	301	365
232	298	-	265	330	-	302	366
233	299	-	266	331	-	303	367
234	300	-	267	332	-	304	368
235	300	-	268	333	-	305	369
236	301	-	269	334	-	306	370
237	302	-	270	335	-	307	371
238	303	-	271	336	-	308	372
239	304	-	272	337	-	309	373
310	374	-	343	406	-	376	438
311	375	-	344	407	-	377	439
312	376	-	345	408	-	378	440
313	377	-	346	409	-	379	441
314	378	-	347	410	-	380	442
315	379	-	348	411	-	381	443
316	380	-	349	412	-	382	444
317	381	-	350	413	-	383	445
318	381	-	351	414	-	384	446
319	382	-	352	415	-	385	447
320	383	-	353	416	-	386	448
321	384	-	354	417	-	387	449
322	385	-	355	418	-	388	450
323	386	-	356	419	-	389	451
324	387	-	357	420	-	390	452
325	388	-	358	421	-	391	453
326	389	-	359	422	-	392	454

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory 95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
327	390	-	360	423	-	393	455
328	391	-	361	424	-	394	456
329	392	-	362	425	-	395	457
330	393	-	363	426	-	396	458
331	394	-	364	427	-	401	463
332	395	-	365	428	-	402	464
333	396	-	366	429	-	403	465
334	397	-	367	430	-	404	466
335	398	-	368	431	-	405	467
336	399	-	369	432	-	406	468
337	400	-	370	433	-	407	469
338	401	-	371	433	-	408	470
339	402	-	372	434	-	409	471
340	403	-	373	435	-	410	472
341	404	-	374	436	-	411	473
342	405	-	375	437	-	412	474
413	475	-	446	507	-	479	540
414	476	-	447	508	-	480	541
415	477	-	448	509	-	481	542
416	478	-	449	510	-	482	543
417	479	-	450	511	-	483	544
418	480	-	451	512	-	484	545
419	481	-	452	513	-	485	546
420	482	-	453	514	-	486	547
421	483	-	454	515	-	487	548
422	484	-	455	516	-	488	549
423	485	-	456	517	-	489	550
424	486	-	457	518	-	490	551
425	487	-	458	519	-	491	552

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
426	488	-	459	520	-	492	553
427	489	-	460	521	-	493	554
428	490	-	461	522	-	494	555
429	491	-	462	523	-	495	556
430	492	-	463	524	-	496	557
431	493	-	464	525	-	497	558
432	494	-	465	526	-	498	559
433	495	-	466	527	-	499	560
434	496	-	467	528	-	500	561
435	497	-	468	529	-	501	562
436	498	-	469	530	-	502	563
437	499	-	470	531	-	503	564
438	500	-	471	532	-	504	565
439	501	-	472	533	-	505	566
440	502	-	473	534	-	506	567
441	502	-	474	535	-	507	568
442	503	-	475	536	-	508	569
443	504	-	476	537	-	509	570
444	505	-	477	538	-	510	571
445	506	-	478	539	-	511	572
512	573	-	545	606	-	578	639
513	574	-	546	607	-	579	640
514	575	-	547	608	-	580	641
515	576	-	548	609	-	581	642
516	577	-	549	610	-	582	643
517	578	-	550	611	-	583	644
518	579	-	551	612	-	584	644
519	580	-	552	613	-	585	645
520	581	-	553	614	-	586	646

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
521	582	-	554	615	-	587	647
522	583	-	555	616	-	588	648
523	584	-	556	617	-	589	649
524	585	-	557	618	-	590	650
525	586	-	558	619	-	591	651
526	587	-	559	620	-	592	652
527	588	-	560	621	-	593	653
528	589	-	561	622	-	594	654
529	590	-	562	623	-	595	655
530	591	-	563	624	-	596	656
531	592	-	564	625	-	597	657
532	593	-	565	626	-	598	658
533	594	-	566	627	-	599	659
534	595	-	567	628	-	600	660
535	596	-	568	629	-	601	661
536	597	-	569	630	-	602	662
537	598	-	570	631	-	603	663
538	599	-	571	632	-	604	664
539	600	-	572	633	-	605	665
540	601	-	573	634	-	606	666
541	602	-	574	635	-	607	667
542	603	-	575	636	-	608	668
543	604	-	576	637	-	609	669
544	605	-	577	638	-	610	670
611	671	-	644	704	-	677	738
612	672	-	645	705	-	678	739
613	673	-	646	706	-	679	740
614	674	-	647	707	-	680	741
615	675	-	648	708	-	681	742

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)	-	XRF VALUE (ppm)	PREDICTED FBL Pb VALUE (mg/kg)
616	676	-	649	709	-	682	743
617	677	-	650	710	-	683	744
618	678	-	651	711	-	684	745
619	679	-	652	712	-	685	746
620	680	-	653	713	-	686	747
621	681	-	654	714	-	687	748
622	682	-	655	715	-	688	749
623	683	-	656	716	-	689	750
624	684	-	657	717	-	690	751
625	685	-	658	718	-	691	752
626	686	-	659	719	-	692	753
627	687	-	660	720	-	693	754
628	688	-	661	721	-	694	755
629	689	-	662	722	-	695	756
630	690	-	663	723	-	696	757
631	691	-	664	724	-	697	758
632	692	-	665	725	-	698	759
633	693	-	666	727	-	699	760
634	694	-	667	728	-	700	761
635	695	-	668	729	-	-	-
636	696	-	669	730	-	-	-
637	697	-	670	731	-	-	-
638	698	-	671	732	-	-	-
639	699	-	672	733	-	-	-
640	700	-	673	734	-	-	-
641	701	-	674	735	-	-	-
642	702	-	675	736	-	-	-
643	703	-	676	737	-	-	-

Table 3

XRF Lead Concentrations and Corresponding Fixed-Base Laboratory
95 Percent Upper Prediction Limits
FTMR No. 3 – UXO 7 Old Rifle Range and Trap Ranges
NSA Crane
Crane, Indiana

Notes:
XRF= X-Ray Fluorescence
FBL = fixed-base laboratory
FTMR = Field Task Modification Request
Pb = lead
ppm = parts per million
mg/kg = milligrams per kilogram

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_SITEMAP.MXD 09/27/13 SP

DRAWN BY	DATE
J. ENGLISH	07/07/11
CHECKED BY	DATE
R. BARRINGER	09/27/13
REVISED BY	DATE
J. ENGLISH	09/27/13
SCALE	
AS NOTED	

NAVFAC

RANGE DETAIL LAYOUT
UXO 7 - OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
5608	F271
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
FIGURE 1	0

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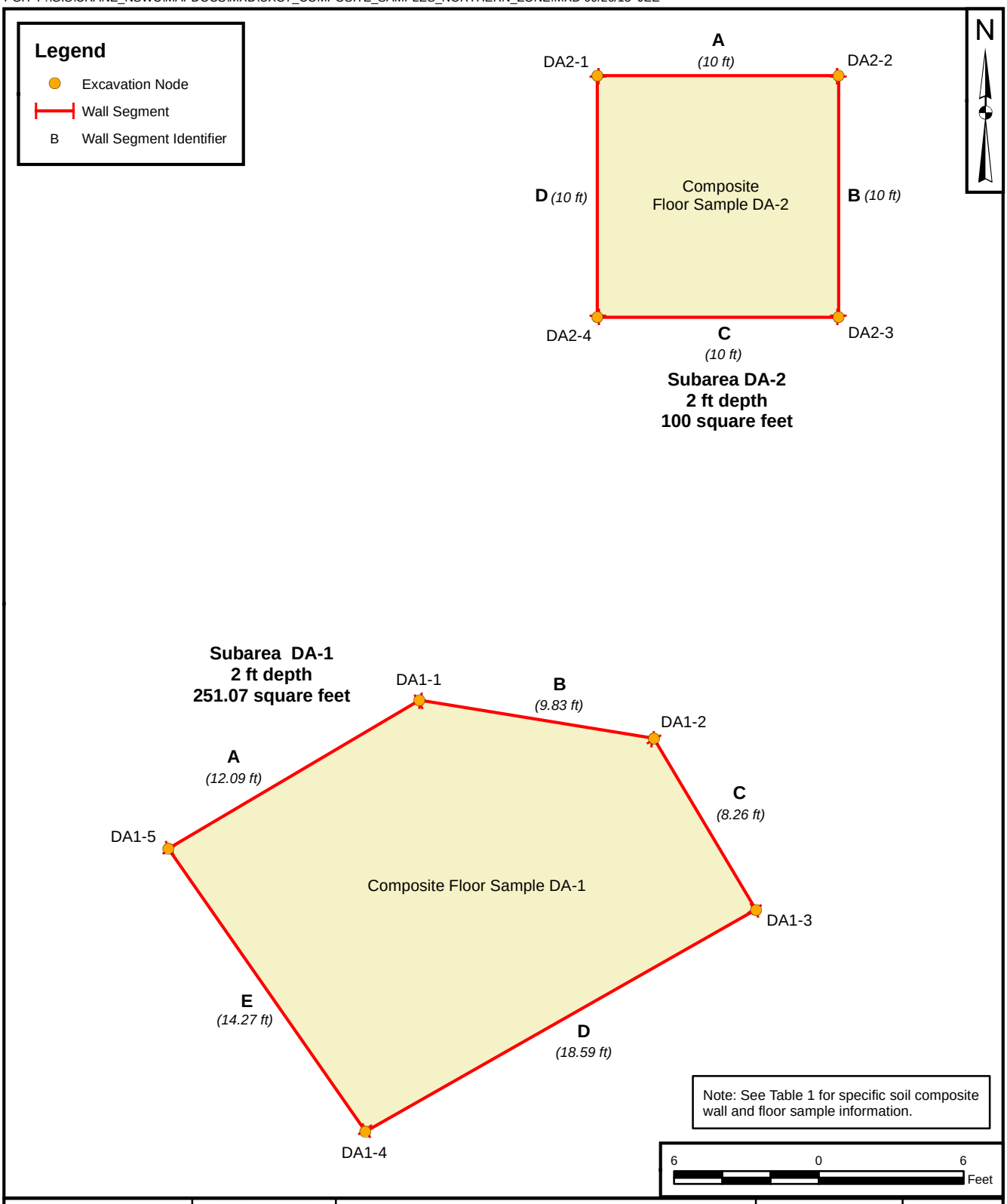
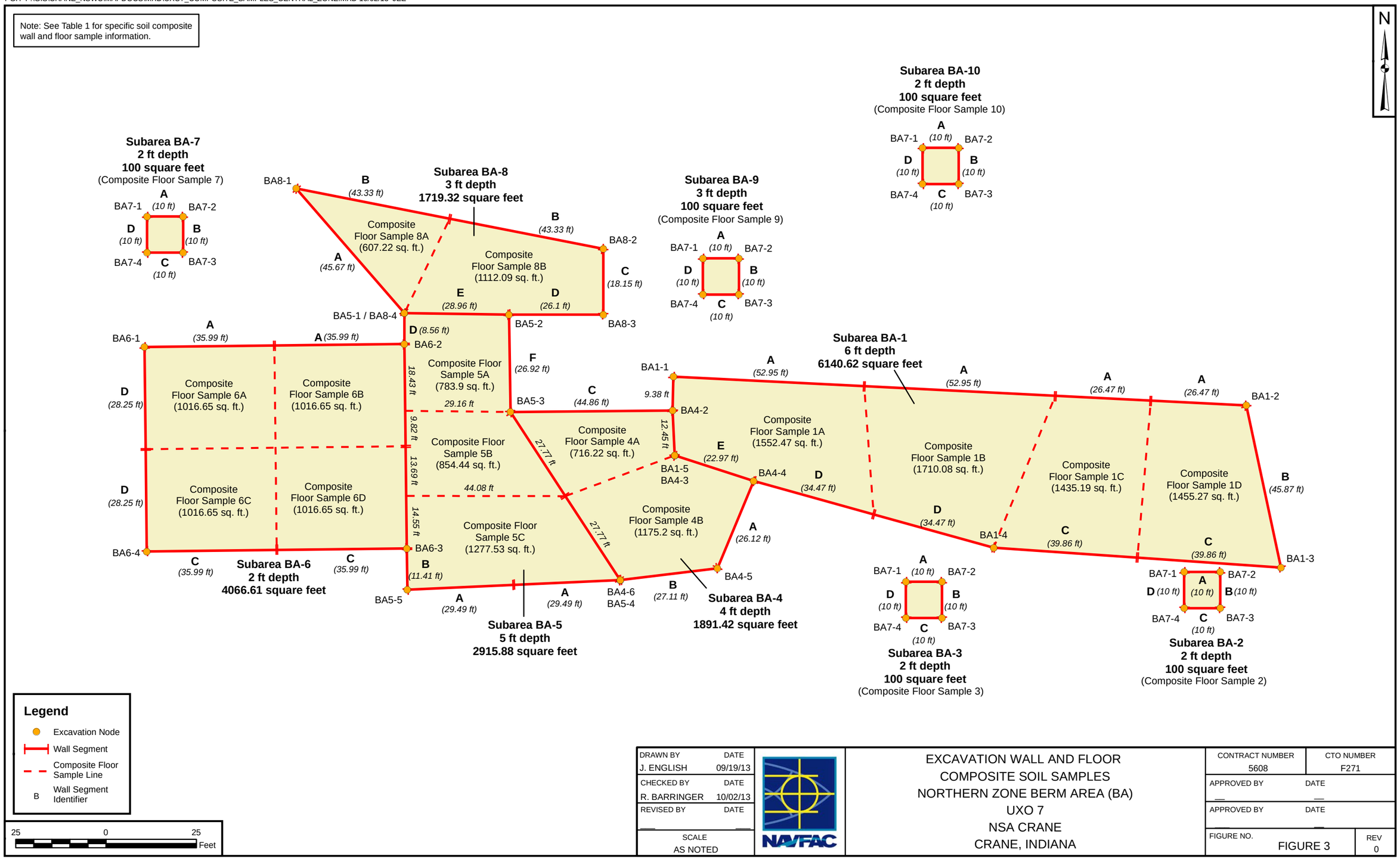


