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FINAL CONFIRMATORY SAMPLING REPORT SITE 4, 23, 38, 42, 53, 55, 61, 62 AND 66 MCB CAMP LEJEUNE NC

08/01/2011

CH2M HILL

Final

Confirmatory Sampling Report
Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66

Marine Corps Base Camp Lejeune
Jacksonville, North Carolina

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Contract No.
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August 2011

Prepared by

CH2MHILL

QC Review Page

Confirmatory Sampling Report
Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66

Marine Corps Base Camp Lejeune
Jacksonville, North Carolina

NAVFAC CLEAN 1000 Program
Contract No. N62470-08-D-1000
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Marine Corps Base Camp Lejeune
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Contract Task Order 40

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Under the

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Executive Summary

Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66, located on Marine Corps Base Camp Lejeune (MCB CamLej), North Carolina were originally identified during the 1983 Initial Assessment Study (IAS) conducted by Water and Air Research, Inc (WAR). Based upon the limited available historical information on the Sites and the lack of specific evidence to suggest the presence of hazardous or toxic substances, the IAS concluded there was no further assessment needed and the sites were designated as "no further action" (NFA). Confirmatory sampling was conducted at these sites to confirm their NFA status; therefore the objective was to evaluate the potential presence and nature of environmental impacts to soil and groundwater which may have resulted from historical land use practices, and to determine if additional investigation is warranted. The NFA status was confirmed for these sites and the background, sample strategy, and results presented herein, provide the documentation/rationale for NFA.

Site 4

Site 4, the Sawmill Road Construction Debris Dump, consists of approximately 0.3 acres of land bisected by the eastern end of Old Sawmill Road. According to the IAS report, the Sawmill Road Construction Debris Dump contained construction and demolition debris including wood, metal, asphalt, bricks, and concrete. Debris consisting of concrete and other construction debris was noted along Old Sawmill Road during field activities.

Subsurface soil and groundwater samples were collected in July 2009 and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. There were no exceedances of Base Background (if applicable) and another relevant standard in groundwater. In subsurface soil methylene chloride was detected at one location exceeding the North Carolina Soil Screening Limits (NC SSLs) Aluminum was detected at concentrations exceeding Base Background and Residential Regional Screening Levels (RSLs).

Human health and ecological risk screening did not identify any potential risks from any media at Site 4. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

Site 23

Site 23, Roads and Grounds, encompasses approximately 0.1 acres of land located within the Hadnot Point Industrial Area (HPIA) and includes Building 1105 and its parking lot. The site is completely encompassed by IR Site 78 and, according to the IAS report, this area was used for pesticide and herbicide storage between 1957 and 1977.

Subsurface soil and groundwater samples were collected in July 2009 and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and polychlorinated biphenyls (PCBs). In subsurface soil benzo(a)pyrene, benzo(b)flouranthene, and arsenic were detected above Base Background levels (arsenic only) and in exceedance of other applicable regulatory

standards. In groundwater, four VOCs (1,2-Dichloroethane [1,2-DCA], 1,2-Dichloropropane, benzene, and tetrachloroethene [PCE]) were detected at concentrations exceeding their North Carolina Water Quality Standards (NCWQS).

Human health and ecological risk screening indicated that there were no unacceptable risks to human or ecological receptors from subsurface soil. No risks to ecological receptors from groundwater were identified since there was not a complete exposure pathway. The single location where VOCs were detected in exceedance of NCWQS is located upgradient of the site and the VOCs detected are consistent with contamination at IR Site 78. Based on this the groundwater exceedances are likely attributable to activity at IR Site 78. No additional sampling or evaluation is recommended and the NFA status is validated.

Site 38

Site 38, the Camp Geiger Construction Dump, consists of approximately 3 acres of land located adjacent to NC Highway 24. The dump was reportedly used until at least 1983 and contained construction and landscape debris (WAR, 1983).

Subsurface soil and groundwater samples were collected in February 2010 and analyzed for VOCs, SVOCs, and metals. Metals were detected in both media (arsenic in subsurface soil and chromium in groundwater) at concentrations that exceeded applicable Base Background levels and other regulatory standards.

Human health and ecological risk screening did not identify any potential risks to human or ecological receptors from any media at Site 38. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

Site 42

Site 42, the Building 705 Bachelor Officers Quarters (BOQ) Dump, encompasses approximately 2.8 acres in the MCAS New River portion of MCB CamLej. Landscape and construction debris was reportedly disposed of at the site from 1950 to 1960.

Subsurface soil and groundwater samples were collected in July 2009 and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs. Multiple metals were detected in both media exceeding applicable Base Background levels and other regulatory standards. The elevated metals are consistent with site geology and are most likely not attributable to historical operations.

Human health and ecological risk screening did not identify any potential risks to human or ecological receptors from any media at Site 42. Based on this and since elevated metals are most likely attributable to site geology, no additional sampling or evaluation is recommended and the NFA status is validated.

Site 53

Site 53, the MCAS Warehouse Building Area, consists of approximately 3 miles of roadway adjoining the southwest portion of the air station. According to the IAS report, used crankcase oil, waste oils, jet propulsion fuels, and paint thinners were reportedly sprayed on roads for dust control between 1970 and 1975. The site is currently adjacent to an equipment

storage area and vehicle fueling area that contains aboveground storage tanks (ASTs) and oil-water separators (OWSs).

Subsurface soil and groundwater samples were collected in July 2009 and analyzed for VOCs, SVOCs, metals, and PCBs. Multiple metals were detected in both media exceeding Base Background and relevant regulatory standards. Based on a review of field data, it was determined that field conditions, including clayey soils and poorly producing wells, were most likely the cause of elevated metals in groundwater. To determine if this was the case an additional groundwater sample was collected in February 2010 and analyzed for arsenic only. This sample was collected from a permanent monitoring well rather than a temporary well. The sample collected did not contain detectable concentrations of arsenic.

Human health and ecological risk screening did not identify unacceptable risks to human or ecological receptors from any media at Site 53. Site geology and field conditions contributed to elevated metals concentrations in groundwater. Based on this, no additional sampling or evaluation is recommended and the NFA status is validated.

Site 55

Site 55, the Air Station East Perimeter Dump, consists of approximately 6 acres that encompasses a marina and recreation area used by MCAS New River. Of the approximate 6 acres, just over 3.5 acres consists of land with the remaining 2.5 acres extending into the New River. The dump was reportedly used from the 1950s until 1960, and reportedly contained barrels of unknown contents or quantity, tires, trash of unknown content, metal planking, and telephone poles. No debris or waste was visually observed during field activities and an underground storage tank is located along the eastern shore of the site.

Subsurface soil and groundwater samples were collected from Site 55 in July 2009 and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs. In subsurface soil, one VOC one SVOC, and four metals were detected at concentrations exceeding applicable Base Background levels and other regulatory standards. In groundwater samples, only metals were detected in at concentrations exceeding Base Background and regulatory criteria.

Human health and ecological risk screening did not identify unacceptable risks to human or ecological receptors from any media at Site 55. A review of field data, indicated that field conditions, including clayey soils and poorly producing wells, were most likely the cause of elevated metals in groundwater. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

Site 61

Site 61 is located near the Camp Devildog area and consists of the Rhodes Point Road Dump. According to the IAS report, the site was reported to include bivouac waste and encompasses approximately 6-acres.

Subsurface soil and groundwater samples were collected from Site 61 in July 2009 and analyzed for VOCs, SVOCs, and metals. In the samples collected, VOCs (methylene chloride in subsurface soil and chloroform in groundwater) and metals were detected at concentrations exceeding applicable Base Background levels and other regulatory criteria. Based on a review of field data, it was determined that field conditions, including clayey

soils and poorly producing wells, were most likely the cause of elevated metals in groundwater. To determine if this was the case an additional groundwater sample was collected in February 2010 and analyzed for arsenic only. This sample was collected from a permanent monitoring well rather than a temporary well. The sample collected did not contain concentrations of arsenic exceeding Base Background levels.

Human health and ecological risk screening did not identify unacceptable risks to human or ecological receptors from any media at Site 61. Site geology and field conditions contributed to elevated metals concentrations in groundwater. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

Site 62

Site 62, the Race Course Area Dump, is located 2 miles south of the MCAS New River and is approximately 2 acres in size. According to the IAS report, the site was reported to include bivouac waste. The site is currently used for war games and site access is restricted.

Subsurface soil samples were collected from Site 62 during the July 2009 field activities and analyzed for VOCs, SVOCs, and metals. Metals were detected in subsurface soil samples at concentrations exceeding Base Background levels and regulatory criteria. Groundwater was not assessed in this investigation due to the significant presence of clay in the subsurface.

Human health and ecological risk screening did not identify unacceptable risks to human or ecological receptors from subsurface soil at Site 62. The presence of a significant clay layer at the site indicated that groundwater would not have been impacted by historical activities. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

Site 66

Site 66, the Amphibious Tractor (AMTRAC) Landing Site and Storage is located in the Courthouse Bay area of MCB CamLej and encompasses approximately 40 acres of heavily vegetated woodlands. According to the IAS, the site was reported to have been utilized for vehicle maintenance during training activities beginning in the 1950s; however, the exact operations are unknown. Large foxhole remnants have been observed throughout the site and MCB CamLej Wildlife currently uses Site 66 to observe bald eagles nesting across the New River. Site 66 currently serves as a helicopter operations training area and MCB CamLej range control (call sign Blackburn) must be notified prior to accessing the site.

Subsurface soil, groundwater, sediment, and surface water samples were collected from Site 66 in July 2009 and analyzed for VOCs, SVOCs, and metals. VOCs and metals exceeded applicable Base Background levels and other relevant standards in subsurface soil and groundwater samples. Sediment samples had concentrations of SVOCs and metals exceeding applicable Base Background levels and regulatory standards. In surface water samples, only metals exceeded Base Background and other relevant standards.

Based on a review of field data, it was determined that field conditions, including the selected sampling methodology and turbidity, were most likely the cause of elevated metals in surface water. To determine if this was the case an additional surface water sample was collected in February 2010 and analyzed for metals. This sample was collected using a

peristaltic pump rather than a sampling cup. The sample collected did not contain concentrations of metals exceeding Base Background levels.

Human health and ecological risk screening did not identify unacceptable risks to human or ecological receptors from any media at Site 66. Field conditions contributed to elevated metals concentrations in surface water. Based on this no additional sampling or evaluation is recommended and the NFA status is validated.

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Acronyms and Abbreviations

amsl	above mean sea level
AMTRAC	Amphibious Tractor
AST	aboveground storage tank
Baker	Baker Environmental, Inc.
bgs	below ground surface
BOQ	Bachelor Officers Quarters
BTOC	below top of casing
CamLej	Camp Lejeune
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chain-of-custody
COPC	constituents/chemicals of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CTO	Contract Task Order
DO	dissolved oxygen
DOT	Department of Transportation
DPT	direct push technology
EcoSSL	USEPA Ecological Soil Screening Levels
EPA	Environmental Protection Agency
EPC	exposure point concentration
ERS	ecological risk screen
ESV	Ecological Screening Values
FID	flame ionization detector
ft bgs	feet below ground surface
FTL	Field Team Leader
HEAST	Health Effects Assessment Summary Tables
HHRS	Human Health Risk Screening
HI	hazards index
HPIA	Hadnot Point Industrial Area
HQ	hazard quotient
IAS	Initial Assessment Study
ID	Inner Diameter
IRP	Installation Restoration Program
IRIS	Integrated Risk Information System
kg	kilograms
LSA	Limited Site Assessment

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCL	Maximum Contaminant Level
MILCON	military construction
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
MRE	Meals Ready to Eat
MS/MSD	matrix spike/matrix spike duplicate
NAD	North American Datum
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Command
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NCEA	National Center for Environmental Assessment
NCGWQS	North Carolina Groundwater Quality Standards
NC SSL	North Carolina Soil Screening Limit
NC2B	North Carolina Administrative Code 15A NCAS 02B, Surface Water and Wetland Standards
NFA	no further action
NRWQC	National Recommended Water Quality Criteria
NTU	Nephelometric Turbidity Units
ORP	oxidation reduction potential
OWS	oil-water separator
PCB	polychlorinated biphenyl
PRG	Preliminary Remediation Goal
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SSL	soil screening level
SU	Standard Units
SVOC	semi-volatile organic compound
UCL	upper confidence limit
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WAR	Water and Air Research, Inc.

SECTION 1

Introduction

This Confirmatory Sampling Report document presents data, results, and conclusions stemming from confirmatory sampling conducted at Installation Restoration Program (IRP) Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66 (hereinafter referred to as the "Sites") located at MCB CamLej in Jacksonville, NC.

The 1983 Initial Assessment Study (IAS) conducted by Water and Air Research (WAR) identified these sites and concluded that there was no specific evidence to suggest the presence of hazardous or toxic substances. Therefore, WAR concluded, no further assessment was required, and the sites were closed. In order to assess the accuracy of this conclusion, MCB CamLej voluntarily conducted confirmatory sampling activities at the Sites. **Figure 1-1** depicts the location of MCB CamLej and the Sites in question.

1.1 Objectives and Approach

The objective of the confirmatory sampling activities was to evaluate the potential presence and nature of impacts to environmental media resulting from historical land use practices at the Sites. The technical approach employed during this study included:

- Collecting samples of subsurface soil and shallow groundwater.
- Analyzing the samples for the presence of various organic and inorganic contaminants
- Evaluating the laboratory analytical data to assess the potential risk to human and ecological receptors.
- Evaluating the need for additional investigation.

1.2 Report Organization

This Confirmatory Sampling Report is comprised of the following sections:

- Section 1 - Introduction
- Section 2 – Background
- Section 3 – Field Investigation Activities
- Section 4 – Site 4, Sawmill Construction Debris Dump
- Section 5 – Site 23, Roads and Grounds, Building 1105
- Section 6 – Site 38, Camp Geiger Construction Dump
- Section 7 – Site 42, Building 70, Building 705 BOQ Dump
- Section 8 – Site 53, MCAS Warehouse Building Area, Oiled Roads
- Section 9 – Site 55, Air Station East Perimeter Dump
- Section 10 – Site 61, Rhodes Point Road Dump
- Section 11 – Site 62, Race Course Area Dump
- Section 12 – Site 66, AMTRAC Landing Site and Storage
- Section 13 – References

Figures and tables are provided at the end of each respective section and appendices are provided after Section 13.

SECTION 2

Background

This section contains general background information for MCB CamLej. Detailed background information for MCB CamLej including topography, climate, geology, hydrogeology, and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)-related history is presented in the Master Project Plans (CH2M HILL, 2008) and is not repeated herein. Site descriptions and environmental settings are presented in the sections that follow.

MCB CamLej was commissioned in 1942 as a training area to prepare Marines for combat and is located on 236 square miles of land in Onslow County, North Carolina. Since 1990, much of the MCB CamLej complex has been part of the adjacent city of Jacksonville which contains approximately half of the county's total population. The Base is bordered by the Atlantic Ocean to the east, NC Highway 17 to the west and State Route 24 to the north. The New River bisects the Base, flowing into the Atlantic Ocean in a southeasterly direction **(Figure 1-1)**.