DRAWN BY	DATE	EXCAVATION WALL AND FLOOR COMPOSITE SOIL SAMPLES NORTHERN ZONE DRAINAGE AREA (DA) UXO 7 NSA CRANE CRANE, INDIANA	CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	09/19/13		5608	F271
CHECKED BY	DATE		APPROVED BY	DATE
R. BARRINGER	09/26/13		___	___
REVISED BY	DATE		APPROVED BY	DATE
			___	___
SCALE AS NOTED			FIGURE NO. FIGURE 2	REV 0

PGH P:\GIS\CRANE_NSWC\MAPDOCS\MXD\UXO7_COMPOSITE_SAMPLES_CENTRAL_ZONE.MXD 10/02/13 JEE

Note: See Table 1 for specific soil composite wall and floor sample information.



DRAWN BY	DATE
J. ENGLISH	09/19/13
CHECKED BY	DATE
R. BARRINGER	10/02/13
REVISED BY	DATE
SCALE	
AS NOTED	

NAVFAC

EXCAVATION WALL AND FLOOR
COMPOSITE SOIL SAMPLES
NORTHERN ZONE BERM AREA (BA)
UXO 7
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
5608	F271
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. FIGURE 3	REV 0

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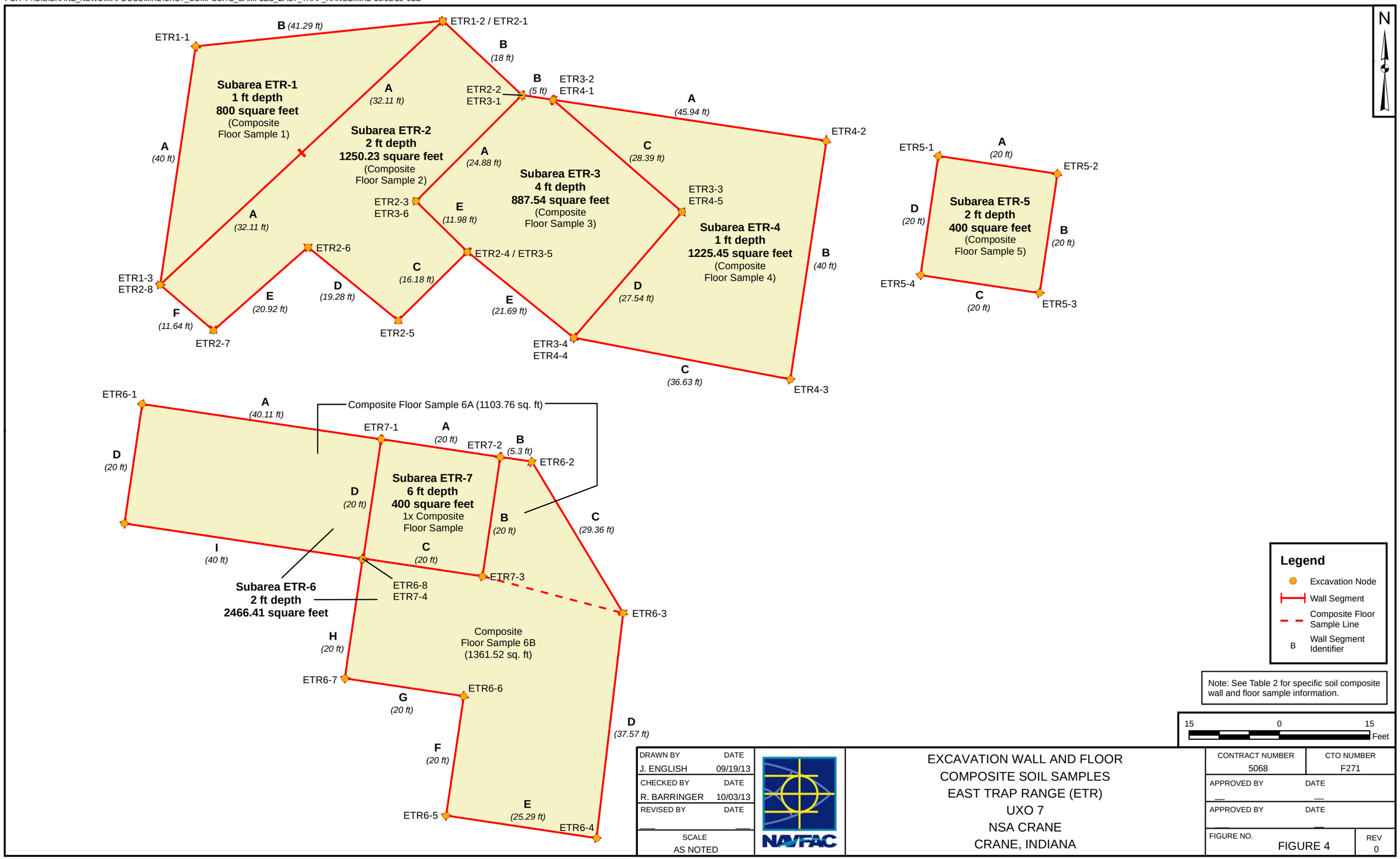

DRAWN BY	DATE
J. ENGLISH	09/19/13
CHECKED BY	DATE
R. BARRINGER	10/03/13
REVISED BY	DATE
SCALE	
AS NOTED	

NAVFAC

EXCAVATION WALL AND FLOOR
COMPOSITE SOIL SAMPLES
EAST TRAP RANGE (ETR)
UXO 7
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
5068	F271
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. FIGURE 4	REV 0

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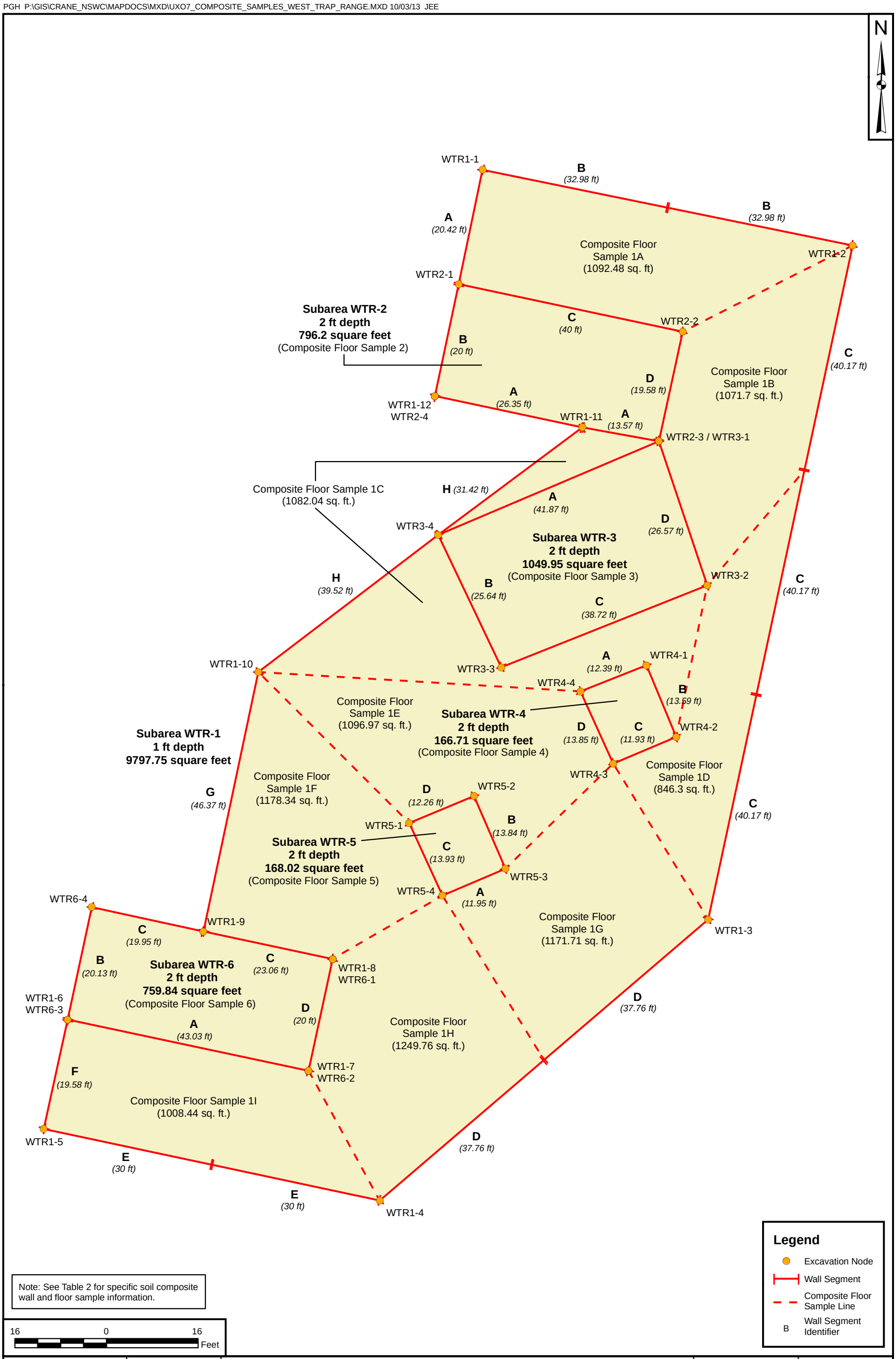


Note: See Table 2 for specific soil composite wall and floor sample information.

DRAWN BY	DATE	EXCAVATION WALL AND FLOOR COMPOSITE SOIL SAMPLES WEST TRAP RANGE (WTR) UXO 7 NSA CRANE CRANE, INDIANA	CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	09/19/13		5608	F271
CHECKED BY	DATE		APPROVED BY	DATE
R. BARRINGER	10/03/13		—	—
REVISED BY	DATE		APPROVED BY	DATE
—	—		—	—
SCALE			FIGURE NO.	REV
AS NOTED			FIGURE 5	0

APPENDIX A

FIELD STANDARD OPERATING PROCEDURES

APPENDIX A

FIELD STANDARD OPERATING PROCEDURES
UXO 7 – OLD RIFLE RANGE AND TRAP RANGES
NSA CRANE
CRANE, INDIANA

Table of Contents

SOP-01	Sample Labeling
SOP-02	Sample Identification Nomenclature
SOP-03	Sample Custody and Documentation of Field Activities
SOP-04	Sample Preservation, Packaging, and Shipping
SOP-05	Composite Sampling for Soil
SOP-06	Soil Sample Logging
SOP-07	Decontamination of Field Sampling Equipment
SOP-08	Management of Investigation-Derived Waste
SOP-09	Global Positioning System
SOP-10	Field Portable X-Ray Fluorescence Analysis of Soil and Sediment Samples Using the INNOV-X Alpha Series Instrument

STANDARD OPERATING PROCEDURE
SOP-01

SAMPLE LABELING

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the procedures to be used for labeling sample containers. Sample labels are used to document the sample ID, date, time, analysis to be performed, preservative, matrix, sampler, and the analytical laboratory. A sample label will be attached to each sample container.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Writing utensil (preferably black pen with indelible ink)
Disposable medical-grade gloves (e.g. latex, nitrile)
Sample log sheets
Required sample containers: All sample containers for analysis by fixed-base laboratories will be supplied and deemed certified clean by the laboratory.
Sample labels
Chain-of-custody records
Sealable polyethylene bags
Heavy-duty cooler
Ice

3.0 PROCEDURES

3.1 The following information will be electronically printed on each sample label prior to mobilizing for field activities. Additional “generic” labels will also be printed prior to mobilization to be used for field QC and backups.

- Project number (CTO xxxx)
- Sample location ID
- Contract Task Order number

- Sample ID
- Matrix
- Preservative
- Analysis to be performed
- Laboratory name

3.2 Select the container(s) that are appropriate for a given sample. Select the sample-specific ID label(s), complete date, time, and sampler name, and affix to the sample container(s).

3.3 Fill the appropriate containers with sample material. Securely close the container lids without overtightening.

3.4 Place the sample container in a bubble wrap sleeve and/or sealable polyethylene bag and place in a cooler containing ice.

Example of a sample label is attached at the end of this SOP.

4.0 ATTACHMENTS

1. Sample Label

ATTACHMENT 1

SAMPLE LABEL

Tetra Tech NUS, Inc. 661 Andersen Drive Pittsburgh, 15220 (412)921-7090	**Project:** **Location:** **CTO:**	
Sample No:		**Matrix:**
Date:	**Time:**	**Preserve:**
Analysis:		
Sampled by:	**Laboratory**	

STANDARD OPERATING PROCEDURE

SOP-02

SAMPLE IDENTIFICATION NOMENCLATURE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish a consistent sample nomenclature system that will facilitate subsequent data management at the Naval Support Activity (NSA) Crane. The sample nomenclature system has been devised such that the following objectives can be attained.

- Sorting of data by site, subarea, location, depth, and type of sample (composite vs. discrete)
- Maintenance of consistency (field, laboratory, and database sample numbers)
- Accommodation of all project-specific requirements
- Accommodation of laboratory sample number length constraints
- Ease of sample identification

The NSA Crane Environmental Protection Department must approve any deviations from this procedure.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Pen with indelible ink

Sample container labels

3.0 SAMPLE IDENTIFICATION NOMENCLATURE

3.1 Composite Soil Samples

All composite soil samples will be properly labeled with a sample label affixed to the sample container. Each sample will be assigned a unique sample tracking number.

3.1.1 Composite Soil Sample Numbering Scheme

The sample tracking number will consist of an eight or nine-segment alpha-numeric code that identifies the sample's associated site, sub-area, matrix, sample type, location type, sample number, depth interval (wall samples only) and, whether the sample is an individual aliquot or a composite sample.

The alphanumeric coding to be used is explained in the following diagram and subsequent definitions:

AN	**AAN**	**A**	**AA**	**AA**	**A**	**NNN**	**N (Aliquot ID)**	**AAAA(1)**
UXO Site Designation Number	Excavation Sub-area ID	Wall or Floor segment ID	Matrix code	Sample Type (C for Composite; G for Grab)	F = Floor W = Wall	Sample Number	A through F (Grab Samples Only)	Sample Depth (feet bgs) Wall Samples Only

(1) Excavation floor sample IDs will not include a depth interval since the sample will be collected from the excavation floor. Excavation depth to be noted on sample log sheet.

Character Type:

A = Alpha

N = Numeric

UXO Site Designation Number (AN):

X7 = Old Rifle Range

Sub-area (AAN)

Each excavation will have a unique identifier.

Wall or Floor Segment Designation (A)

Each subarea excavation will be evenly divided into segments. The segments will be a maximum of 50 linear feet for the excavation walls and 1,000 square feet for the excavation floors. For example, an excavation that is 120 feet long by 10 feet wide would be divided into the following segments:

Each of the two 120-foot long walls would be equally segmented into (3) three 40-foot lengths, with each segment having a composite sample collected (segments A, B, and C). Because the side walls are less than 50-feet, a single composite sample would be

collected from each side wall, with each identified as segment A. The square footage of the floor excavation would be 1,200 square feet which is greater than the maximum of 1,000 square feet, so it would be divided into (2) two equal segments with each segment consisting of approximately 600 square feet (segments A and B). A composite sample would be collected from each of the (2) two 600-foot segments.

Matrix Code (AA):

SO = Soil Sample

Sample Type (A):

C = Composite sample consisting of multiple aliquots blended to form a single mixture

G = Grab (aliquot)

Matrix Code (AA):

SO = Soil Sample

Wall or Floor Designation (A)

F = Excavation floor

W = Excavation wall

Location Number (NNN):

Sequential number beginning with “001”

003 = Sample location 003

Aliquot ID (A):

A = Aliquot A (each composite sample will be comprised of six aliquots (A - F)

Individual aliquots used to form composite samples will be labeled as “A”, “B”, “C”, “D” “E” and “F”. Each of the aliquots for a given sample will be recorded in the field log. The number of aliquots combined to form a composite and the locations of the aliquots within the sampled area must be recorded in the “OBSERVATONS/NOTES” section of the Soil and Sediment Sample Log Sheet.

Sample Depth (NNNN):

0203 = Depth interval is 2 to 3-feet from top of excavation (wall samples only)

3.1.2 Examples of Composite Soil Sample Nomenclature

A composite soil sample collected from an excavation wall at UXO 7, subarea BA-8, segment C, location 004, at a depth interval of 2-3 feet bgs would be labeled as “X7-BA8-C-SOCW004-0203”. The six individual grab samples (aliquots) that comprise the composite sample will be identified as Aliquots “A”, “B”, “C”, “D”, “E”, and “F”. For the above example sample, aliquot “D” would be labeled as X7-BA8-C-SOCW004D-0203.

A composite soil sample collected from an excavation floor at UXO 07, subarea BA-5, segment B, location 006 would be labeled as “X7-BA5-B-SOCF006”. Again, the six individual grab samples (aliquots) that comprise the composite sample will be identified as Aliquots “A”, “B”, “C”, “D”, “E”, and “F”. For the above example sample, aliquot “F” would be labeled as “X7-BA5-B-SOCF006F”.

3.2 Field Quality Assurance/Quality Control (QA/QC) Sample Nomenclature

Field QA/QC samples are described in the QAPP Addendum No. 2 (Tetra Tech NUS, 2007) and this FTMR No. 3. They will be designated using a different coding system than the one used for regular field samples.

3.2.1 QC Sample Numbering

The QC code will consist of a three- to four-segment alpha-numeric code that identifies the sample QC type, the date the sample was collected, and the number of this type of QC sample collected on that date.

AA	NNNNNN	NN
QC Type	Date	Sequence Number (per day)

The QC types are identified as:

FD = Field Duplicate

The sampling time recorded on the Chain-of-Custody Form, labels, and tags for duplicate samples will be 0000 so that the samples are "blind" to the laboratory. Notes detailing the sample number, time, date, and type will be recorded on the sample log sheets and will document the location of the duplicate sample (sample log sheets are not provided to the laboratory).

3.2.2 Examples of Field QA/QC Sample Nomenclature

The first field duplicate of the day for a soil sample collected on November 3, 2013 would be designated as FD110313-01.

The third field duplicate of the day taken of a soil sample collected on November 17, 2013 would be designated as FD111713-03.

STANDARD OPERATING PROCEDURE
SOP-03

SAMPLE CUSTODY AND DOCUMENTATION OF FIELD ACTIVITIES

1.0 PURPOSE

This Standard Operating Procedure (SOP) establishes the procedures for sample custody and documentation of field sampling and field analyses activities.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

The following logbooks, forms, labels, and equipment are required.

Writing utensil (preferably black pen with indelible ink)
Site logbook
Field logbook
Sample label
Chain-of-Custody Form
Custody seals
Equipment calibration log
Soil and Sediment Sample Log Sheet

3.0 PROCEDURES

This section describes custody and documentation procedures. All entries made into the logbooks, custody documents, logs, and log sheets described in this SOP must be made in indelible ink (black is preferred). No erasures are permitted. If an incorrect entry is made, the entry will be crossed out with a single strike mark, initialed, and dated.