The Base consists of six geographic locations under the jurisdiction of the Base command. These areas include Camp Geiger, Montford Point, Courthouse Bay, Mainside, the Greater Sandy Run Area, and the Rifle Range Area. MCB CamLej is home to an active duty, dependent, retiree, and civilian population of approximately 150,000 personnel, and provides housing, training facilities, logistical support, and administrative supplies for Fleet Marine Force units and other assigned units. Additionally, Marine Corps Air Station (MCAS) New River is located within the boundary of MCB CamLej.

2.1 Site Descriptions and Environmental Setting

Sites 4 and 23 are located within the Mainside area of MCB CamLej, Site 38 is located north of Camp Geiger adjacent to NC Highway 17, Sites 42, 53 and 55 are located within MCAS New River. Sites 61 and 62 are located near the Camp Devil Dog area, south of MCAS New River adjacent to NC Highway 17 near Verona, NC. Site 66 is located in the Courthouse Bay area of MCB CamLej. Site location maps are presented as **Figures 2-1 through 2-9**. Specific information concerning each site can be found in the site-specific sections of this report.

2.2 Public Water Supply Usage

Potable water supplies for MCB CamLej and the surrounding areas are provided by water supply wells that pump groundwater from the Castle Hayne aquifer. Public water supply wells within a 4-mile radius of the Sites are shown on **Figures 2-10** through **2-12** with water supply well details summarized in **Tables 2-1** through **2-3**. Although freshwater is present within the surficial, Castle Hayne, Beaufort, and Peedee aquifers, all of which are present beneath MCB CamLej, only the Castle Hayne aquifer is used by MCB CamLej as a water supply source (Cardinell, Berg, and Lloyd, 1993).

TABLE 2-1
Sites 4 and 23
Regional Water Supply Wells
Confirmatory Sampling Report
MCB CamLej
North Carolina

Well ID	Status	Well Field	Year Drilled	Total Depth (ft)*	Diameter (in)	Original Pump Rate (gpm)	Pump Rate 2001 (gpm)
PSW-HP557	NA						
PSW-HP558	NA						
PSW-HP584	Active	Holcomb Boulevard	NA	277	NA	260	260
PSW-HP606	Inactive	Hadnot Point	1941	210	8	345	197
PSW-HP607	Active	Hadnot Point	NA	200	NA	200	289
PSW-HP611	Active	Hadnot Point	1997	208	10	144	157
PSW-HP612	Active	Hadnot Point	1997	210	10	101	170
PSW-HP613	Inactive	Hadnot Point	1942	150	8	200	250
PSW-HP614	Active	Hadnot Point	1994	330	10	249	240
PSW-HP616	Active	Hadnot Point	1942	170	8	200	167
PSW-HP617	Active	Hadnot Point	1994	265	10	407	292
PSW-HP618	Active	Hadnot Point	1992	260	12	400	349
PSW-HP619	Active	Hadnot Point	1994	330	10	176	222
PSW-HP620	Inactive	Hadnot Point	1944	52	18	160	105
PSW-HP621	Active	Hadnot Point	1994	312	10	176	232
PSW-HP622	Active	Hadnot Point	NA	227	NA	300	280
PSW-HP623	Active	Hadnot Point	NA	197	NA	300	175
PSW-HP627	Active	Hadnot Point	1995	315	10	381	500
PSW-HP628	Active	Hadnot Point	1984	200	8	150	180
PSW-HP629	Active	Hadnot Point	1982	240	8	200	137
PSW-HP633	Inactive	Hadnot Point	1959	205	8	200	183
PSW-HP635	Inactive	Hadnot Point	1959	215	8	NA	NA
PSW-HP640	Active	Hadnot Point	1969	176	8	290	214
PSW-HP641	Active	Hadnot Point	1971	178	8	315	506
PSW-HP642	Active	Hadnot Point	1971	210	8	156	100
PSW-HP643	Active	Hadnot Point	1971	240	10	260	146
PSW-HP644	Active	Hadnot Point	1971	255	10	160	192
PSW-HP646	Active	Hadnot Point	1971	266	10	260	294
PSW-HP647	Active	Hadnot Point	1970	200	10	260	278
PSW-HP648	Inactive	Holcomb Boulevard	1971	260	10	230	229
PSW-HP649	Inactive	Holcomb Boulevard	1971	284	10	NA	NA
PSW-HP650	Inactive	Holcomb Boulevard	1971	179	10	400	388
PSW-HP652	NA	Hadnot Point	1971	183	10	200	119
PSW-HP654	Inactive	Hadnot Point	1978	183	NA	200	100
PSW-HP661	Active	Hadnot Point	1983	135	10	175	151
PSW-HP662	Inactive	Hadnot Point	NA	230	NA	200	149
PSW-HP663	Active	Hadnot Point	1986	180	10	300	130
PSW-HP698	Active	Holcomb Boulevard	1985	124	10	250	170
PSW-HP699	Active	Holcomb Boulevard	1985	108	10	275	108
PSW-HP700	Active	Holcomb Boulevard	1985	130	10	275	100
PSW-HP701	Active	Holcomb Boulevard	1985	100	10	150	185
PSW-HP703	Active	Holcomb Boulevard	1985	145	NA	275	190
PSW-HP704	Active	Holcomb Boulevard	1985	124	10	200	100
PSW-HP705	Active	Holcomb Boulevard	1986	160	10	250	216
PSW-HP706	Inactive	Holcomb Boulevard	1985	176	10	190	170
PSW-HP707	Inactive	Holcomb Boulevard	1986	130	NA	125	133
PSW-HP708	Active	Holcomb Boulevard	1986	176	10	265	221
PSW-HP709	Active	Hadnot Point	1985	140	10	225	190
PSW-HP710	Active	Hadnot Point	1985	140	10	200	100
PSW-HP711	Active	Hadnot Point	1985	150	NA	150	108
PSW-HP5186	Active	Hadnot Point	NA	160	NA	250	362
PSW-LCH4009	Active	Hadnot Point	1942	134	NA	450	420
PSW-LCH4007	Inactive	Holcomb Boulevard	NA	150	8	250	146

Notes:

Well data from: *Wellhead Protection Plan, 2002 Update,* AH Environmental Consultants, 2002.

MCB - Marine Corps Base

NA - Not available

Created by: Jeff Albano Checked by: David Lubell

TABLE 2-2
Sites 42, 49, 53, 55, and 62
Regional Water Supply Wells
Confirmatory Sampling Report
MCB CamLej
North Carolina

Well ID	Status	Well Field	Year Drilled	Total Depth (ft)*	Diameter (in)	Original Pump Rate (gpm)	Pump Rate 2001 (gpm)
PSW-TC502	Inactive	Camp Gieger	1942	184	10	400	235
PSW-TC600	Active	Camp Gieger	1942	70	8	130	104
PSW-TC604	Active	Camp Gieger	1942	113	8	250	157
PSW-TC700	Inactive	Camp Gieger	1941	76	18	125	149
PSW-TC1000	Active	Camp Gieger	1942	153	8	200	60
PSW-TC1001	Active	Camp Gieger	1975	100	8	175	160
PSW-TC1251	Active	Camp Gieger	1975	155	8	200	175
PSW-TC1253	Active	Camp Gieger	1975	250	NA	200	195
PSW-TC1254	Inactive	Camp Gieger	1975	195	NA	200	100
PSW-AS106	Inactive	MCAS	1954	179	NA	225	183
PSW-AS131	Inactive	MCAS	NA	200	NA	260	275
PSW-AS190	Active	MCAS	NA	180	NA	250	159
PSW-AS191	Active	MCAS	NA	180	NA	250	285
PSW-AS203	Inactive	MCAS	NA	173	NA	130	220
PSW-AS4140	Active	MCAS	NA	193	NA	110	110
PSW-AS4150	Active	MCAS	NA	193	NA	128	115
PSW-AS5001	Active	MCAS	NA	193	NA	185	50
PSW-AS5009	Inactive	MCAS	NA	196	NA	100	111
PSW-HP698	Active	Holcomb Blvd.	1985	124	10	250	170
PSW-HP699	Active	Holcomb Blvd.	1985	108	10	275	108
PSW-HP700	Active	Holcomb Blvd.	1985	130	10	275	100
PSW-HP701	Active	Holcomb Blvd.	1985	100	10	150	185
PSW-HP707	Inactive	Holcomb Blvd.	1986	130	NA	125	133
PSW-VL101	Active	Verona Loop	1994	300	8	950	700
PSW-VL102	Active	Verona Loop	1997	280	12	1001	850
PSW-VL103	Active	Verona Loop	1997	280	12	757	550
PSW-VL104	Active	Verona Loop	1997	300	12	673	525
PSW-VL105	Active	Verona Loop	1997	248	12	673	700

Notes:
Well data from: *Wellhead Protection Plan, 2002 Update, AH Environmental Consultants, 2002.*
MCB - Marine Corps Base
MCAS - Marine Corps Air Station
NA - Not available
Created by: *Jeff Albano* Checked by: David Lubell

TABLE 2-3
Sites 61 and 66
Regional Water Supply Wells
Confirmatory Sampling report
MCB CamLej
North Carolina

Well ID	Status	Well Field	Year Drilled	Total Depth (ft)*	Diameter (in)	Original Pump Rate (gpm)	Pump Rate 2001 (gpm)
PSW-BB44	Active	Court House Bay	1942	62	8	200	115
PSW-BB47	Active	Court House Bay	NA	200	NA	250	251
PSW-BB143	NA						
PSW-BB144	NA						
PSW-BB218	Active	Court House Bay	NA	NA	NA	220	226
PSW-BB221	Active	Court House Bay	NA	200	NA	300	140
PSW-BB280	Active	Court House Bay	1997	180	10	203	300
PSW-BB281	Active	Court House Bay	1997	175	10	308	349

Notes:

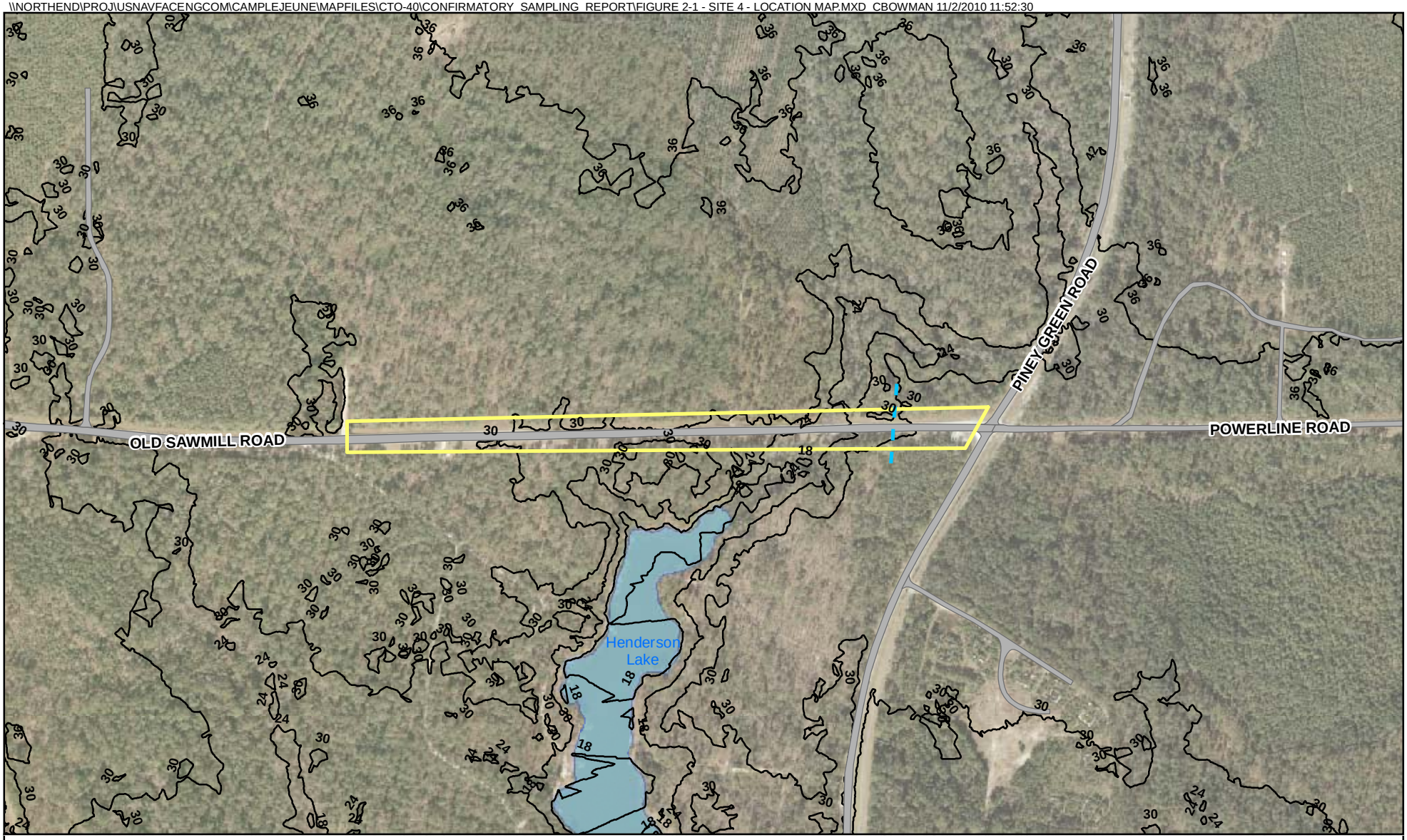
Well data from: *Wellhead Protection Plan, 2002 Update, AH Environmental Consultants, 2002.*

MCB - Marine Corps Base

NA - Not available

Created by: *Jeff Albano* Checked by: David lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-1 - SITE 4 - LOCATION MAP.MXD CBOWMAN 11/2/2010 11:52:30



Legend

- Site 4 Boundary
- Road
- Surface Water
- Topographic Contour (6 ft interval)
- Drainage ditch

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency

N

0 275 550 1,100 Feet

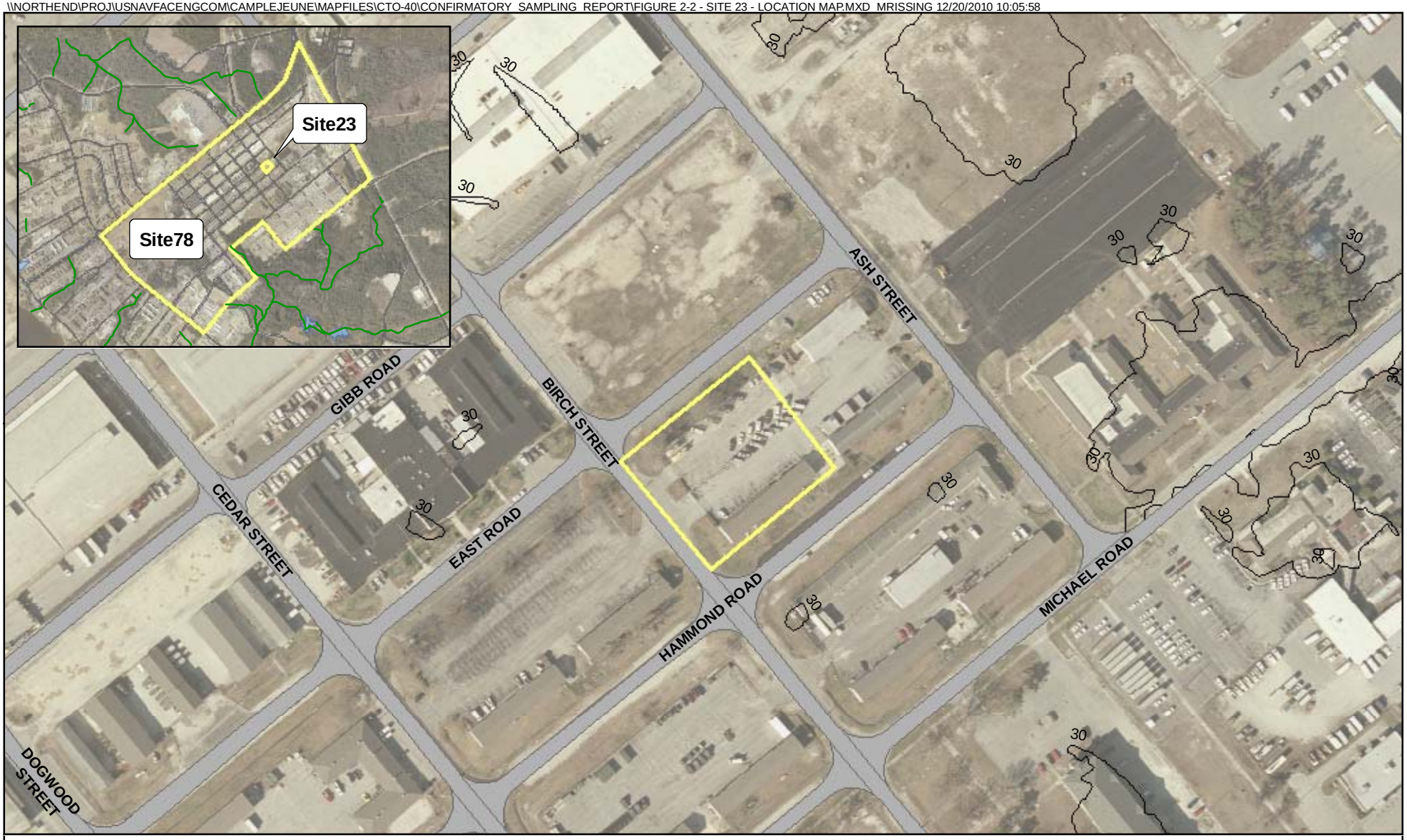
1 inch = 550 feet

Figure 2-1
Site 4 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-2 - SITE 23 - LOCATION MAP.MXD MRISSING 12/20/2010 10:05:58



Legend

- Site 23 Boundary
- Road
- Topographic Contour (6 ft interval)

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 2-2
Site 23 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency

CH2MHILL

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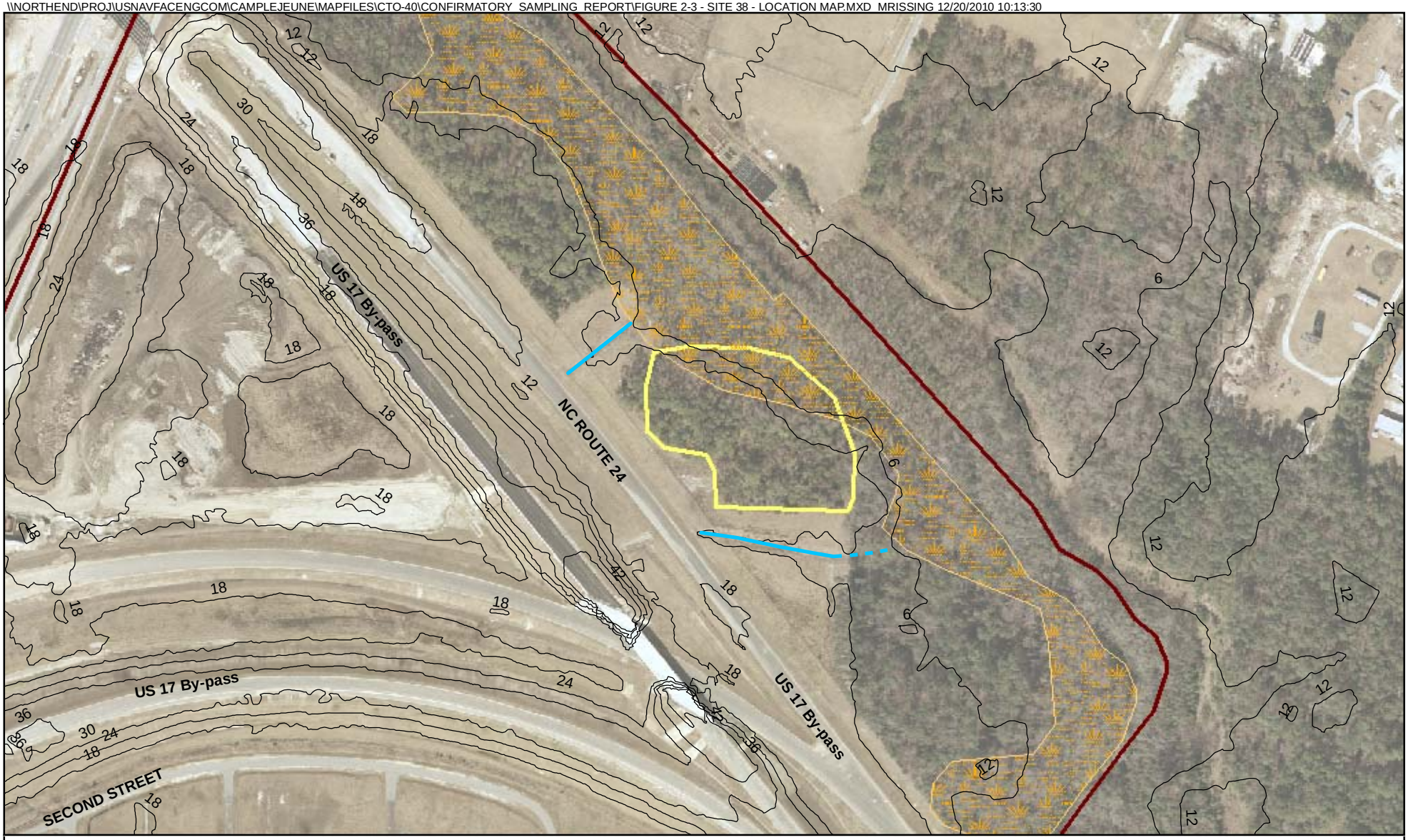
\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-3 - SITE 38 - LOCATION MAP.MXD MRISSING 12/20/2010 10:13:30



Legend

- Site 38 Boundary
- Installation Boundary
- Planning Wetland Area
- Topographic Contour (6 ft interval)
- Drainage ditch

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency
Planning Wetlands Source:
provided by MCB CamLej

N

0 150 300 Feet

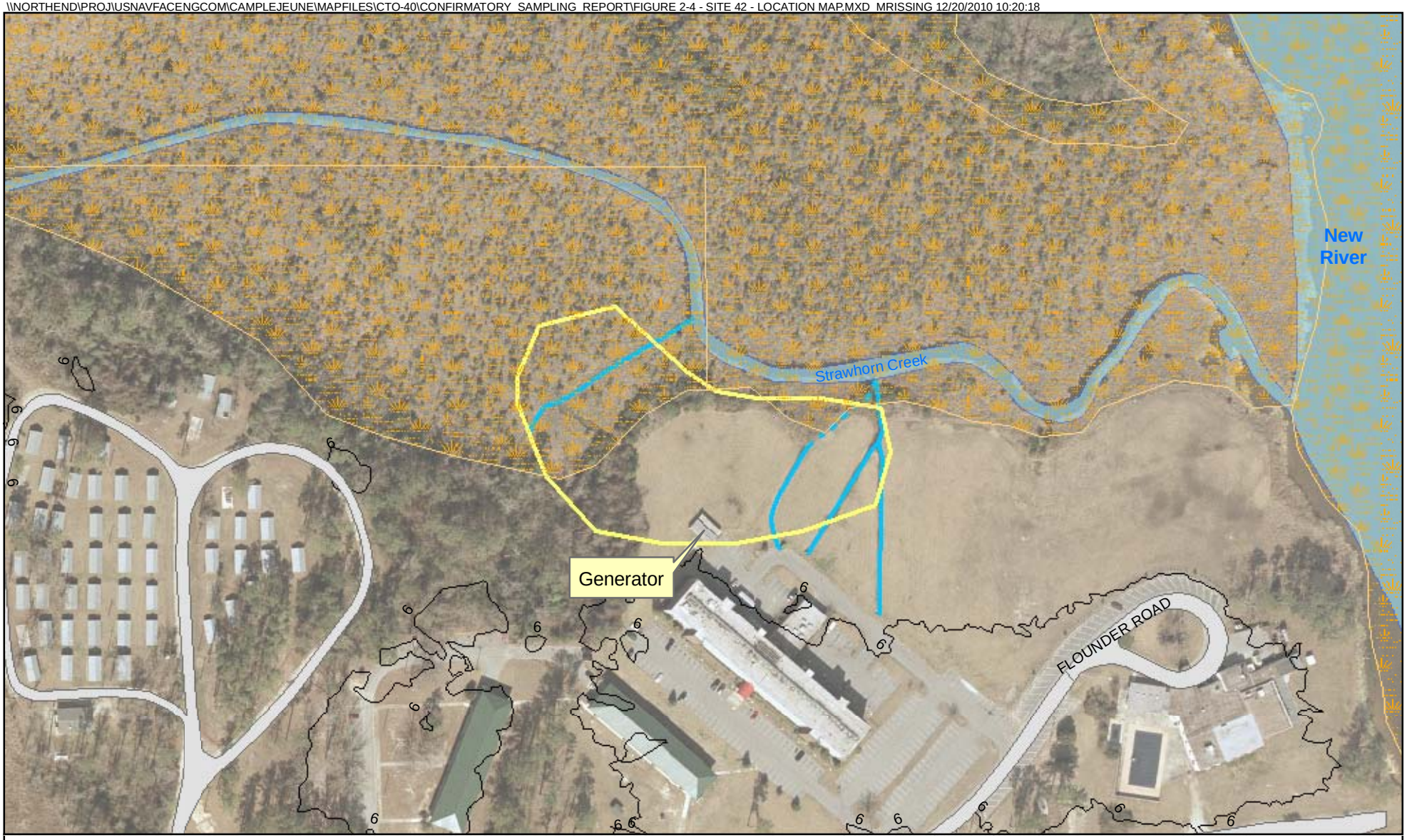
1 inch = 300 feet

Figure 2-3
Site 38 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-4 - SITE 42 - LOCATION MAP.MXD MRISSING 12/20/2010 10:20:18



Legend

- Site 42 Boundary
- Surface Water
- Road
- Topographic Contour (6 ft interval)
- Planning Wetland Area
- Drainage ditch (dashed where inferred)

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency

N

0 100 200 400 Feet

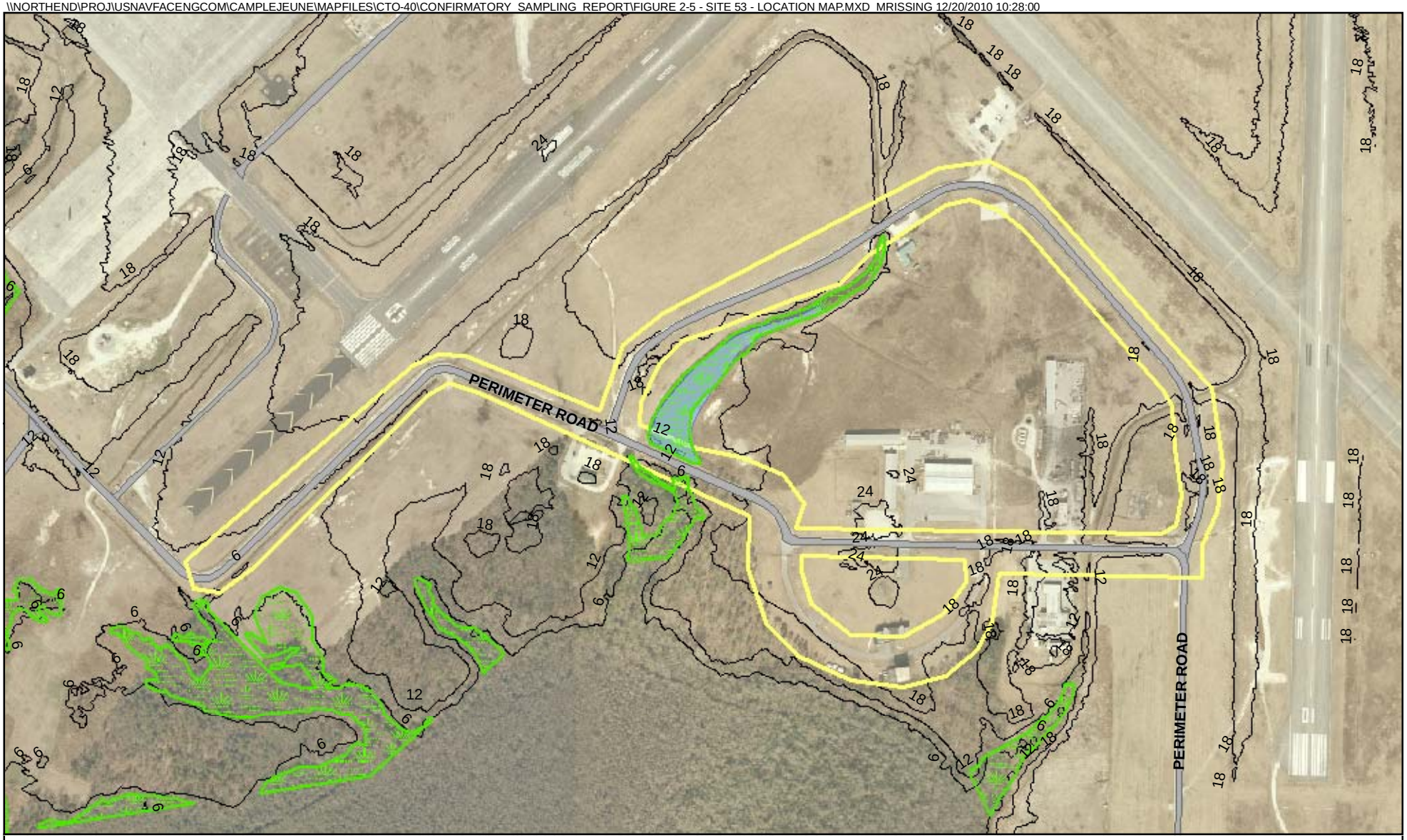
1 inch = 200 feet

Figure 2-4
Site 42 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-5 - SITE 53 - LOCATION MAP.MXD MRISSING 12/20/2010 10:28:00