3.1 <u>Site Logbook</u>

The site logbook is a hard-bound, paginated, controlled-distribution record book in which all major on-site activities are documented. At a minimum, the following activities and events will be recorded (daily) in the site logbook:

- All field personnel present
- Arrival/departure of site visitors
- Arrival/departure of equipment
- Start or completion of sampling activities
- Daily on-site activities performed each day
- Sample pickup information
- Health and safety issues
- Weather conditions

The site logbook is initiated at the start of the first on-site activity (e.g., site visit or initial reconnaissance survey). Entries are to be made for every day that on-site activities take place.

The following information must be recorded on the cover of each site logbook:

- Project name
- Project number
- Book number
- Start date
- End date

Information recorded daily in the site logbook need not be duplicated in other field notebooks but must summarize the contents of these other notebooks and refer to specific page locations in these notebooks for detailed information (where applicable). At the completion of each day's entries, the site logbook must be signed and dated by the Field Operations Leader (FOL).

3.2 Field Logbooks

The field logbook is a separate dedicated notebook used by field personnel to document his or her activities in the field. This notebook is typically hardbound and paginated.

3.3 Sample Labels

Adhesive sample container labels must be completed and applied to every sample container. Information on the label includes the project name, location, sample number, date, time,

preservative, analysis, matrix, sampler's initials, and the name of the laboratory performing the analysis.

3.4 Chain-of-Custody Form

The Chain-of-Custody Form (COC) is a form that is initiated as samples are acquired and accompanies a sample (or group of samples) as it is transferred from person to person. Each COC is numbered. This form must accompany any samples collected for laboratory chemical analysis. A copy of a blank COC form is attached at the end of this SOP.

The FOL must include the name of the laboratory in the upper right hand corner section to ensure that the samples are forwarded to the correct location. If more than one COC is necessary for any cooler, the FOL will indicate "Page __ of __" on each COC. The original signed copy of the COC will be placed inside a sealable polyethylene bag and taped inside the lid of the shipping cooler. Once the samples are received at the laboratory, the sample custodian checks the contents of the cooler(s) against the enclosed COC(s). Any problems are noted on the enclosed COC Form (bottle breakage, discrepancies between the sample labels, COC form, etc.) and will be resolved through communication between the laboratory point-of-contact and the Project Manager (PM). The COC form is signed and retained by the laboratory and becomes part of the sample's corresponding analytical data package.

3.5 Custody Seal

The custody seal is an adhesive-backed label, and it is part of the chain-of-custody process and is used to prevent tampering with samples after they have been collected in the field and sealed in coolers for transit to the laboratory. The custody seals are signed and dated by the samplers and affixed across the opening edges of each cooler (two seals per cooler) containing environmental samples. The laboratory sample custodian will examine the custody seal for evidence of tampering and will notify the TtNUS PM if evidence of tampering is observed.

3.6 Equipment Calibration Log

The Equipment Calibration Log is used to document calibration of measuring equipment used in the field, if applicable. The Equipment Calibration Log documents that the manufacturer's instructions were followed for calibration of the equipment, including frequency and type of standard or calibration device. An Equipment Calibration Log must be maintained for each

electronic measuring device requiring calibration. Entries must be made for each day the equipment is used.

3.7 Sample Log Sheets

The Soil and Sediment Sample Log Sheets are used to document the sampling of soil and sediment (see SOP-06).

4.0 ATTACHMENTS

1. Chain-of-Custody Record
2. Equipment Calibration Log
3. Soil and Sediment Sample Log

ATTACHMENT 1
CHAIN-OF-CUSTODY RECORD

CHAIN OF CUSTODY | NUMBER | PAGE ____ OF _____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		CARRIER/WAYBILL NUMBER	CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS									COMMENTS

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
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)

3/99
FORM NO. TtNUS-001

ATTACHMENT 2
EQUIPMENT CALIBRATION LOG

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : _____

SITE NAME: _____

PROJECT No.: _____

INSTRUMENT NAME/MODEL: _____

MANUFACTURER: _____

SERIAL NUMBER: _____

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		

ATTACHMENT 3

SOIL AND SEDIMENT SAMPLE LOG SHEET

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: _____
Project No.: _____

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

Sample ID No.: _____
Sample Location: _____
Sampled By: _____
C.O.C. No.: _____

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

GRAB SAMPLE DATA:

Date:	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time:			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

STANDARD OPERATING PROCEDURE
SOP-04

SAMPLE PRESERVATION, PACKAGING, AND SHIPPING

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the procedures for sample preservation, packaging, and shipping to be used in handling soil and aqueous samples.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Shipping labels
Custody seals
Chain-of-custody (COC) form(s)
Sample containers with preservatives: All sample containers for analysis by fixed-base laboratories will be supplied, with preservatives added (if required) and deemed certified clean by the laboratory.
Sample shipping containers (coolers): All sample shipping containers are supplied by the laboratory.
Packaging material: Bubble wrap, sealable polyethylene bags, strapping tape, etc.

3.0 PROCEDURES FOR SAMPLE PRESERVATION, PACKAGING, AND SHIPPING

3.1 The laboratory provides sample containers with preservative already included (as required) for the analytical parameter for which the sample is to be analyzed. All samples will be held, stored, and shipped at or below 6°C, but above freezing. This will be accomplished through refrigeration (used to hold samples prior to shipment) and/or ice.

3.2 The sampler shall maintain custody of the samples until the samples are relinquished to another custodian or to the common carrier.

3.3 Check that each sample container is properly labeled, the container lid is securely fastened, and the container is sealed in a polyethylene bag.

3.4 If the container is glass, place the sample container into a bubble-out shipping bag and seal the bag using the self-sealing, pressure sensitive tape supplied with the bag.

3.5 Inspect the insulated shipping cooler. Check for any cracks, holes, broken handles, etc. If the cooler has a drain plug, make certain it is sealed shut, both inside and outside of the cooler. If the cooler is questionable for shipping, the cooler must be discarded.

3.6 Line the cooler with large plastic bag, and line the bottom of the cooler with a layer of bubble wrap. Place the sample containers into the shipping cooler in an upright position (containers will be upright, with the exception of any 40-ml vials). Continue filling the cooler with ice until the cooler is nearly full and the movement of the sample containers is limited.

3.7 Wrap the large plastic bag closed and secure with tape.

3.8 Place the signed copy of the COC form inside a sealable polyethylene bag. Tape the bag to the inside of the lid of the shipping cooler.

3.9 Close the cooler and seal the cooler with approximately four wraps of strapping tape at each end of the cooler. Prior to wrapping the last wrap of strapping tape, apply a signed and dated custody seal to each side of the cooler (one per side). Cover the custody seal with the last wrap of tape. This will provide a tamper evident custody seal system for the sample shipment.

3.10 Affix shipping labels to each of the coolers, ensuring all of the shipping information is filled in properly. Overnight (e.g., FedEx Priority Overnight) courier services will be used for all sample shipments.

3.11 All samples will be shipped to the laboratory no more than 72 hours after collection. Under no circumstances should sample hold times be exceeded.

STANDARD OPERATING PROCEDURE
SOP-05

COMPOSITE SAMPLING FOR SOIL

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish a consistent procedure for collection of systematic composite soil samples from excavated wall and floor subareas at UXO 7 at the Naval Support Activity (NSA) Crane.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

The following field forms and equipment are required for composite sediment sampling.

Disposable medical-grade gloves (e.g., latex, nitrile)

Indelible marker

Plastic storage bags

Shipping containers (containing ice)

Disposable plastic trowels or Stainless steel trowels

Stainless steel mixing bowls or Ziploc baggies

Sample containers: Sample containers are certified clean by the laboratory supplying the containers.

Soil Sample Log Forms.

Daily Activity Logs.

Chain-of-Custody Form.

3.0 SAMPLING PROCEDURES

Stainless steel or disposable plastic trowels will be employed to collect the soil samples. The sampler will wear clean, disposable, medical-grade gloves.

3.1 <u>SOIL COMPOSITE SAMPLING PROCEDURES</u>

3.1.1 For each subarea wall or floor segment to be sampled, determine the appropriate six sample aliquot locations based on the systematic (pre-determined) composite sample locations as presented on attached Figure 1.

3.1.2 For excavation wall samples, scrape a soil sample (aliquot) from the designated area of the side wall to a depth of only a few inches. For excavation floor samples, remove any loose soil material and then collect a soil sample (aliquot) from the designated area from the base of the excavation floor to a depth of only a few inches. The amount of soil collected for each individual sample aliquot should be equal to approximately 4 cups of soil.

3.1.3 The sample aliquot should be placed into a one-quart Ziplock® bag labeled with the designated sample aliquot ID, date, and time. The aliquot sample should be thoroughly homogenized using either a nitrile gloved hand, decontaminated stainless steel spoon, or dedicated disposable trowel.

3.1.4 Repeat steps 3.1.1–3.1.3 in the designated sampling area for a specific sample until the six discrete soil sample aliquots are collected.

3.1.5 From each of the six associated aliquot sample bags, remove an equal amount of soil sample material and place it into a large one-gallon Ziplock® bag and homogenize using either a gloved hand, decontaminated stainless steel spoon, or dedicated disposable trowel. Label the outside of the baggie with sample ID, date, and time.

3.1.6 Place the labeled sample container into a cooler containing ice.

3.1.7 For composite lead (Pb) samples undergoing XRF field analysis, prepare the composite sample per XRF SOP-10. For composite PAH samples being shipped directly to the fixed-base laboratory for analysis, place the composite soil sample into a properly labeled laboratory supplied sampling container.

3.1.8 Complete the required information on the Soil Sample Log Sheet (copy attached at the end of this SOP). Note the location of each aliquot in the “OBSERVATIONS/NOTES” section of the log sheet. Only the notes added within the sample analysis block on the log sheet will be visible on the COC Form for review by laboratory personnel.

3.1.9 Decontaminate the stainless steel trowel and mixing bowl, if employed, in the field between each composite sample location.