Legend

- Surface Water
- Site 53 Boundary
- Road
- Topographic Contour (6 ft interval)
- Jurisdictional Wetlands

Elevation in feet above mean sea level

N

0 250 500 1,000 Feet

1 inch = 500 feet

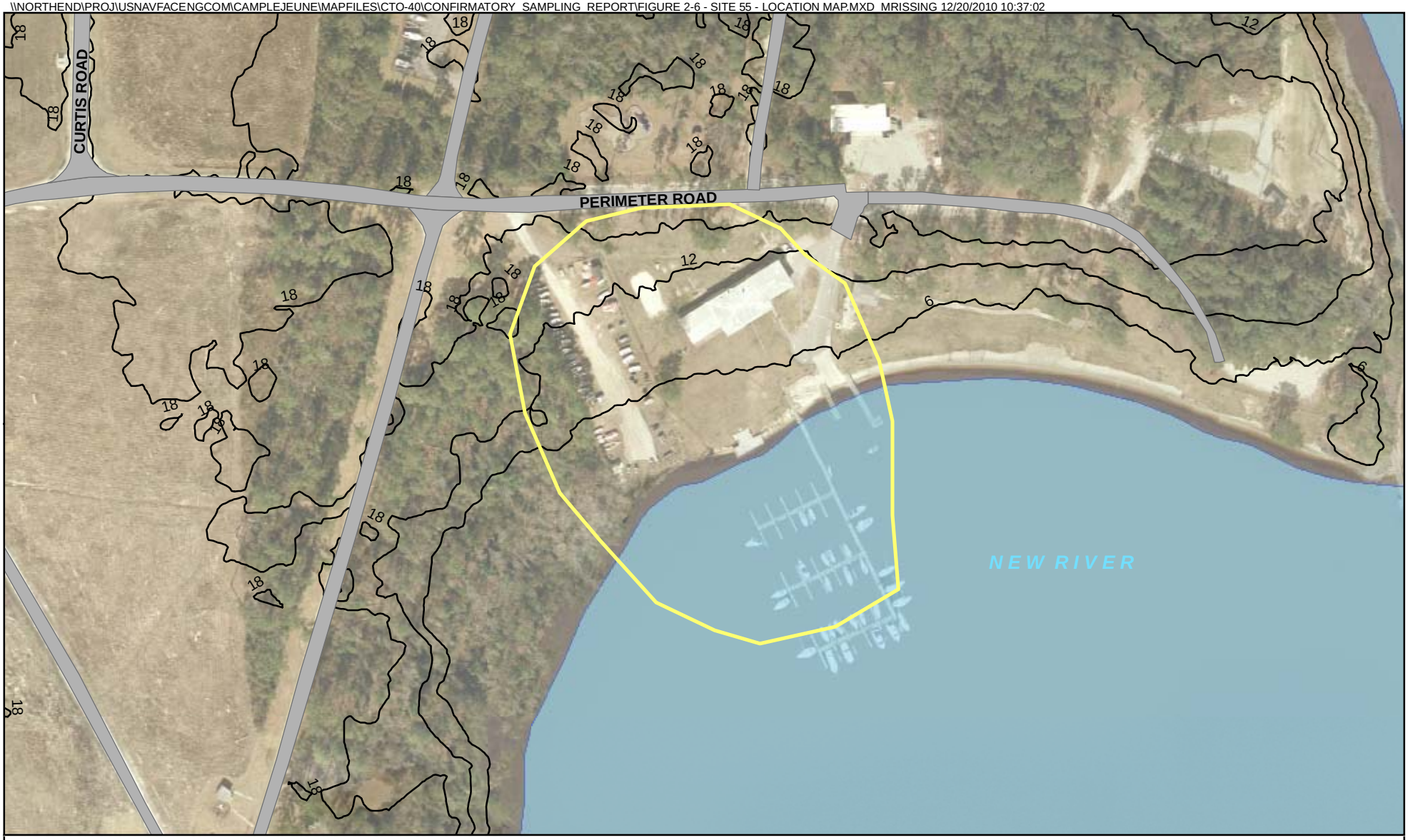
Topographic Contour Source:
Federal Emergency Management Agency

Figure 2-5
Site 53 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY SAMPLING REPORT\FIGURE 2-6 - SITE 55 - LOCATION MAP.MXD MRISSING 12/20/2010 10:37:02



Legend

- Site 55 Boundary
- Road
- Surface Water
- Topographic Contour (6 ft interval)

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency

N

0 100 200 400 Feet

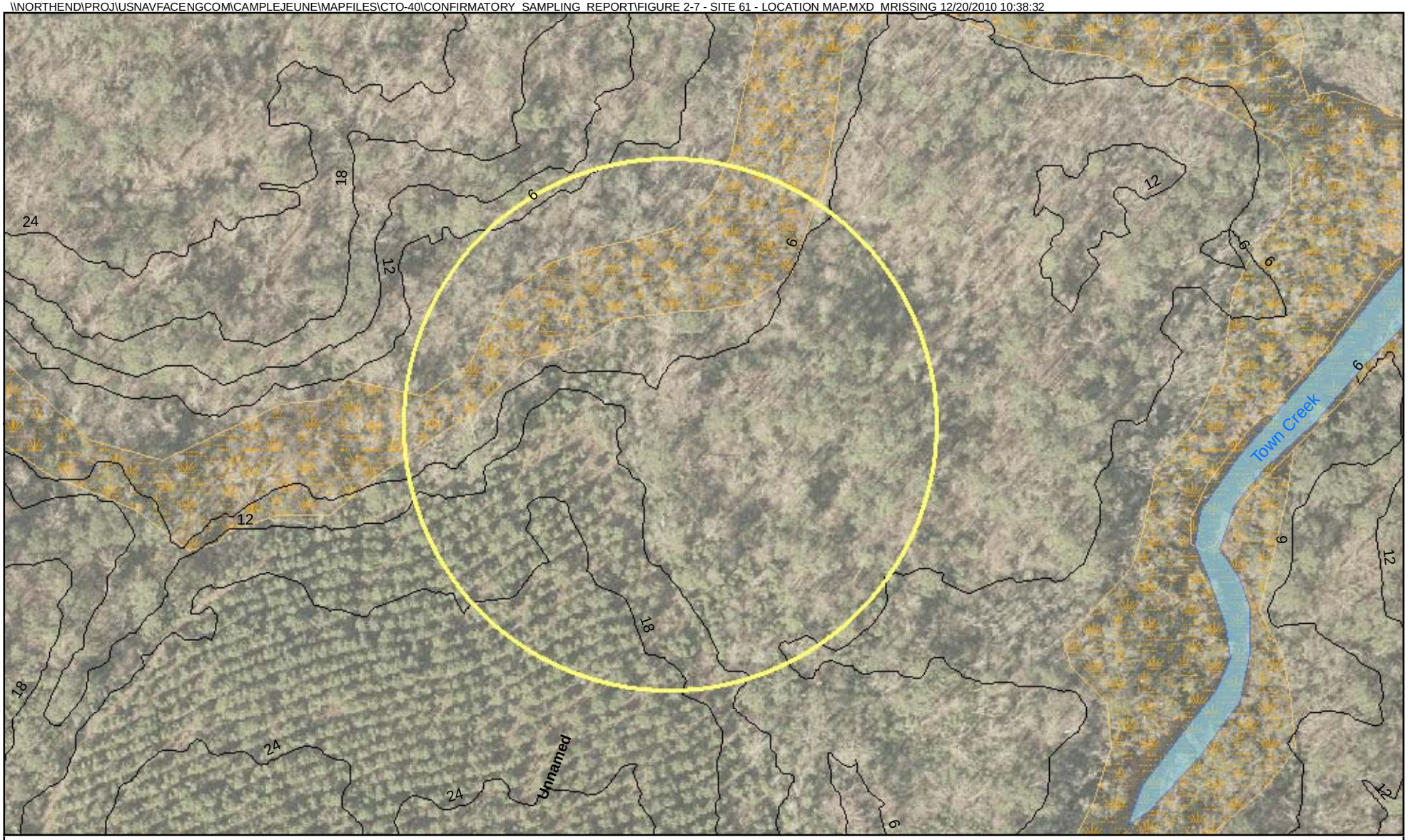
1 inch = 200 feet

Figure 2-6
Site 55 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-7 - SITE 61 - LOCATION MAP.MXD MRISSING 12/20/2010 10:38:32



Legend

- Site 61 Boundary
- Surface Water
- Planning Wetlands
- Topographic Contour (6 ft interval)

Elevation in feet above mean sea level

N

0 75 150 300 Feet

1 inch = 150 feet

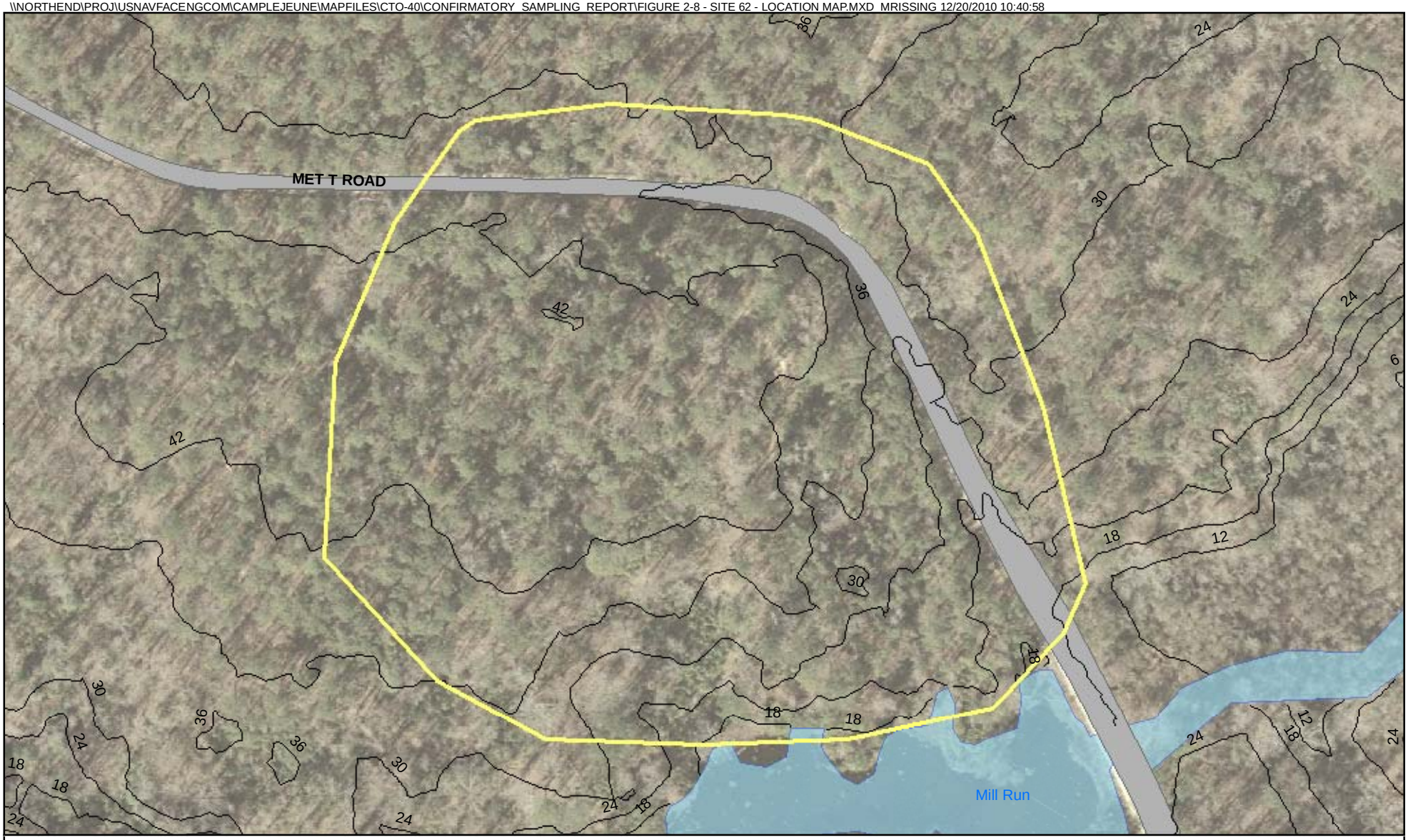
Topographic Contour Source:
Federal Emergency Management Agency

Figure 2-7
Site 61 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-8 - SITE 62 - LOCATION MAP.MXD MRISSING 12/20/2010 10:40:58



Legend

- Site 62 Boundary
- Road
- Surface Water
- Topographic Contour (6 ft interval)

Elevation in feet above mean sea level

N

0 75 150 300 Feet

1 inch = 150 feet

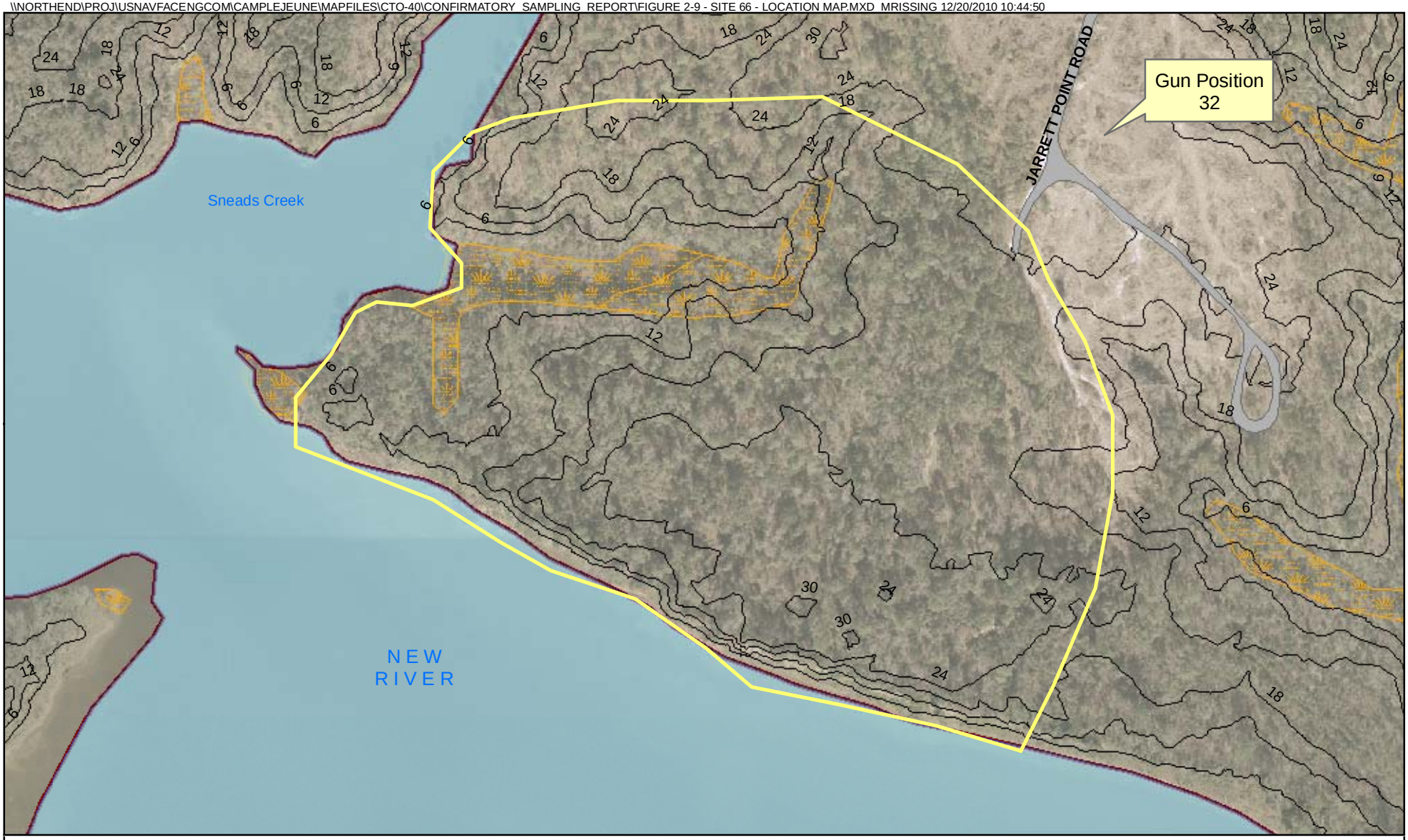
Topographic Contour Source:
Federal Emergency Management Agency