4.0 ATTACHMENTS

1. Soil and Sediment Sample Log Sheet
2. Systematic Pre-determined Composite Sample Aliquot Locations - Figure 1

ATTACHMENT 1

SOIL AND SEDIMENT SAMPLE LOG SHEET

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: _____
Project No.: _____

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

Sample ID No.: _____
Sample Location: _____
Sampled By: _____
C.O.C. No.: _____

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

GRAB SAMPLE DATA:

Date:	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time:			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

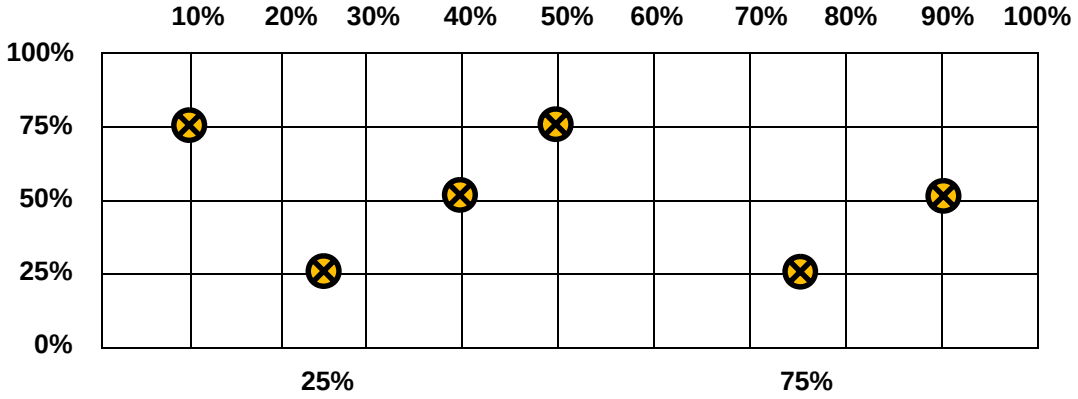
MS/MSD	Duplicate ID No.:

Signature(s):

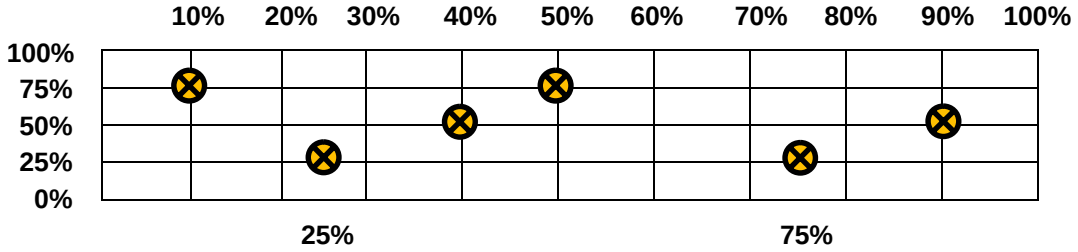
ATTACHMENT 2

FIGURE 1
SYSTEMATIC PRE-DETERMINED COMPOSITE SAMPLE ALIQUOT LOCATIONS

Typical UXO 7 Excavation Floor:
Proposed Locations for Pre-determined Individual Composite Soil Sample Aliquots



Typical UXO 7 Excavation Wall:
Proposed Locations for Pre-determined Individual Composite Soil Sample Aliquots



⊗ **= Location for individual soil aliquot from UXO 7 IM soil excavation floor or wall.**

The indicated percentages are the percent distance along the exposed surface.

STANDARD OPERATING PROCEDURE
SOP-06

SOIL SAMPLE LOGGING

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the standard procedures and technical guidance on the logging of soil samples.

2.0 FIELD FORMS AND EQUIPMENT

Knife
Ruler (marked in tenths and hundredths of feet)
Boring Log: An example of this form is attached.
Writing utensil (preferably black pen with indelible ink)

3.0 RESPONSIBILITIES

A field geologist or engineer is responsible for supervising all activities and assuring that each soil sample is properly and completely logged.

4.0 PROCEDURES FOR SAMPLE LOGGING

To maintain a consistent classification of soil, it is imperative that the field geologist understands and accurately uses the field classification system described in this SOP. This identification is based on visual examination and manual tests.

4.1 USCS Classification

Soils are to be classified according to the Unified Soil Classification System (USCS). This method of classification is detailed in Figure 1 (attached to this SOP).

This method of classification identifies soil types on the basis of grain size and cohesiveness.

Fine-grained soils, or fines, are smaller than the No. 200 sieve and are of two types: silt (M) and clay (C). Some classification systems define size ranges for these soil particles, but for field classification purposes, they are identified by their respective behaviors. Organic material (O) is a common component of soil but has no distinguishable size range; it is recognized by its composition. The careful study of the USCS will aid in developing the competence and consistency necessary for the classification of soils.

Coarse-grained soils will be divided into categories: rock fragments, sand, or gravel. The terms "sand" and "gravel" not only refer to the size of the soil particles but also to their depositional history. To insure accuracy in description, the term "rock fragments" will be used to indicate angular granular materials resulting from the breakup of rock. The sharp edges that are typically observed indicate little or no transport from their source area; and therefore, the term provides additional information in reconstructing the depositional environment of the soils encountered. When the term "rock fragments" is used, it will be followed by a size designation such as "(1/4 inch-1/2 inch)" or "coarse-sand size" either immediately after the entry or in the remarks column. The USCS classification would not be affected by this variation in terms.

4.2 Color

Soil colors will be described utilizing a single color descriptor preceded, when necessary, by a modifier to denote variations in shade or color mixtures. A soil could therefore be referred to as "gray" or "light gray" or "blue-gray." Because color can be utilized in correlating units between sampling locations, it is important for color descriptions to be consistent from one boring to another.

Colors must be described while the sample is still moist. Soil samples will be broken or split vertically to describe colors. Samplers tend to smear the sample surface, creating color variations between the sample interior and exterior.

The term "mottled" will be used to indicate soils irregularly marked with spots of different colors. Mottling in soils usually indicates poor aeration and lack of good drainage.

4.3 Relative Density and Consistency

To classify the relative density and/or consistency of a soil, the geologist is to first identify the soil type. Granular soils contain predominantly sands and gravels. They are non-cohesive (particles do not adhere well when compressed). Finer-grained soils (silts and clays) are cohesive (particles will adhere together when compressed).

Granular soils are given the USCS classifications GW, GP, GM, SW, SP, SM, GC, or SC (see Figure 1).

The consistency of cohesive soils is determined by performing field tests and identifying the consistency as shown in the following table.

CONSISTENCY FOR COHESIVE SOILS

Consistency	Standard Penetration Resistance (Blows per Foot)	Unconfined Compressive Strength (Tons/Sq. Foot by pocket penetration)	Field Identification
Very soft	0 to 2	Less than 0.25	Easily penetrated several inches by fist.
Soft	2 to 4	0.25 to 0.50	Easily penetrated several inches by thumb.
Medium stiff	4 to 8	0.50 to 1.0	Can be penetrated several inches by thumb with moderate effort.
Stiff	8 to 15	1.0 to 2.0	Readily indented by thumb but penetrated only with great effort.
Very stiff	15 to 30	2.0 to 4.0	Readily indented by thumbnail.
Hard	Over 30	More than 4.0	Indented with difficulty by thumbnail.

Cohesive soils are given the USCS classifications ML, MH, CL, CH, OL, or OH (see Figure 1).

The consistency of cohesive soils is determined by hand by determining the resistance to penetration by the thumb. The thumb determination methods are conducted on a selected sample of the soil, preferably the lowest 0.5 foot of the sample. The sample will be broken in half and the thumb pushed into the end of the sample to determine the consistency. Do not determine consistency by attempting to penetrate a rock fragment. If the sample is decomposed rock, it is classified as a soft decomposed rock rather than a hard soil. One of the other methods will be used in conjunction with it. The designations used to describe the consistency of cohesive soils are shown in the above-listed table.

4.4 Weight Percentages

In nature, soils are consist of particles of varying size and shape and are combinations of the various grain types. The following terms are useful in the description of soil:

Terms of Identifying Proportion of the Component	Defining Range of Percentages by Weight
Trace	0 - 10 percent
Some	11 - 30 percent
Adjective form of the soil type (e.g., sandy)	31 - 50 percent

Examples:

- Silty fine sand: 50 to 69 percent fine sand, 31 to 50 percent silt.
- Medium to coarse sand, some silt: 70 to 80 percent medium to coarse sand, 11 to 30 percent silt.
- Fine sandy silt, trace clay: 50 to 68 percent silt, 31 to 49 percent fine sand, 1 to 10 percent clay.
- Clayey silt, some coarse sand: 70 to 89 percent clayey silt, 11 to 30 percent coarse sand.

4.5 Moisture

Moisture content is estimated in the field according to four categories: dry, moist, wet, and saturated. In dry soil, there appears to be little or no water. Saturated samples obviously have all the water they can hold. Moist and wet classifications are somewhat subjective and often are determined by the individual's judgment. A suggested parameter for this would be calling a soil wet if rolling it in the gloved hand or on a porous surface liberates water (i.e., dirties or muddies the surface). Whatever method is adopted for describing moisture, it is important that the method used by an individual remains consistent throughout an entire field activity.

4.6 Classification of Soil Grain Size for Chemical Analysis

To determine the gross grain size classification (e.g., clay, silt, and sand) from the USCS classification described above, the following table will be used.

Gross Soil Grain Size Classification	USCS Abbreviation	Description
Clay	CL	inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
	CH	inorganic clays of high plasticity, fat clays.
	OH	organic clays of medium to high plasticity, organic silts.
Silt	ML	inorganic silts and very fine sands, rock four, silty or clayey fine sands with slight plasticity.
	OL	organic silts and organic silty clays of low plasticity.
	MH	inorganic silts, micaceous or diatomaceous fine sand or silty soils.

Gross Soil Grain Size Classification	USCS Abbreviation	Description
Sand	SW	well graded sands, gravelly sands, little or no fines.
	SP	poorly graded sands, gravelly sands, little or no fines.
	SM	silty sands, sand-silt mixtures.
	SC	clayey sands, sand-clay mixtures.

4.7 Summary of Soil Classification

In summary, soils will be classified in a similar manner by each geologist/engineer at a project site. The hierarchy of classification is as follows:

- Density and/or consistency
- Color
- Plasticity (optional)
- Soil types
- Moisture content
- Other distinguishing features
- Grain size
- Depositional environment

5.0 ATTACHMENTS

1. Figure 1 - Unified Soil Classification System
2. Boring Log

ATTACHMENT 1

FIGURE 1 - UNIFIED SOIL CLASSIFICATION SYSTEM

Unified Soil Classification System

Coarse Grained Soils (more than half of soil > No. 200 sieve)	Gravels (More than half of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Sandy gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-silt mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
Fine Grained Soils (more than half of soil < No. 200 sieve)	Silts and Clays LL = < 50	ML	Inorganic silts and very fine sands, rock flour, silty fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays LL = > 50	MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils, elastic silts
		CH	Inorganic silts of high plasticity, fat clays
		OH	Organic clays of high plasticity, organic silty clays, organic silts
Highly Organic Soils		Pt	Peat and other highly organic soils

Grain Size Chart

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size In Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 7.76
coarse	3" to 3/4"	76.2 to 4.76
fine	3/4"to No.4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
coarse	No.4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.074
Silt and Clay	Below No. 200	Below 0.074

Relative Density (SPT)

SANDS AND GRAVELS	BLOWS/FOOT
VERY LOOSE	0 – 4
LOOSE	4 – 10
MEDIUM DENSE	10 – 30
DENSE	32 – 50
VERY DENSE	OVER 50

Consistency (SPT)

SILTS AND CLAYS	BLOWS/FOOT
VERY SOFT	0 – 2
SOFT	2 – 4
MEDIUM STIFF	4 – 8
STIFF	8 – 16
VERY STIFF	16 – 22
HARD	OVER 32

ATTACHMENT 2

BORING LOG

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: _____ BORING No.: _____
PROJECT NUMBER: _____ DATE: _____
DRILLING COMPANY: _____ GEOLOGIST: _____
DRILLING RIG: _____ DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): _____

Remarks: _____

Converted to Well: Yes _____ No _____ Well I.D. #: _____

STANDARD OPERATING PROCEDURE
SOP-07

DECONTAMINATION OF FIELD SAMPLING EQUIPMENT

1.0 PURPOSE

This Standard Operating Procedure (SOP) establishes the procedures to be followed when decontaminating non-dedicated field sampling equipment during the field investigations.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Writing utensil (preferably black pen with indelible ink)
Non-latex rubber or plastic gloves
Cotton gloves
Field logbook
Potable water
Deionized water
Isoproponal (optional)
LiquiNox detergent
Brushes, spray bottles, paper towels, etc.
Container to collect and transport decontamination fluids

3.0 DECONTAMINATION PROCEDURES

3.1 Don non-latex and/or cotton gloves and decontaminate sampling equipment (in accordance with the following steps) prior to field sampling and between samples.

3.2 Rinse the equipment with potable water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the potable water rinsate into a container.

3.3 Wash the equipment with a solution of LiquiNox detergent. Prepare the LiquiNox wash solution in accordance with the instructions on the LiquiNox container. Collect the LiquiNox wash solution into a container. Use brushes or sprays as appropriate for the equipment. If oily residue has

accumulated on the sampling equipment, remove the residue with an isopropanol wash and repeat the LiquiNox wash.

3.4 Rinse the equipment with potable water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the potable water rinsate into a container.

3.5 Rinse the equipment with deionized water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the deionized water rinsate into a container.

3.6 Remove excess water by air drying, shaking, or by wiping with paper towels as necessary.

3.7 Document decontamination by recording it in the field logbook.

3.8 Containerized decontamination solutions will be managed in accordance with the procedures described in SOP-08.

STANDARD OPERATING PROCEDURE
SOP-08

MANAGEMENT OF INVESTIGATION-DERIVED WASTE

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes how investigation-derived waste (IDW) will be collected, segregated, classified, and managed during the field investigations at NSA Crane. The following types of IDW will be generated during this investigation:

- Soil sampling residues
- Decontamination solutions
- Personal protective equipment and clothing (PPE)
- Miscellaneous trash and incidental items

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Health and safety equipment (with PPE)
Hand augers, plastic or stainless steel trowels
Bucket (with collected decon water)
Decontamination equipment
Field logbook
Writing utensil (preferably black pen with indelible ink)
Plastic sheeting and/or tarps
Plastic garbage bags

3.0 PROCEDURES

Management of IDW includes the collection, segregation, temporary storage, classification, final disposal, and documentation of the waste-handling activities if necessary.

3.1 Liquid Wastes

Liquid wastes that will be generated during the site activities include decontamination solutions from sampling equipment. These wastes will be collected and containerized in a central location at NSA Crane for proper disposal.

3.2 Solid Wastes

Solid wastes that may be generated during site activities include soil and sediment sampling residues. Excess soil core/sampling materials will be returned to the hole and tamped. If insufficient soil is available to fill the hole to the ground surface, then bentonite pellets mixed with the soil will be used to backfill the hole, and hydrated with potable water. Excess sediment sampling materials will be returned to the point of collection. The disposition of this materials will be carried out in a manner such as not to contribute further environmental degradation or pose a threat to public health or safety.

3.3 PPE and Incidental Trash

All PPE wastes and incidental trash materials (e.g., wrapping or packing materials from supply cartons, waste paper) will be decontaminated (if contaminated), double bagged, securely tied shut, and placed in a designated waste receptacle at NSA Crane.

STANDARD OPERATING PROCEDURE
SOP-09

GLOBAL POSITIONING SYSTEM

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide the Field Technicians with basic instructions for operating a handheld Global Positioning System (GPS) unit allowing them to set GPS parameters in the receiver, record GPS positions on the field device, and update existing Geographic Information System (GIS) data. This SOP is specific to GIS quality data collection for Trimble-specific hardware and software.

If possible, the Trimble GeoXM or GeoXH Operators Manual should be downloaded onto the operator's personal computer for reference before or while in the field. The manual can be downloaded at http://trl.trimble.com/docushare/dsweb/Get/Document-311749/TerraSyncReferenceManual.pdf

Unless the operator is proficient in the setup and operation of the GPS unit, the Project Manager (or designee) should have the GPS unit shipped to the project-specific contact listed below in the Pittsburgh, Pennsylvania office at least five working days prior to field mobilization so project-specific shape files, data points, background images, and correct coordinate systems can be uploaded into the unit.

Tetra Tech NUS, Inc.
Attn: Kevin Moore
661 Anderson Drive, Bldg #7
Pittsburgh, PA 15220

2.0 REQUIRED EQUIPMENT

The following hardware and software should be utilized for locating and establishing GPS points in the field:

2.1 Required GPS Hardware

- Hand-held GPS Unit capable of sub-meter accuracy (i.e. Trimble GeoXM or Trimble GeoXH). This includes the docking cradle, a/c adapter, stylus, and USB cable for data transfer.

Optional Accessories:

- External antenna
- Range pole
- Hardware clamp (for mounting Geo to range pole)
- GeoBeacon

- Indelible marker
- Non-metallic pin flags for temporary marking of positions

2.2 Required GPS Software

The following software is required to transfer data from the handheld GPS unit to a personal computer:

- Trimble TerraSync version 2.6 or later (pre-loaded onto GPS unit from vendor)

- Microsoft ActiveSync version 4.2 or later. Download to personal computer from: http://www.microsoft.com/windowsmobile/en-us/downloads/eulas/eula_activesync45_1033.mspx?ProductID=76

- Trimble Data Transfer Utility (freeware version 2.1 or later). Download to personal computer from: http://www.trimble.com/datatransfer.shtml

3.0 START-UP PROCEDURES

Prior to utilizing the GPS in the field, ensure the unit is fully charged. The unit may come charged from the vendor, but an overnight charge is recommended prior to fieldwork.

The Geo-series GPS units require a docking cradle for both charging and data transfer. The Geo-series GPS unit is docked in the cradle by first inserting the far domed end in the top of the cradled, then gently seating the contact end into the latch. The power charger is then connected to the cradle at the back end using the twist-lock connector. Attach a USB cable as needed between the cradle (B end) and the laptop/PC (A end).

It is recommended that the user also be familiar and check various Windows Mobile settings. One critical setting is the Power Options. The backlight should be set as needed to conserve power when not in use.

Start Up:

1) Power on the GPS unit by pushing the small green button located on the lower right front of the unit.

2) Utilizing the stylus that came with the GPS unit, launch **TerraSync** from the Windows Operating System by tapping on the start icon located in the upper left hand corner of the screen and then tap on **TerraSync** from the drop-down list.

3) If the unit does not default to the Setup screen, tap the Main Menu (uppermost left tab, just below the Windows icon) and select Setup.

4) If the unit was previously shipped to the Pittsburgh office for setup, you can skip directly to Section 4.0. However, to confirm or change settings, continue on to Section 3.1.

3.1 Confirm Setup Settings

Use the Setup section to confirm the TerraSync software settings. To open the Setup section, tap the Main Menu and select Setup.

1) Coordinate System
   a. Tap on the Coordinate System.
   b. Verify the project specs are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu. **Note:** It is always best to utilize the Cancel tab rather than the OK tab if no changes are made since configurations are easily changed by mistake.
   c. Tap on the Units.
   d. Verify the user preferences are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu.
   e. Tap Real-time Settings.
   f. Verify the Real-time Settings are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu.
   g. The GPS unit is now configured correctly for your specific project.

4.0 ANTENNA CONNECTION

1) If a connection has been properly made with the internal antenna, a satellite icon along with the number of usable satellites will appear at the top of the screen next to the battery icon. If no connection is made (e.g.: no satellite icon), tap on the GPS tab to connect antenna.
2) At this point the GPS unit is ready to begin collecting data.

5.0 COLLECTING NEW DATA IN THE FIELD

1) From the Main Menu select Data.
2) From the Sub Menu (located below the Data tab) select New which will bring up the New Data File menu.
3) An auto-generated filename appears and should be edited for your specific project. If the integral keyboard does not appear, tap the small keyboard icon at the bottom of the screen.
4) After entering the file name, tap Create to create the new file.
5) Confirm antenna height if screen appears. Antenna height is the height that the GPS unit will be held from the ground surface (Typically 3 to 4 feet).
6) The Choose Feature screen appears.

5.1 Collecting Features

1) If not already open, the Collect Feature screen can be opened by tapping the Main Menu and selecting Data. The Sub Menu should default to Collect.
2) **Do not begin the data logging process until you are at the specific location for which you intend to log the data.**
3) A known reference or two should be shot at the beginning and at the end of each day in which the GPS unit is being used. This allows for greater accuracy during post-processing of the data.
4) Upon arriving at the specific location, tap on Point_generic as the Feature Name.
5) Tap Create to begin data logging.
6) In the Comment Box enter sample ID or location-specific information.
7) Data logging can be confirmed by viewing the writing pencil icon in the upper part of the screen. Also, the logging counter will begin. As a Rule of Thumb, accumulate a minimum of 20 readings on the counter, per point, as indicated by the logging counter before saving the GPS data.
8) Once the counter has reached a minimum number of counts (i.e. 20), tap on OK to save the data point to the GPS unit. Confirm the feature. All data points are automatically saved within the GPS unit.

9) Repeat steps 2 through 8, giving each data point a unique name or number.

Note: If the small satellite icon or the pencil icon is blinking, this is an indication the GPS unit is not collecting data. A possible problem may be too few satellites. While still in data collection mode, tap on Main Menu in upper left hand corner of the screen and select Status. Skyplot will display as the default showing the number of available satellites. To increase productivity (number of usable satellites) use the stylus to move the pointer on the productivity and precision line to the left. This will decrease precision, but increase productivity. The precision and productivity of the GPS unit can be adjusted as the number of usable satellites changes throughout the day. To determine if GPS is correctly recording data, see Section 5.2.

5.2 Viewing Data or Entering Additional Data Points to the Current File

1) To view the stored data points in the current file, tap on the Main Menu and select Map. Stored data points for that particular file will appear. Use the +/- and <-/-> icons in lower left hand corner of screen to zoom in/out and to manipulate current view.
2) To return to data collection, tap on the Main Menu and select Data. You are now ready to continue to collect additional data points.

5.3 Viewing Data or Entering Data Points from an Existing File

1) To view data points from a previous file, tap on Main Menu and select Data, then select File Manager from the Sub Menu.
4) Highlight the file you want to view and select Map from the Main Menu.
5) To add data points to this file, tap on Main Menu and select Data. Continue to collect additional data points.

6.0 NAVIGATION

This section provides instructions on navigating to saved data points in an existing file within the GPS unit.

1) From the Main Menu select Map.
2) Using the Select tool, pick the point on the map to where you want to navigate.
3) The location you select will have a box placed around the point.
4) From the Options menu, choose the Set Nav Target (aka set navigation target).
5) The location will now have double blue flags indicating this point is you navigation target.
6) From the Main Menu select Navigation.

7) The dial and data on this page will indicate what distance and direction you need to travel to reach the desired target.
8) Follow the navigation guide until you reach the point you select.
9) Repeat as needed for any map point by going back to Step 1.

7.0 PULLING IN A BACKGROUND FILE

This section provides instructions on pulling in a pre-loaded background file. These files are helpful in visualizing your current location.