Figure 2-8
Site 62 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY SAMPLING REPORT\FIGURE 2-9 - SITE 66 - LOCATION MAP.MXD MRISSING 12/20/2010 10:44:50



Legend

- Site 66 Boundary
- Road
- Surface Water
- Installation Boundary
- Planning Wetland
- Topographic Contour (6 ft interval)

Elevation in feet above mean sea level

Topographic Contour Source:
Federal Emergency Management Agency
Planning Wetlands Source:
provided by MCB CamLej

N

0 150 300 600 Feet

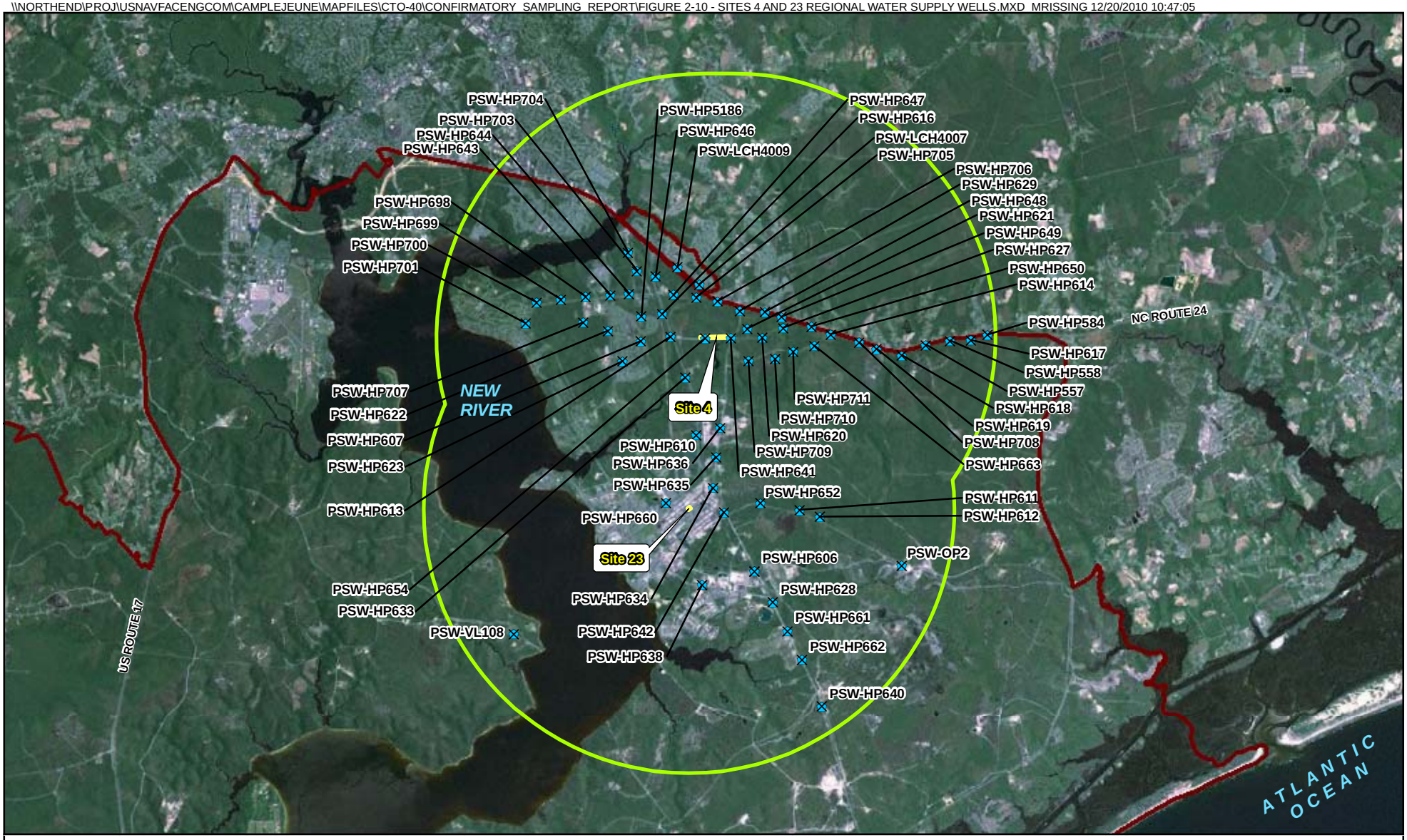
1 inch = 300 feet

Figure 2-9
Site 66 Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-10 - SITES 4 AND 23 REGIONAL WATER SUPPLY WELLS.MXD MRISSING 12/20/2010 10:47:05



Legend

- Water Supply Wells
- 4 mile radius
- Site Boundary
- Installation Boundary

N

0 6,000 12,000 24,000 Feet

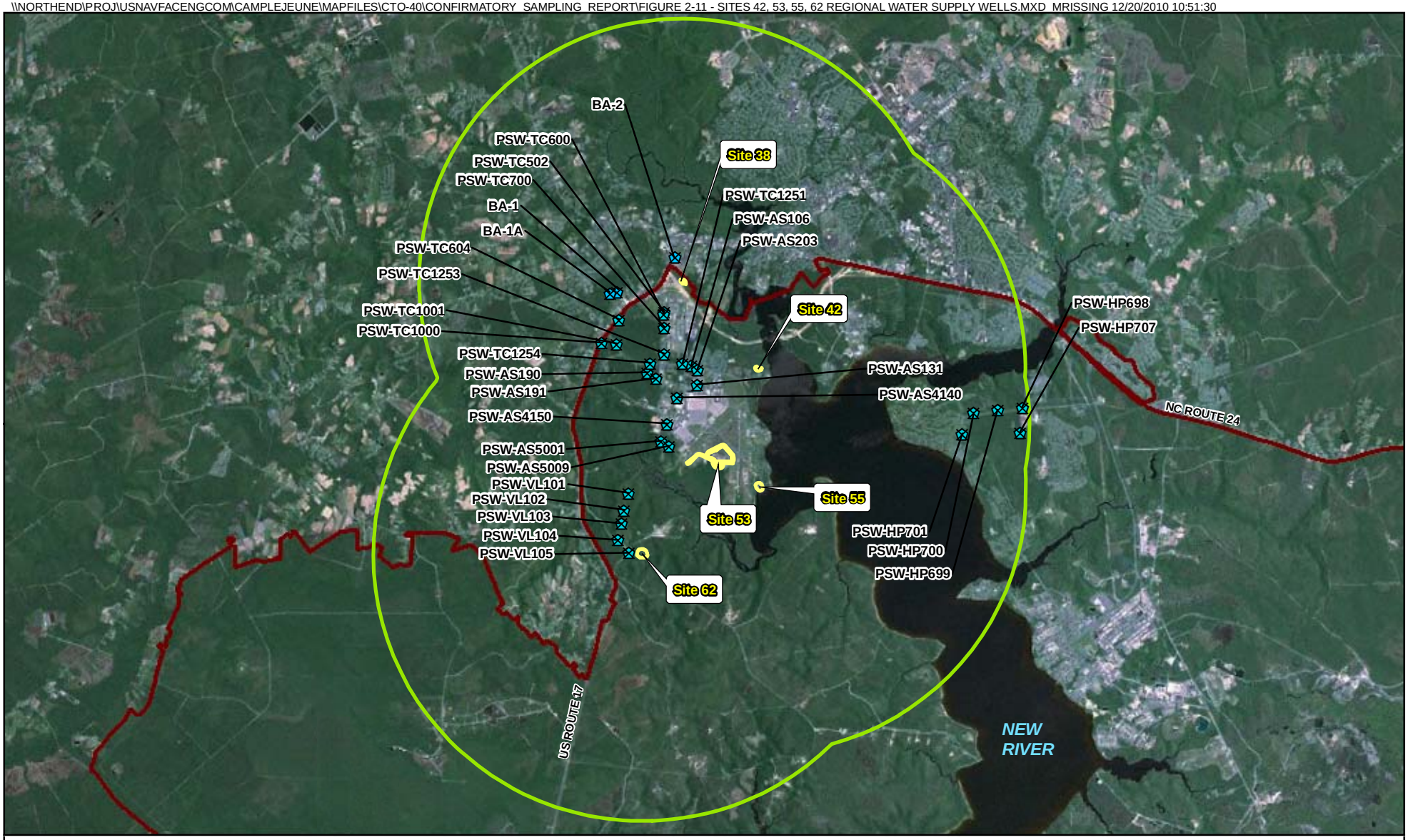
1 inch = 11,000 feet

Figure 2-10
Sites 4 and 23 Regional Water Supply Wells
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-11 - SITES 42, 53, 55, 62 REGIONAL WATER SUPPLY WELLS.MXD MRISSING 12/20/2010 10:51:30



Legend

- Water Supply Well
- 4 mile radius
- Site Boundary
- Installation Boundary

N

0 5,500 11,000 22,000 Feet

1 inch = 11,000 feet

Figure 2-11
Sites 42, 53, 55, 62 Regional Water Supply Wells
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 2-12 - SITES 61 AND 66 REGIONAL WATER SUPPLY WELLS.MXD MRISSING 12/20/2010 10:54:46

Legend

- Water Supply Wells
- 4 mile radius
- Site Boundary
- Installation Boundary

N

0 6,000 12,000 24,000 Feet

1 inch = 12,000 feet

Figure 2-12
Sites 61 and 66 Regional Water Supply Wells
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

SECTION 3

Field Investigation Activities

3.1 Field Investigation Activities

Field activities were conducted at Sites 4, 23, 42, 53, 55, 61, 62, and 66 in July 2009. A second mobilization was conducted in February 2010 to investigate Site 38 (activity delayed due to NCDOT access), as well as additional investigation of Sites 53, 61, and 66. Three permanent monitoring wells were also abandoned at Site 62 in February 2010. Field activities performed during the July 2009 and February 2010 mobilizations were conducted in accordance with the *Confirmatory Sampling Work Plan for Sites 4,23,38,42,53,55,61,62, and 66*(CH2M HILL, 2009).

The following activities were conducted at the Sites, where applicable:

- Vegetation clearing
- Subsurface utility locating
- Subsurface soil sampling
- Installation of temporary and/or permanent monitoring wells
- Groundwater sampling
- Surface water and sediment sampling
- Surveying of monitoring wells, soil borings, surface water and sediment sample locations
- IDW management

3.1.1 Vegetation Clearing

In preparation for sampling activities, vegetation less than three inches in diameter was removed by Wetlands & Woodlands of Wilmington, NC from portions of Sites 4, 38,61, 62, and 66 where vegetation obstructed proper access to sampling locations. Overhanging vines and protruding branches potentially interfering with the safe and effective use of direct push technology (DPT) rigs were also removed. Vegetation was cleared using a combination of mechanical and manual methods and whenever possible, trees larger than approximately 3 inches in diameter were left undisturbed. Felled brush and trees were mulched and left in place.

3.1.2 Subsurface Utility Locating

Prior to the subsurface sampling activities at the Sites, the North Carolina One Call Center (ULOCO) was notified. In addition, a subsurface utility locating company, Accumark of Ashland, Virginia, located subsurface utilities within a 20-ft radius of each intrusive sampling location.

3.1.3 Subsurface Soil Sampling

A total of 78 subsurface soil samples were collected during the July 2009 and February 2010 sampling events. Subsurface soil samples were collected using DPT drilling equipment operated by North Carolina-licensed drillers ARM Environmental Services, Inc of Columbia, SC and Subsurface Exploration, Inc. of Statesville, NC. Continuous soil cores were collected in 5-ft long disposable acetate liners using a macrocore soil sampler. The soil cores were screened in the field using a calibrated flame ionization detector (FID) and described by a CH2M HILL geologist using the Unified Soil Classification System. Soil samples were collected in laboratory supplied, appropriately labeled containers, and placed in iced coolers until shipped via FedEx courier under chain-of-custody (COC) to Empirical Laboratories located in Nashville, Tennessee. A summary of the subsurface soil sampling activities specific to each of the Sites, including target analytes is provided below in **Table 3-1**. Subsurface soil sample locations for the Sites are shown on **Figures 3-1** through **3-9**.

TABLE 3-1
Subsurface Soil Sample Summary

IRP Site	Number of Samples	Sample Location Map	Target Analytes					
			Metals	SVOCs	VOCs	Pesticides	Herbicides	PCBs
4	7	3-1	X	X	X			
23	8	3-2	X	X	X	X	X	X
38	8	3-3	X	X	X			
42	7	3-4	X	X	X			
53	8	3-5	X	X	X			X
55	7	3-6	X	X	X	X	X	X
61	8	3-7	X	X	X			
62	8	3-8	X	X	X			
66	17	3-9	X	X	X			

3.1.4 Monitoring Well Installation

Groundwater quality and shallow hydrology was evaluated by the installation and sampling of a total of 36 monitoring wells (27 temporary monitoring wells and 9 permanent monitoring wells) during the July 2009 and February 2010 mobilizations. Details of the installation methods and materials used are provided below.