1) From the Main Menu select Map, then tap on Layers, select the background file from drop down list.
2) Select the project-specific background file from the list of available files.
3) Once the selected background file appears, the operator can manipulate the screen utilizing the +/- and <-/-> functions at the bottom of the screen.
4) In operating mode, the operator's location will show up on the background file as a floating "x".

8.0 DATA TRANSFER

This section provides instructions on how to transfer stored data on the handheld GPS unit to a personal computer. Prior to transferring data from the GPS unit to a computer, Microsoft ActiveSync and Trimble Data Transfer Utility software must be downloaded to the computer from the links provided in Section 2.2 (Required GPS Software). If a leased computer is utilized in which the operator can not download files, see the Note at the end of Section 8.0.

1) See Attachment A at the end of this SOP for instructions on how to transfer data from the GPS to a personal computer.

Note: If you are unable to properly transfer data from the GPS unit to a personal computer, the unit should be shipped to the project-specific contact listed in Section 1.0 where the data will be transferred and the GPS unit then shipped back to the vendor.

9.0 SHUTTING DOWN

This section provides instruction for properly shutting down the GPS unit.

1) When shutting down the GPS unit for the day, first click on the "X" in the upper right hand corner.

2) You will be prompted to ensure you want to exit TerraSync. Select Yes.
3) Power off the GPS unit by pushing the small green button located on the bottom face of the unit.
4) Place the GPS unit in its cradle to recharge the battery overnight. Ensure the green charge light is visible on the charging cradle.

ATTACHMENT A

How to Transfer Trimble GPS Data between Data Collector and PC
original 11/21/06 (5/1/08 update)

Remember – Coordinate System, Datum, and Units are critical!!!

Trimble Data Collection Devices:
Standard rental systems include the Trimble ProXR/XRS backpack and the newer handheld GeoXT or GeoXH units. Some of the older backpack system may come with either a RECON "PDA-style" or a TSCe or TSC1 alpha-numeric style data collector.

The software on all of the above units should be Trimble TerraSync (v 2.53 or higher – current version is 3.20) and to the user should basically look and function similar. The newer units and software versions (which should always be requested when renting) include enhancements for data processing, real-time display functions, and other features.

Data Transfer:
Trimble provides a free transfer utility program to aid in the transfer of GIS and field data. The Data Transfer Utility is a standalone program that will run on a standard office PC or laptop.

To connect a field data collector such as a RECON, GeoXM, GeoXT, GeoXH, or ProXH, you must first have Microsoft ActiveSync installed to allow the PC and the data collector to talk to one another. A standard USB cable is also needed to connect the two devices.

A CD or USB drive is provided with the data collector for use in data transfer. If needed, these programs are also available without charge via the web at:

• **Trimble Data Transfer Utility** (v 1.38) program to download the RECON or GeoXH field data to your PC: http://www.trimble.com/datatransfer.shtml

• **ActiveSync** from Microsoft to connect the data collector to the PC. The latest version (v4.5) can be found at: http://www.microsoft.com/windowsmobile/activesync/default.mspx
(see page 2 for data transfer instructions)

To Transfer Data Collected in the Field:

• Install the Data Transfer and ActiveSync software installed on your PC
• Connect the RECON or GeoXH to your PC via an A/B USB cable (blade end and square end type "HP printer" style)
• ActiveSync should auto-detect the connection and recognize the data collector
• Make sure the data file desired is CLOSED in TerraSync prior to transfer
• Connect via ActiveSync as a guest (not a partnership)
• Run the Trimble Data Transfer Utility program on your PC
• Select "***GIS Datalogger on Windows CE***" or similar selection
• Hit the green connect icon to the right - the far right area should say "***Connected to ....***" if successful
• Select the "***Receive***" data tab (under device)
• Select "***Data***" from file types on the right
• Find the file(s) needed for data transfer. You can sort the data files by clicking on the date/time header
• Select or browse to a C-drive folder you can put this file for emailing
• When the file appears on the list, hit the "***Transfer All***"
• Go to your Outlook or other email, send a message to: kevin.moore@tetratech.com (or GIS department)
• Attach the file(s) you downloaded from your C-drive. For each TerraSync data file created you should have a packet of multiple data files. All need to be sent as a group – make sure you attach all files (the number of files may vary – examples include: ssf, obx, obs, gix, giw, gis, gip, gic, dd, and car)

To Transfer GIS Data from PC to the Field Device (must be converted in Pathfinder Office):

• Obtain GIS file(s) desired from GIS Department and have converted to Trimble extension
• Contact Kevin Moore (kevin.moore@tetratech.com) if needed for file conversion and upload support
• The GIS file(s) can be quickly converted if requested and sent back to the field user in the needed "Trimble xxx.imp" extension via email – then quickly downloaded from Outlook to your PC for transfer
• Install the Data Transfer and ActiveSync software installed on your PC
• Connect the RECON or GeoXH to your PC via an A/B USB cable (blade end and square end type "HP printer" style)
• ActiveSync should auto-detect the connection and recognize the data collector
• Connect via ActiveSync as a guest (not a partnership)
• Run the Trimble Data Transfer Utility program on your PC
• Select "***GIS Datalogger on Windows CE***" or similar selection
• Hit the green connect icon to the right - the far right area should say "***Connected to ....***" if successful
• Select the "**Send**" data tab (under device)
• Select "**Data**" from file types on the right (you can also send background files)
• Browse to the location of the data on your PC (obtain the file from Pathfinder Office or from the person who converted the data for field use)
• Select the options as appropriate for the name and location of the data file to go on the data collector (usually you can choose main memory or a data storage card)
• When the file(s) appears on the list, hit the "***Transfer All***"
• Run TerraSync on the field device and open the existing data files. Your transferred file should appear (make sure you have selected Main Memory, Default, or Storage Card as appropriate)

STANDARD OPERATING PROCEDURE
SOP-10

FIELD PORTABLE X-RAY FLUORESCENCE ANALYSIS OF SOIL AND SEDIMENT SAMPLES USING THE INNOV-X ALPHA SERIES INSTRUMENT

1.0 PURPOSE

This procedure is for the semiquantitative analysis of metallic lead particles and chemical compounds of lead in soil using a field portable x-ray fluorescence (FPXRF) spectrometer. This procedure is based on the United States Environmental Protection Agency (USEPA)-approved XRF field screening method for elemental analysis (Method 6200).

2.0 SCOPE, APPLICATION, AND LIMITATIONS

2.1 Scope of Procedure

Analysis of any other elements besides lead using FPXRF may require changes to this Standard Operating Procedure (SOP), and are therefore outside the scope of this SOP.

Although it is possible to use FPXRF to measure analytes in situ, this SOP requires removal of a soil sample from its native environment prior to analysis. By removing, drying, and homogenizing the sample prior to analysis, more precise and accurate results are obtained.

2.2 Analyst Training

Use of this method is restricted to personnel both trained and knowledgeable in the operation of the Innov-X alpha series XRF instrument or under the supervision of a trained and knowledgeable individual. Proper training for the safe operation of the instrument should be completed by the analyst prior to analysis. This training may be obtained directly from INNOV-X, an INNOV-X instrument distributor or lessor, or another trained Tetra Tech person.

3.0 ACRONYMS AND ABBREVIATIONS

FPXRF: Field portable x-ray fluorescence.
mg/kg: milligrams per kilogram.
MDL: Method detection limit.
PQL: Practical quantitation limit.
QC: Quality control.
RPD: Relative percent difference.
USGS: United States Geological Survey.
XRF: X-ray fluorescence.

4.0 RESPONSIBILITIES

Analyst/Chemist - Responsible for all aspects of sample preparation and analysis including equipment maintenance. Also responsible for maintaining chain-of-custody of samples after receipt from sampling personnel.

5.0 PROCEDURES

5.1 Safety

5.1.1 Radiation Safety

Radiation safety practices for the INNOV-X instrument can be found in the operator's manual (typically shipped with unit). Protective shielding should never be removed by the analyst or any personnel other than the manufacturer.

An additional hazard present with x-ray tubes is the danger of electric shock from the high voltage supply. The danger of electric shock is as substantial as the danger from radiation but is often overlooked because of its familiarity.

5.1.2 Protective Equipment

Analysts must wear disposable plastic gloves whenever sample aliquots are being transferred from one vessel to another. Consult the health and safety plan for other protection requirements.

5.2 Apparatus and Materials

Apparatus and materials consist of the following:

INNOV-X Alpha Series FPXRF spectrometer with data processing unit (iPAQ) pocket personnel computer):

INNOV-X Alpha Series XRF instrument manual to match the INNOV-X Alpha Series instrument.

Aluminum drying pans or aluminum foil: Sized suitably to hold as much as 50 grams of sample and fit into the drying oven.

Calibration verification check sample: A National Institute of Standards and Technology (NIST) or other Standard reference material (SRM) that contains lead in a concentration range that is compatible with the project objectives to verify the accuracy of the instrument. SRMs are shipped with the unit. Acceptable limits for SRM percent recoveries are usually provided with the SRMs. In their absence, a limit of ± 30 percent will be used as a guideline.

Instrument Blank: May be silicon dioxide, a Teflon block, a quartz block, "clean" sand, or lithium carbonate and is typically shipped with the unit.

Lead calibration check standard: Supplied by the FPXRF manufacturer.

Method blank material for performing method blank checks: May be lead-free silica sand or lithium carbonate that undergoes the same preparation procedure as the samples.

Battery charger.

Polyethylene sample cups: 31 millimeters (mm) to 40 mm in diameter with collar, or equivalent (appropriate for FPXRF instrument).

X-ray window film: Mylar™, Kapton™, Spectrolene™, polypropylene, or equivalent; 2.5 to 6.0 micrometers (µm) thick.

Sample containers: glass or plastic to store samples.

Sieves: 60-mesh Stainless steel, Nylon, or equivalent for preparing soil and sediment samples if necessary.

Trowels: for collecting soil samples.

Plastic bags: used for collection and homogenization of soil samples. May also be used as sample presentation device.

Drying oven: standard convection or toaster oven, for soil samples that require drying.

Rolling pin (optional): Wooden rolling pin for crushing dried samples.

5.3 Sample Collection, Preservation, and Handling

Samples shall be provided to the FPXRF analyst in plastic bags. The analyst is responsible for maintaining chain-of-custody of all samples until all analyses have been successfully completed. No sample preservation is necessary. All samples shall be handled in accordance with sample handling SOPs in effect for the field event.

5.4 Preventive Maintenance

Refer to the instrument manual for specific manufacturer's recommendations.

5.5 Instrument Start-Up

5.5.1 Ensure the pocket PC (iPAQ) is plugged into the FPXRF instrument body and install a fully charged battery into the instrument.

5.5.2 Press the ON/OFF button on the base of the pistol grip of the instrument. If the iPAQ does not automatically power up, press the Power button in the right corner of the iPAQ.

5.5.3 Tap the Microsoft icon at the upper left corner of the iPAQ.

5.5.4 Choose START.

5.5.5 Tap "Soil Mode" on the menu or choose Mode (bottom of screen) and then choose Soil Mode from the drop down menu.

5.5.6 Allow the instrument to warm up (approximately 3 minutes).

5.5.7 Release the manual trigger lock.

5.5.8 Standardize the instrument in accordance with Section 5.6.

5.6 Standardization/Calibration Check

It is not possible to start an analysis if the instrument has not been standardized. To verify proper calibration of the instrument it is necessary to periodically standardize it using the automated standardization procedure. This must be done anytime the instrument is restarted and every 4 hours of operation, although re-standardization may be done at any other time (e.g., when instrument drift is suspected).

5.6.1 Click the standardization piece (supplied with the instrument) on the front of the instrument, verifying that the solid portion of the standard completely covers the analysis window. If using a manufacturer supplied test stand, lay the standardization plate over the analysis window.

5.6.2 Select "Tap here to Standardize" or select *File* → *Standardize*. The red light on top of the instrument will blink indicating that the instrument is producing x-rays and the shutter is open. The amber light on the rear of the instrument will also be illuminated and a status bar will appear to display the progress of the standardization.

5.6.3 Upon successful standardization the message "Successful Standardization" will appear along with the instrument resolution. In this case tap "ok" to dismiss the completion message. If problems are encountered, either follow the prompts that appear and/or repeat the standardization. Contact the FOL if problems persist. Take note of any error messages that appear as they may be useful if the instrument manufacturer must be contacted. Additional assistance is also available in the manufacturer's instrument manual.

5.7 Quality Control

The quality control (QC) program includes analysis of blanks, calibration verification checks, duplicate analyses, and field duplicate samples. For all the above areas, any identified problems and corrective action must be documented in the instrument run log, analysis narrative report, and instrument

maintenance log or standards log (as applicable). Identical operating conditions will be used for each sample.

5.7.1 Laboratory Blanks

Two types of blank samples shall be analyzed for FPXRF analysis: instrument blanks and method blanks.

5.7.1.1 At the beginning of each day, at the end of each day, and after every 20th sample or when potential contamination of the instrument is suspected, analyze an instrument blank to verify that no contamination exists in the spectrometer or on the probe window.

If the lead concentration in the blank exceeds the method detection limit (MDL, see Section 5.9.3) check the probe window and other potentially contaminated instrument components for contamination. If contamination is not causing the elevated blank readings, “zero” the instrument according to manufacturer's instructions.

5.7.1.2 After every 20th sample analyze a method blank. If the method blank lead concentration exceeds the practical quantitation limit (PQL, see Section 5.9.4), identify the cause of the elevated lead concentration and reanalyze all samples since the last acceptable method blank.

5.7.2 Calibration Verification Checks

5.7.2.1 After performing each blank check (Section 5.7.2), analyze a calibration verification check sample to check the accuracy of the instrument and to assess the stability and consistency of the analysis for the analytes of interest.

5.7.2.2 If the measured lead percent recovery (See Section 5.9.1) is less than 60 percent or greater than 135 percent, reanalyze the check sample. If the value continues to fall outside this acceptance range, the instrument should be recalibrated, or restandardized according to the manufacture instructions and the batch of samples analyzed before the unacceptable calibration verification check must be reanalyzed.

5.7.3 XRF Duplicate Samples

XRF duplicate samples are two portions of the same sample that have been prepared and homogenized together, and then split and analyzed in the same manner by the XRF analyst.

5.7.3.1 Analyze an XRF duplicate at a frequency of 1 per 20 or once per day, whichever is more frequent.

5.7.3.2 If the computed RPD (See Section 5.9.2) exceeds 50 percent reanalyze both samples. If the RPD again exceeds 50 percent RPD consider whether the high degree of imprecision is caused by sample heterogeneity or other causes. This assessment may be aided by repeating the analysis of a sample that was analyzed previously. If the observed imprecision is attributed to sample heterogeneity, increase the number of readings made per sample to try to limit the imprecision and repeat the analyses. If this does not correct the problem notify the FOL.

5.8 Sample Analysis

Note:

This section provides sample analysis instructions, assuming that appropriate instrument start-up and calibration checks have been completed. The longer the instrument count time, the lower the detection limits and the less uncertainty there is with a recorded result. Count time is user-selectable through the instrument's software. Because the XRF data will be used in a screening capacity to make preliminary decisions concerning the soil concentrations relative to 400 mg/kg, it is not necessary to obtain a high degree of accuracy or precision with the instrument. Therefore, count times should be limited to less than 180 seconds unless an usually high degree of precision is expected. To change the count time, select Options → Setup Testing and enter the same value (in seconds) to minimum and maximum count times.

Note:

Section 5.7 identifies the appropriate frequencies for conducting various QC sample analyses and the associated acceptance limits and corrective actions for potentially unsuitable conditions. The specified QC analysis frequencies are minimum frequencies. More frequent QC sample analyses are permitted, especially when diagnosing quality problems.

5.8.1 Ensure that calibration checks and blanks have been analyzed according to Sections 5.6, 5.7.1, and 5.7.2. Count times shall be at least 60 seconds but generally less than 180 seconds.

5.8.2 Acquire enough soil sample to fill an 8-ounce jar and separate from it all particles greater than the size of a pea.

5.8.3 Homogenize the remaining finer grained portion of the sample by simple mixing until it appears as uniform in texture and composition as practicable. Mixing may be done in a beaker or other

suitable lead-free container. If the sample is moist and has high clay content, it may be kneaded in a plastic bag. Mixing shall continue for at least two minutes to ensure that the sample is well mixed. To aid mixing, the sample may be placed into a thick-walled (3 mil or thicker) gallon-sized freezer bag (e.g., ZipLoc®) and rolled flat with a rolling pin to break up large chunks of dirt.

5.8.4 Place approximately 20 to 50 grams (one U.S. nickel weighs about 5 grams) in a suitable container (e.g., aluminum drying pan) for drying.

5.8.5 Dry the homogenized sample from Step 5.8.4 for approximately 20 to 30 minutes in the oven at a temperature not greater than 150°C (a setting of approximately 300°F). If the sample is not visibly dry after this initial drying time, place the sample back into the oven until the sample is dry.

5.8.6 Re-homogenize the dried sample aliquot in a beaker or other suitable lead-free container to obtain a well mixed soil sample. Mixing shall continue for at least one minute.

5.8.7 Place a portion (approximately 1.5 cubic inches) of the dried, homogenized sample aliquot into the instrument manufacturer's recommended sample cup (e.g., a 31.0-mm polyethylene sample cup (or equivalent) or place it in a thin-walled (1.0 mil or thinner) plastic sandwich bag (e.g., ZipLoc®).

5.8.8 If using a disposable plastic sample cup, ensure the cup is at least three-quarters full and cover with mylar (or other) film per the manufacturer's recommendations.

5.8.9 Present a portion of the sample to the instrument in Soil Mode.

5.8.10 Perform a single pull of the trigger to start the count. The count time shall be the same as was used for the calibrations, calibration checks, and blank analyses. The message "Test in progress" will appear on the instrument and the red light on top of the instrument and will illuminate.

5.8.11 When the predetermined count period has expired the message "Test complete" will appear on the instrument. A slight delay may also be incurred during which time the message "calculating" may appear to indicate that results are being computed.

5.8.12 Record the displayed results for lead concentration in mg/kg on Figure 1.

CAUTION

Inconsistent positioning of samples in front of the probe window is a potential source of error because the x-ray signal decreases by the square of the distance from the radioactive source. This error is minimized by maintaining the same distance between the window and each sample. For the best results, the window of the probe should be in direct contact with the sample, which means that the sample surface should be flat and smooth to provide a good contact surface.

5.8.13 Rotate the sample cup approximately one-third of a turn, or if using a thin plastic baggie, read another 1/3 portion of the sample bag. Acquire another measurement by repeating Steps 5.8.10 through 5.8.12.

5.8.14 Repeat Steps 5.8.10 through 5.8.11 a third time, and calculate the average concentration.

5.8.15 Based on the degree of precision demonstrated by the three individual measurements, determine whether additional readings should be acquired on the sample. This determination shall be based on professional judgment of the FPXRF analyst and shall consider the degree of precision observed during calibration checks and previous sample analyses. The objective will be to ensure that the average reading reported for each sample is representative of the true sample concentration. If the analyst feels that non-representative readings are being obtained the analyst shall correct the analytical system or notify the FOL prior to continuing with analyses.

5.8.16 Ensure that measured results are reported to the following standards

- Results < 1000 mg/kg (or parts per million) are reported to two significant figures and results > 1000 mg/Kg are reported to three significant figures.
- All values < MDL shall be reported as the MDL and flagged with the letter “U”.
- All values > MDL and < PQL shall be reported as is and flagged with the letter “B”.

5.9 Calculations

5.9.1 Percent Recovery: The equation for determining percent recovery of calibration verification check standards and standard reference materials is:

$$\%R = \frac{\text{Experimental Concentration}}{\text{Certified or Known Concentration}} \text{ X } 100\,\%$$

5.9.2 Relative Percent Difference: The equation for determining relative percent difference for laboratory and field duplicate samples is:

$$\text{RPD} = \frac{|\text{Amount in Sample 1} - \text{Amount in Sample 2}|}{0.5\,(\text{Amount in Sample 1} + \text{Amount in Sample 2})} \text{ X } 100\,\%$$

5.9.3 Method Detection Limit (MDL): Because the analyses governed by this SOP are semi-quantitative, the manufacturer-specified detection limit will be reported as the MDL unless the specified detection limit is less than 20 mg/kg. Care will taken to ensure that the appropriate count time is consistent with the reported detection limit. However, no value less than 20 mg/kg will be reported as an MDL.

5.9.4 Practical Quantitation Limit (PQL): Multiply the MDL by 3 to obtain the PQL: PQL = MDL*3

6.0 REFERENCES

Innov-X Systems, Inc. Innov-X Systems X-Ray Fluorescence Spectrometers Instruction Manual. Woburn, MA. June 2002.

Stephen Shefsky, NITON Corporation. Comparing Field Portable X-Ray Fluorescence (XRF) To Laboratory Analysis of Heavy Metals In Soil. Presented at the International Symposium of Field Screening Methods for Hazardous Wastes and Toxic Chemicals. Las Vegas, Nevada. January 29-31, 1997.

USEPA (U.S. Environmental Protection Agency), Method 6200: Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment, Office of Solid Waste, Washington, D.C. January 1998.

USEPA, Region I, Northeast Waste Management Officials' Association (NEWMOA) Technology Review Committee Advisory Opinion. Innovative Technology: X-Ray Fluorescence Field Analysis. September 21, 1999.

FIGURE 1

FIELD PORTABLE XRF SAMPLE ANALYSIS LOG SHEET

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Project Site Name: ______________________ Run Length/Duration: ______________________
Project No.: ______________________ Measurement Units: ______________________
Analyzed By: ______________________ Reference/Calibration: ______________________

SAMPLING AND FIELD PORTABLE XRF RESULTS DATA:

SAMPLE ID	ANALYSIS DATE	ANALYSIS TIME	ELEMENT ANALYSIS	RESULT RUN 1	RESULT RUN 2	RESULT RUN 3	RESULTS AVERAGE	ERROR RUN 1	ERROR RUN 2	ERROR RUN 3	ERROR AVERAGE