Temporary monitoring wells were constructed using 1-inch inner diameter (ID), polyvinyl chloride (PVC) casing with 0.010-inch factory slotted well screen, and equipped with a pre-packed sand filter. A granular bentonite seal was installed to prevent surface water from entering the aquifer through the borehole annular space. The temporary monitoring wells were allowed to equilibrate before they were thoroughly developed by surging with a ¾-inch bailer to agitate fine grained solids and then pumped using a peristaltic pump until turbidity was minimized and water quality parameters including; pH, dissolved oxygen

(DO), specific conductivity, oxidation/reduction potential (ORP), and temperature were relatively stable. Three temporary wells at Site 62 were converted to permanent monitoring wells in order to keep them installed long enough for a decision to be made regarding the need for groundwater sampling at the site. These wells were completed with a concrete well pad, flush with the ground surface, and equipped with a manhole cover.

Permanent groundwater monitoring wells were installed at Sites 23, 38, 53, and 61 using with 4.25-inch ID hollow stem augers. Permanent monitoring wells were constructed using 2-inch ID, Schedule 40 PVC riser with 0.01-inch slotted well screen. These wells were developed using a surge block and then over-pumping using a submersible pump. Wells were developed until groundwater turbidity was minimized and water quality parameters were relatively stable as discussed above. Permanent wells were completed with a concrete well pad, flush with the ground surface and equipped with a manhole cover.

Figures 3-1 through 3-9 illustrate the locations of monitoring wells installed at each site. **Table 3-2** provides a summary of the well construction details.

TABLE 3-2
Monitoring Well Construction Summary

IRP Site	Sample Location Map	Monitoring Wells		Well Depths (ft bgs)	Screened Intervals (ft bgs)
		Temporary	Permanent		
4	3-1	3	0	17 to 23.6	7 to 23.6
23	3-2	0	1	20	10 to 20
38	3-3	0	3	15 to 18	5 to 18
42	3-4	3	0	12.8 to 13.5	2.8 to 13.5
53	3-5	3	1[1]	13 to 17.9	3 to 17.9
55	3-6	3	0	13.8 to 20	3.8 to 20
61	3-7	3	1[1]	15 to 20	5 to 20
62	3-8	0	3[2]	20 to 32	10 to 32
66	3-9	12	0	14.3 to 40.7	4.3 to 40.7

Note:
1 - Installed in February 2010
2 - Temporary wells converted to permanent wells

3.1.5 Groundwater Sampling

Following construction and development of the monitoring wells, water levels were allowed to equilibrate for a minimum of 24 hours prior to gauging and sampling. Monitoring wells were gauged using an electronic water level meter in order to calculate the total height of the water column within the monitoring well. The water column height was used in conjunction with the cross-sectional area of the monitoring well to calculate the minimum purge volume required prior to collecting the groundwater sample.

Groundwater was purged from the wells at a target rate between 0.3 to 0.5 liters per minute using a peristaltic pump equipped with new, clean ¼-inch ID polyethylene tubing. Water

quality parameters [i.e. conductivity, dissolved oxygen (DO), pH, temperature, and oxidation reduction potential (ORP) and turbidity] were monitored while purging each well. Groundwater samples were collected after water quality parameters had stabilized over three consecutive readings and at least one well volume had been purged. Stabilization occurred when pH measurements remained within 0.1 standard units (SU), specific conductivity varied by no more than 10 percent, the temperature remained relatively constant, and turbidity was below 10 Nephelometric Turbidity Units (NTU). If water quality parameters did not stabilize, at least three well volumes were purged prior to sampling. A summary of the water quality parameters is shown on **Tables 3-3 through 3-10.** Groundwater samples were collected from monitoring wells and shipped to a fixed-based laboratory for analysis. A target analyte summary for each site is listed in **Table 3-11**.

Groundwater samples intended for organic analyses (SVOCs and VOCs) were collected using the vacuum jug method and straw method, respectively. Once collected in laboratory supplied, appropriately labeled containers, groundwater samples were immediately packed in iced coolers and shipped via Federal Express delivery under COC to Empirical Laboratories of Nashville, Tennessee for analysis.

TABLE 3-11
Target Analyte Summary

IRP Site	Number of Groundwater Samples	Target Analytes					
		Metals	SVOCs	VOCs	Pesticides	Herbicides	PCBs
4	3	X	X	X			
23	4	X	X	X	X	X	X
38	3	X	X	X			
42	3	X	X	X			
53	4	X	X	X			X
55	3	X	X	X	X	X	X
61	4	X	X	X			
62	3	X	X	X			
66	12	X	X	X			

3.1.6 Sediment and Surface Water Sampling

During the July 2009 mobilization, four sediment samples and two surface water samples were collected from locations within Site 66. Sediment and surface water samples were collocated where surface water was present. These samples were analyzed for VOCs, SVOCs, and metals. In February 2010, samples of surface water were again collected from Site 66 and analyzed for metals only.

Sediment samples were collected using a stainless steel trowel or spoon from the soil/water interface. Surface water samples collected in July 2009 were collected by submerging the sample bottle into the surface water in a manner to “sip” surface water into the sample

bottles and prevent sediment from entering. The surface water sample collected in February 2010 was obtained using a peristaltic pump equipped with new, clean ¼-inch ID polyethylene tubing. Both sediment and surface water samples were placed directly into laboratory supplied, appropriately labeled containers, immediately packed in iced coolers, and shipped under COC via FedEx courier to Empirical Laboratories.

3.1.7 Quality Assurance/Quality Control Sampling

Quality assurance/quality control (QA/QC) samples were collected in the same types of preserved containers as the field samples. QA/QC requirements for environmental sampling, handling, and management are detailed in Section 4 of the MRP Master Project Plans. Field QC samples, including field blanks, equipment blanks, duplicate samples, and matrix spike/matrix spike duplicate matrix spike/matrix spike duplicate (MS/MSD) samples were collected during the investigation and submitted for laboratory analysis. QC samples were collected at the following rates.

- One MS/MSD per 20 samples collected
- One duplicate per 10 samples collected
- One equipment blank per day
- One field blank per week
- One trip blank per cooler containing VOC samples

3.1.8 Surveying

All temporary and permanent monitoring wells, soil sampling locations, surface water, and sediment sampling locations associated with the July 2009 field event were surveyed by SEPI Engineering and Construction of Raleigh, North Carolina. All permanent monitoring wells installed and subsurface soil sample locations associated with the February 2010 field event were surveyed by Mayo and Associates of New Bern, NC. Locations were referenced both horizontally and vertically to permanent land monuments. The survey controls were tied to the North American Datum (NAD) of 1983 and the North American Vertical Datum (NAVD) of 1988. Ground surface and monitoring well top of casing vertical control were surveyed to the nearest 0.01 foot, and the horizontal control was to the nearest 0.10 foot.

3.1.9 Investigation-Derived Waste Management

Investigation-derived waste (IDW) generated during both the July 2009 and February 2010 field activities was managed in accordance with the Master Project Plans (CH2M HILL, 2008). IDW included soil, purged groundwater, decontamination fluids, and personal protective equipment. Waste requiring offsite disposal was containerized in 55-gallon drums and staged at the Parachute Tower Road staging area and disposed offsite.

3.2 Data Tracking and Validation

The management and tracking of data from the time of field collection to receipt of validated electronic analytical results reflects the overall quality of the analytical results. Field samples and their corresponding analytical tests were recorded on COC forms, which accompanied the samples to the laboratory. COC entries were checked against the *Work Plan* to verify all designated samples were collected and submitted for the appropriate analyses. Upon receipt of the samples by the laboratory, all field information was reviewed to ensure

that each sample was analyzed for the correct parameters. In addition, a check was made to ensure that the proper number and types of quality QA/QC samples were collected. QA/QC samples included field blanks, equipment blanks, trip blanks, duplicates, MS/MSD samples, and laboratory blanks.

Analytical data reports, in hard copy and electronic format, were submitted to Environmental Data Services, INC for third-party validation. Procedures used for the validation process were *National Functional Guidelines for Organic Data Review* (USEPA, 2008), and *National Functional Guidelines for Inorganic Data Review* (USEPA, 2004). These steps (third-party validation and electronic data handling) serve to reduce inherent uncertainties associated with data authenticity and usability.

3.3 Data Evaluation

To identify constituents present in site media indicative of a potential site-related release, inorganic constituents detected in each medium were first compared to available Base background data (Baker, 2001). Detected constituents exceeding twice the mean Base background concentrations were then compared to regulatory standards, as described below.

All site soil data was compared to Base Background criteria (where established) (Baker, 2001), NC SSLs, and USEPA Adjusted Residential and Industrial Soil RSLs. RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents.

All site groundwater data was compared to Base Background criteria (where established), NCGWQS, and USEPA Adjusted Groundwater Regional Screening Levels (RSLs). If the MCL for a constituent is more stringent than the NCGWQS, then the MCL was referenced instead of the NCGWQS.

3.4 Risk Screening

The data collected during the confirmatory sampling event were evaluated via screening level assessments to determine if site-related compounds are present at levels posing a risk to human and ecological receptors. Method, results, and conclusions of the human health and ecological risk evaluations are presented in the site-specific sections of this report. A sample summary evaluation for human health risk evaluation is presented in **Table 3-12**.

Table 3-3
Site 4 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR04-TW01	IR04-TW02	IR04-TW03
Sample Date	7/13/2009	7/14/2009	7/14/2009
Field Parameters			
Temperature (^{o}C)	18.89	20.5	18.43
Specific Conductivity (mS/cm)	0.055	0.087	0.092
Dissolved Oxygen (mg/L)	2.97	0.34	0.38
pH (SU)	4.57	5.49	3.38
Oxidation Reduction Potential (mV)	166.2	-1.2	110.4
Turbidity (NTU)	3.2	7	8

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-4
Site 23 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR78-GW16	IR78-GW17-2	IR78-GW17-4	USTHPFFC-MW09
Sample Date	7/15/2009	7/15/2009	7/15/2009	7/15/2009
Field Parameters				
Temperature (^{o}C)	23.86	21.55	22.2	23.68
Specific Conductivity (mS/cm)	0.314	0.588	0.303	0.169
Dissolved Oxygen (mg/L)	3.92	1.4	0.5	4.43
pH (SU)	6.18	6.5	5.57	5.46
Oxidation Reduction Potential (mV)	151.6	-5.6	77.5	123.9
Turbidity (NTU)	2	3.2	7.4	2.6

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-5
Site 38 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR38-MW01	IR38-MW02	IR38-MW03
Sample Date	2/23/2010	2/23/2010	2/23/2010
Field Parameters			
Temperature (^{o}C)	12.18	16.38	13.64
Specific Conductivity (mS/cm)	0.432	0.336	0.333
Dissolved Oxygen (mg/L)	5.77	2.38	2.54
pH (SU)	7.11	5.68	5.96
Oxidation Reduction Potential (mV)	222.8	204.3	212.4
Turbidity (NTU)	76.2	17	6.37

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: Jeff Albano
Checked by: David Lubell

Table 3-6
Site 42 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR42-TW01	IR42-TW02	IR42-TW03
Sample Date	7/10/2009	7/11/2009	7/10/2009
Field Parameters			
Temperature (^{o}C)	19.68	23.65	22.7
Specific Conductivity (mS/cm)	1.765	1.6	1.087
Dissolved Oxygen (mg/L)	0.41	1.698	1.89
pH (SU)	6.5	6.08	5.8
Oxidation Reduction Potential (mV)	-66.3	-84.5	27.3
Turbidity (NTU)	22	14	210

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-7
Site 53 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR53-TW01	IR53-TW02	[1]IR53-TW03	IR53-MW03
Sample Date	7/12/2009	7/11/2009		2/24/2010
Field Parameters				
Temperature (^{o}C)	23.84	22.27	NA	13.08
Specific Conductivity (mS/cm)	0.177	0.06	NA	0.055
Dissolved Oxygen (mg/L)	2.09	0.43	NA	4.83
pH (SU)	5.33	5.86	NA	4.91
Oxidation Reduction Potential (mV)	33.5	36	NA	362.1
Turbidity (NTU)	110	28	NA	38

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
[1] Well purged dry with insufficient volume to collect water quality parameters
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-8
Site 55 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR55-TW01	IR55-TW02	IR55-TW03
Sample Date	7/12/2009	7/12/2009	7/12/2009
Field Parameters			
Temperature (^{o}C)	21.69	25.73	25.71
Specific Conductivity (mS/cm)	0.13	0.473	0.987
Dissolved Oxygen (mg/L)	1.31	0.58	0.19
pH (SU)	3.98	5.38	5.15
Oxidation Reduction Potential (mV)	165.3	39.4	7.4
Turbidity (NTU)	3.6	300	130

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-9
Site 61 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR61-TW01	IR61-TW02	IR61-TW03
Sample Date	7/15/2009	7/15/2009	7/14/2009
Field Parameters			
Temperature (^{o}C)	18.12	17.75	19.8
Specific Conductivity (mS/cm)	0.355	0.127	0.415
Dissolved Oxygen (mg/L)	0.72	0.91	5.61
pH (SU)	6.59	5.95	7.05
Oxidation Reduction Potential (mV)	-44.5	107.4	32.2
Turbidity (NTU)	*	8	*

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
* Turbidity outside meter calibration range (>999 NTU)
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-10
Site 66 Water Quality Parameters
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	IR66-TW01	IR66-TW02	IR66-TW03	IR66-TW04	IR66-TW05	IR66-TW06	IR66-TW07	IR66-TW08	IR66-TW09	IR66-TW10	IR66-TW11	IR66-TW12
Sample Date	7/13/2009	7/13/2009	7/13/2009	7/12/2009	7/12/2009	7/14/2009	7/13/2009	7/12/2009	7/13/2009	7/14/2009	7/13/2009	7/13/2009
Field Parameters												
Temperature (^{o}C)	19.2	18.15	19.15	18.98	18.9	18.7	18.9	18.7	18.5	17.99	19.08	21.9
Specific Conductivity (mS/cm)	0.612	0.143	0.147	0.28	0.101	0.203	0.187	0.238	0.569	0.2	0.468	0.374
Dissolved Oxygen (mg/L)	7.48	4.67	5.8	0.62	5.82	5.35	0.62	2.24	5.24	1.47	0.37	1.82
pH (SU)	5.02	5.32	5.36	6.87	5.4	6.03	5.05	6.25	6.1	5.85	7.33	7.12
Oxidation Reduction Potential (mV)	190.2	120.1	133.6	13.4	164.3	149.7	22	10.1	39.7	49.9	-82.3	91
Turbidity (NTU)	8	6	73	5.9	6.9	207	9.3	7.5	71	2.3	8.2	95

Notes:
mg/L - milligrams per liter
mV - millivolts
mS/cm - milliSiemens per centimeter
^{o}C - degrees Celsius
NTU - Nephelometric Turbidity Unit
SU- Standard Unit
Created by: *Daniel Brown*
Checked by: *Jeff Albano*

Table 3-12
Summary of Samples Evaluated in the Human Health Risk Evaluation
Confirmmatory Sampling Report
MCB CampLej
North Carolina

Site	Medium	Sample Date	Sample	Analytes
Site 4	Subsurface Soil	7/11/2009	IR4-IS01-5-6-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS01D-5-6-09C*	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS02-10-11-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS03-4-5-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS04-4-5-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS05-4-5-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS06-5-6-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS07-5-6-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS08-5-6-09C	VOCs, SVOCs, Metals
	Groundwater	7/13/2009	IR04-TW01-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW03C-09C*	VOCs, SVOCs, Metals
Site 23	Subsurface Soil	7/11/2009	IR23-IS01-6-7-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/11/2009	IR23-IS01D-6-7-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/11/2009	IR23-IS02-6-7-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS03-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS04-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS05-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS06-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS07-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS08-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
	Groundwater	7/15/2009	IR78-GW16-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW16D-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW17-2-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW17-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	USTHPFFC-MW9-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
Site 38	Subsurface Soil	2/19/2010	IR38-IS01-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS02-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS03-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS03D-6-7-10A*	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS04-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS05-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS06-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS07-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS08-6-7-10A	VOCs, SVOCs, Metals
	Groundwater	2/25/2010	IR38-GW01-10A	VOCs, SVOCs, Metals
		2/23/2010	IR38-GW02-10A	VOCs, SVOCs, Metals
		2/23/2010	IR38-GW02D-10A*	VOCs, SVOCs, Metals
		2/25/2010	IR38-GW03-10A	VOCs, SVOCs, Metals
Site 42	Subsurface Soil	7/7/2009	IR42-IS01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS01D-09C*	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS04-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS05-09C	VOCs, SVOCs, Metals
		7/8/2009	IR42-IS06-09C	VOCs, SVOCs, Metals
		7/8/2009	IR42-IS08-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-TW-S01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-TW-S03-09C	VOCs, SVOCs, Metals
	Groundwater	7/10/2009	IR42-TW01-09C	VOCs, SVOCs, Metals
		7/11/2009	IR42-TW02-09C	VOCs, SVOCs, Metals
		7/11/2009	IR42-TW02D-09C*	VOCs, SVOCs, Metals
		7/10/2009	IR42-TW03-09C	VOCs, SVOCs, Metals

Table 3-12
Summary of Samples Evaluated in the Human Health Risk Evaluation
Confirmmatory Sampling Report
MCB CampLej
North Carolina

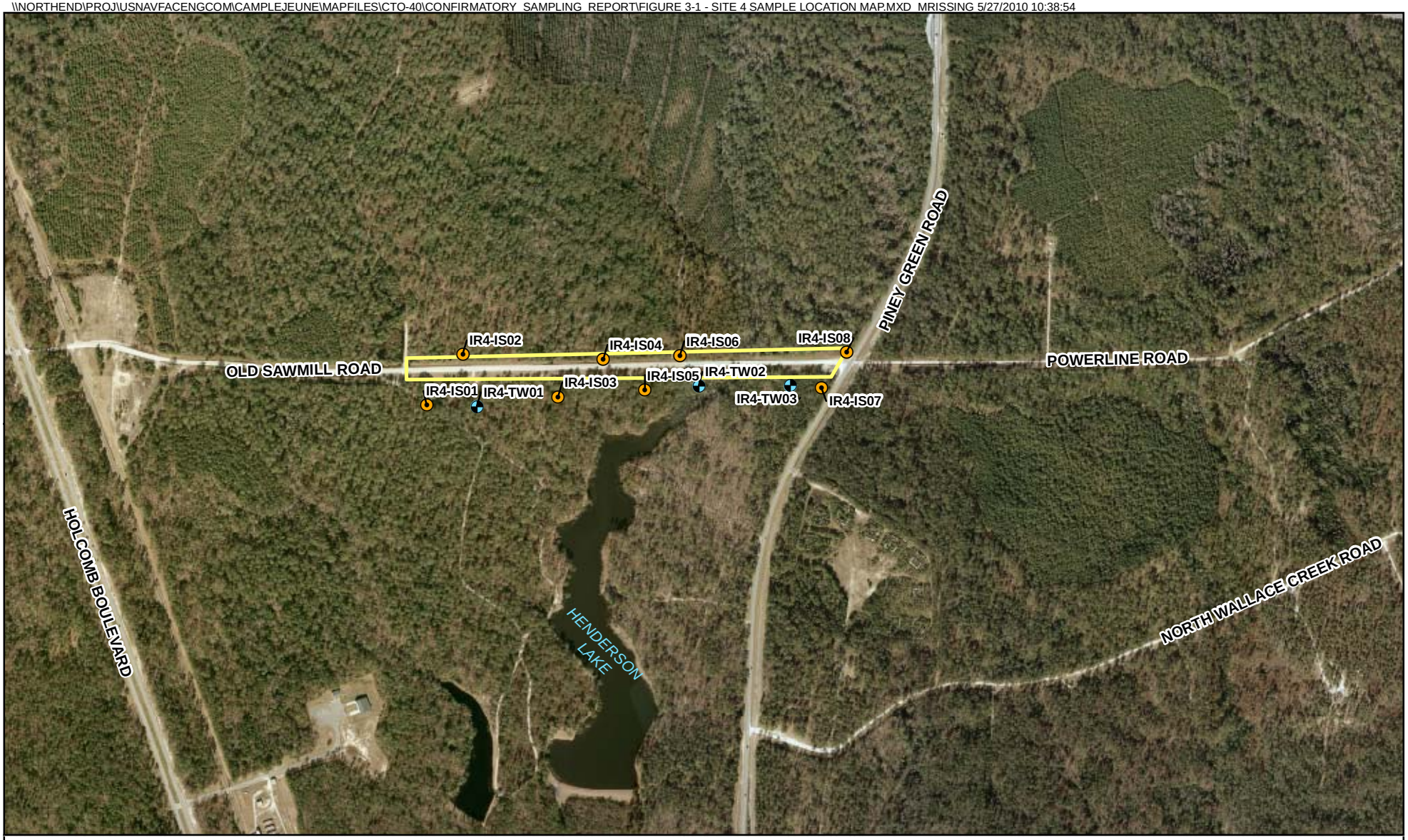
Site	Medium	Sample Date	Sample	Analytes
Site 49	Subsurface Soil	7/8/2009	IR49-IS01-7-8-09C	VOCs, SVOCs, Metals
		7/8/2009	IR49-IS01-7-8D-09C*	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS02-6-7-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS04-6.5-7.5-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS05-4-5-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS06-7-8-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS07-9-10-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS08-8-9-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-TW-S02-8-9-09C	VOCs, SVOCs, Metals
	Groundwater	7/12/2009	IR49-TW01-09C	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW01D-09C*	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW02-09C	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW03-09C	VOCs, SVOCs, Metals
		2/18/2010	IR49-TW01R-10A	VOCs
		2/19/2010	IR49-TW04-10A	VOCs
		2/18/2010	IR49-TW05-10A	VOCs
		2/18/2010	IR49-TW06-10A	VOCs
		2/18/2010	IR49-TW07-10A	VOCs
		2/18/2010	IR49-TW08-10A	VOCs
Site 53	Subsurface Soil	7/7/2009	IR53-IS01-4-5-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS01D-4-5-09C*	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS02-3.5-4.5-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS03-6-7-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS04-4-5-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS05-2-3-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS06-5-6-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS07-1-2-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS08-7-8-09C	VOCs, SVOCs, Metals, PCBs
	Groundwater	7/12/2009	IR53-TW01-09C	VOCs, SVOCs, Metals, PCBs
		7/11/2009	IR53-TW02-09C	VOCs, SVOCs, Metals, PCBs
		7/11/2009	IR53-TW02D-09C*	VOCs, SVOCs, Metals, PCBs
		7/13/2009	IR53-TW03-09C	VOCs, SVOCs, Metals, PCBs
		2/24/2010	IR53-GW03-10A	Arsenic
Site 55	Subsurface Soil	7/9/2009	IR55-IS01-7-8-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS01D-7-8-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS02-4-5-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/10/2009	IR55-IS03-1-2-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS04-4-5-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/10/2009	IR55-IS05-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-IS06-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS07-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
	Groundwater	7/12/2009	IR55-TW01-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW02-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW03-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW03D-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
Site 61	Subsurface Soil	7/13/2009	IR61-IS01-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS02-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS04-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS05-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS06-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS07-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS07D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS08-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-TW-S03-09C	VOCs, SVOCs, Metals
	Groundwater	7/15/2009	IR61-TW01-09C	VOCs, SVOCs, Metals
		7/15/2009	IR61-TW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR61-TW03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR61-TW03D-09C*	VOCs, SVOCs, Metals
		2/24/2010	IR61-GW01-10A	Arsenic

Table 3-12
Summary of Samples Evaluated in the Human Health Risk Evaluation
Confirmmatory Sampling Report
MCB CampLej
North Carolina

Site	Medium	Sample Date	Sample	Analytes
Site 62	Subsurface Soil	7/12/2009	IR62-IS01-9-10-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS02-11-12-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS02D-11-12-09C*	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS03-7-8-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS04-14-15-09C	VOCs, SVOCs, Metals
		7/11/2009	IR62-IS05-7-8-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS06-11-12-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS07-12-13-09C	VOCs, SVOCs, Metals
		7/11/2009	IR62-IS08-3-4-09C	VOCs, SVOCs, Metals
Site 66	Subsurface Soil	7/7/2009	IR66-IS01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS02-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS02D-09C*	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS03-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-IS04-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-IS05-09C	VOCs, SVOCs, Metals
		7/10/2009	IR66-IS06-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S01-09C	VOCs, SVOCs, Metals
		7/10/2009	IR66-IW-S02-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-TW-S04-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S05-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S06-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S07-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S07D-09C*	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S08-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S09-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-TW-S10-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S11-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S12-09C	VOCs, SVOCs, Metals
	Groundwater	7/13/2009	IR66-TW01-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW02-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW02D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW03-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW04-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW05-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW06-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW07-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW08-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW09-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW10-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW10D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW11-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW12-09C	VOCs, SVOCs, Metals
	Surface Water	7/14/2009	IR66-SW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SW02D-09C*	VOCs, SVOCs, Metals
		7/14/2009	IR66-SW03-09C	VOCs, SVOCs, Metals
		2/25/2010	IR66-SW02-10A	Metals
	Sediment	7/14/2009	IR66-SD01-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD01D-09C*	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD04-09C	VOCs, SVOCs, Metals

Notes:
* - Duplicate sample of sample listed above
SVOCs - Semivolatile Organic Compounds
VOCs - Volatile Organic Compounds
PCBs - Polychlorinated Biphenyls
Created By Martha White Checked By: Jeff Albano

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-1 - SITE 4 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 10:38:54



Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Site 4 Boundary

N

0 400 800 1,600 Feet

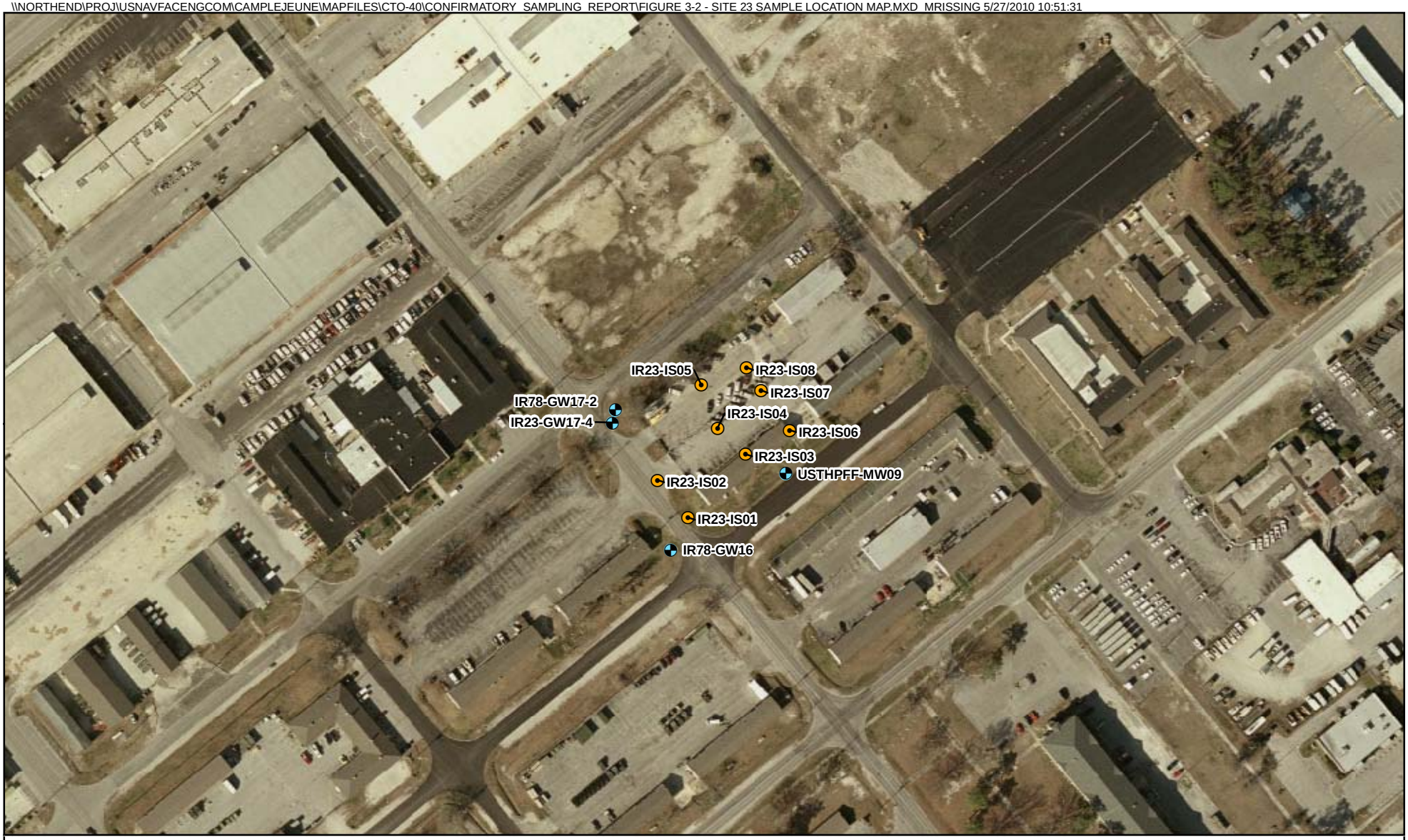
1 inch = 800 feet

Figure 3-1
Site 4 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-2 - SITE 23 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 10:51:31



Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Site 23 Boundary

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 3-2
Site 23 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-3 - SITE 38 SAMPLE LOCATION MAP.MXD MRISSING 7/26/2010 11:22:16

Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Site 38 Boundary
- Installation Boundary

N

0 150 300 Feet

1 inch = 300 feet

Figure 3-3
Site 38 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-4 - SITE 42 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 11:03:45

Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Subsurface Soil/Groundwater Sample Location
- Site 42 Boundary

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 3-4
Site 42 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-5 - SITE 53 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 11:11:23

Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Site 53 Boundary

N

0 250 500 1,000 Feet

1 inch = 500 feet

Figure 3-5
Site 53 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-6 - SITE 55 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 11:21:37

Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Site 55 Boundary

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 3-6
Site 55 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-7 - SITE 61 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 11:27:02

Legend

- Groundwater Sample Location
- Subsurface Soil Sample Location
- Soil/Groundwater Sample Location
- Site 61 Boundary

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 3-7
Site 61 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-8 - SITE 62 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 11:57:00

Legend

- Monitoring Well
- Subsurface Soil Sample Location
- Site 62 Boundary

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 3-8
Site 62 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By:*Lauren Petty* Checked by: *Jeff Albano*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 3-9 - SITE 66 SAMPLE LOCATION MAP.MXD MRISSING 5/27/2010 12:07:57

Legend

- Groundwater Sample Location
- Soil Sample Location
- Sediment/Surface Water Sample Location
- Site 66
- Installation Boundary

N

0 150 300 600 Feet

1 inch = 300 feet

Figure 3-9
Site 66 Sample Location Map
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

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SECTION 4

Site 4—Sawmill Road Construction Debris Dump

Site 4, the Sawmill Road Construction Debris Dump, consists of approximately 0.3 acres of land bisected by the eastern end of Old Sawmill Road (**Figure 2-1**). The topography slopes to the south toward Henderson Lake, located approximately 250 feet to the south of the site. A small drainage ditch which discharges to the lake is located at the eastern end of the site, flowing from north to south under Old Sawmill Road. Unpaved, unnamed roads that provide access to the lake traverse the southern portion of the site. Vegetation at the site consists of sparse undergrowth and trees.

According to the IAS report, the Sawmill Road Construction Debris Dump contained construction and demolition debris including wood, metal, asphalt, bricks, and concrete. During a site reconnaissance by CH2M HILL personnel conducted in December 2008, it was noted that debris consisting of concrete and other construction debris was present along the south side of Old Sawmill Road.

4.1 Site Geology

Shallow soils were found to consist of poorly graded sands, silty sands, and sands with minor amounts of clay, extending to at least 20 feet below ground surface (ft bgs), the maximum depth of intrusive investigation. Soil boring logs are presented in **Appendix A**.

Site-specific hydrogeological information was derived from three temporary groundwater monitoring wells installed within the unconfined surficial aquifer. The water table was encountered at depths ranging from 9.85 feet below top of casing (BTOC) (IR04-TW02) to 16.15 feet BTOC (IR04-TW01) with groundwater elevations ranging from 12.87 to 23.14 ft (**Table 4-1**) above mean sea level (amsl). This data was used in conjunction with monitoring well survey data to produce a generalized potentiometric surface map of the surficial aquifer (**Figure 4-1). Figure 4-1** illustrates that shallow groundwater generally flows toward Henderson Lake, approximately 250 feet south of the site, with an average hydraulic gradient of 0.013 ft/ft.

4.2 Environmental Sampling and Results

Based on site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

4.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site 4 during the July 2009 field activities and analyzed for VOCs, SVOCs, and metals. Methylene chloride was the only VOC detected above regulatory screening criteria (NC SSL). SVOCs were not detected in subsurface soil. Aluminum was the only metal detected above Base Background and the regulatory

standard (residential RSL). Analytes exceeding applicable screening criteria are summarized in **Figure 4-1** and **Table 4-1. Table B-1** presents the laboratory analytical data for all subsurface soil samples collected from Site 4. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 4-2
Summary of Subsurface Soil Exceedances - Site 4

Analyte	IR4-IS02	IR4-IS04	IR4-IS05	IR4-IS06	IR4-IS07	IR4-IS08
Methylene chloride (mg/kg)	55 J	NE	NE	NE	NE	NE
Aluminum (mg/kg)	NE	15,600	10,500	11,900	12,100	14,100

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background

4.2.2 Groundwater

Groundwater samples were collected from three temporary monitoring wells (IR04-TW01 through IR04-TW03) and analyzed for VOCs, SVOCs, and metals. VOCs, SVOCs, and metals were not detected in groundwater samples at concentrations exceeding applicable Base Background or regulatory criteria. Laboratory analytical results from all groundwater samples collected from Site 4 are presented in **Table C-1** and the raw analytical data is presented in **Appendix C**.

4.3 Human Health Risk Screening Summary

A conservative human health risk screening (HHRS) evaluation for subsurface soil and groundwater at Site 4 was performed to provide a preliminary indication of potential risks from constituents of potential concern (COPCs), and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were no potential human health risks from exposure to subsurface soil or groundwater at Site 4.

4.4 Ecological Risk Screening Summary

An ecological risk screening (ERS) was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil and groundwater analytical results were compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil or groundwater at Site 4. The full ERS report is presented in **Appendix E**.

4.5 Conclusions

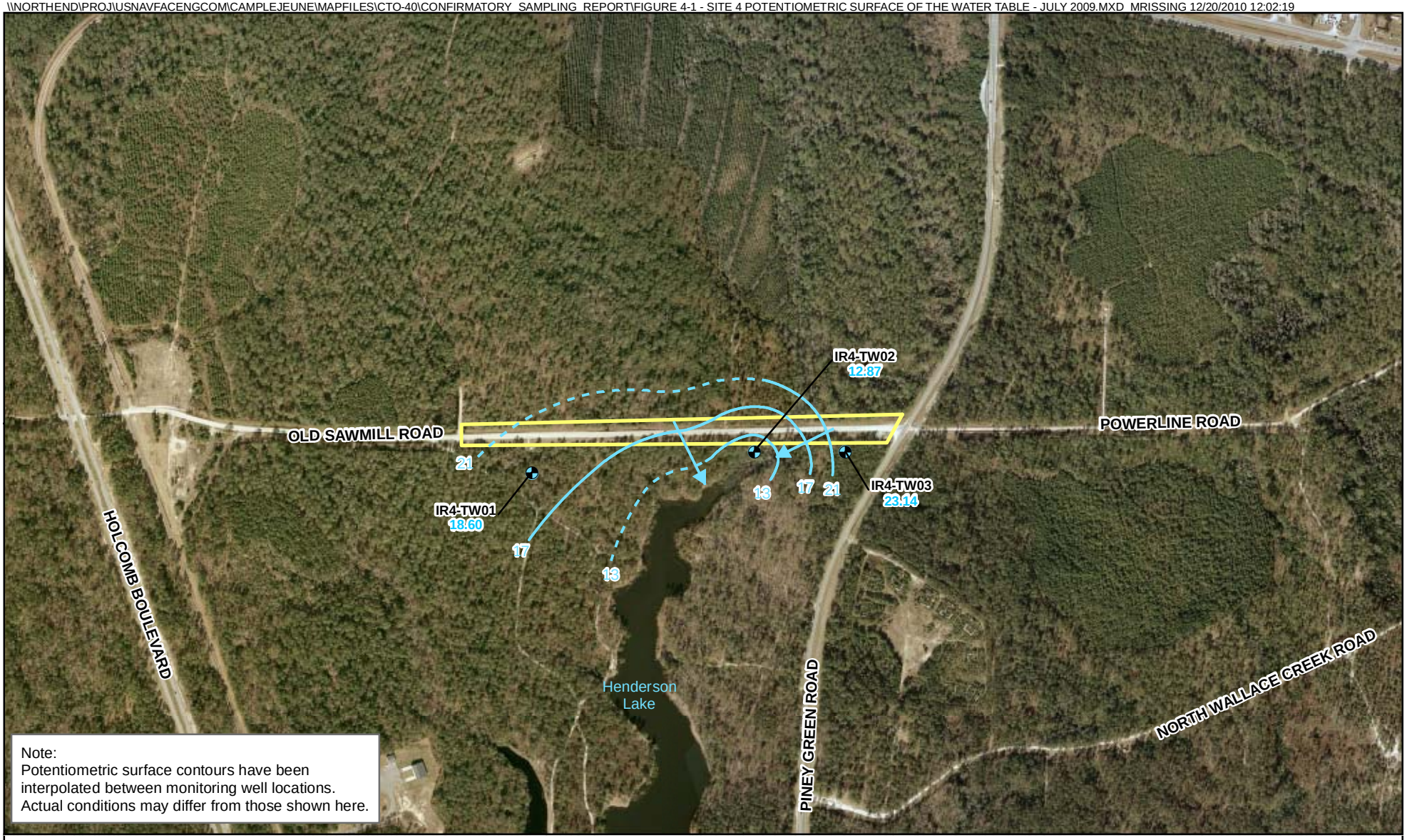
The concentrations of target analytes detected in groundwater samples collected from Site 4 did not exceed background or applicable regulatory standards. Aluminum was detected in subsurface soil samples collected from the eastern portion of the site at concentrations exceeding background and the Adjusted Residential RSL. However, the screening level HHRA and ERA did not identify unacceptable risks to human or ecological receptors. Consequently, it is recommended that Site 4 remain closed.

Table 4-1
Site 4 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft msl)
IR04-TW01	7/13/2009	34.75	16.15	18.60
IR04-TW02	7/14/2009	22.72	9.85	12.87
IR04-TW03	7/14/2009	34.71	11.57	23.14

Notes:
ft msl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 4-1 - SITE 4 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:02:19



Legend

- Monitoring Well
- Site 4 Boundary
- 13 Potentiometric Surface contour (dashed where inferred)
- Estimated direction of groundwater flow
- 18.60 Groundwater elevation (ft amsl)

N

0 400 800 1,600 Feet

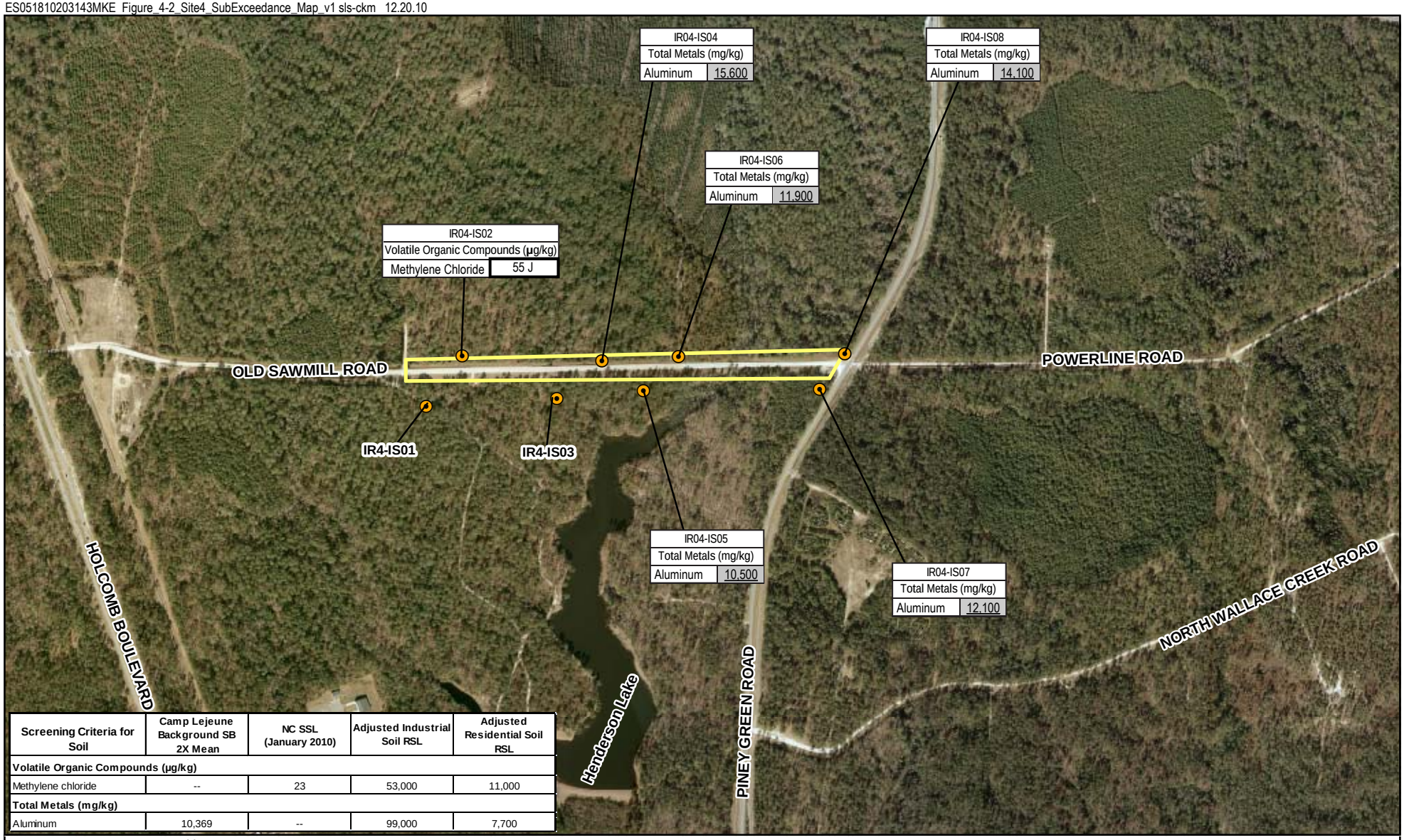
1 inch = 800 feet

Figure 4-1
Site 4 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_4-2_Site4_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Volatile Organic Compounds (µg/kg)				
Methylene chloride	--	23	53,000	11,000
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700

Legend
- Soil Sample Location
- Site 4 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg – Micrograms per kilogram
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 400 800 1,600 Feet

1 inch = 800 feet

Figure 4-2
Site 4 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT

SECTION 5

Site 23—Roads and Grounds, Building 1105

Site 23, Roads and Grounds, Building 1105 encompasses approximately 0.1 acres of land located within the Hadnot Point Industrial Area (HPIA) and IRP Site 78, and includes Building 1105 and its parking lot (**Figure 2-2**). Building 1105 is currently used by MCB CamLej as the telephone utility office. Surface topography within Site 23 is generally level, with an approximate elevation of 24 ft amsl.

According to the IAS Report, Site 23 was previously used for the storage of pesticides and herbicides from 1957 until 1977. Several pre-existing monitoring wells are located within the general vicinity of Site 23, related to the investigation of Site 78.

5.1 Site Geology

Shallow soils were found to consist of poorly graded sands, silty sands, and clayey sands extending to at least 10 ft bgs, the maximum depth of intrusive investigation. Soil boring logs are presented in **Appendix A.** Details of the geologic conditions beyond the intrusive investigation can be found in the Site 21, Site 24, and Site 78 Remedial Investigation Report (Baker, 1994).

Site-specific hydrogeological information was derived from three permanent monitoring wells (IR78-GW16, IR78-GW17-4, and USTHPFF-MW09) screened across the water table. IR78-GW17-2 does not straddle the water table and was not used while deriving hydrogeological data. Groundwater elevation data and depth to groundwater measurements are provided in **Table 5-1**. The water table was encountered at depths ranging from 11.59 feet BTOC (IR78-GW17-4) to 13.95 feet BTOC (IR78-GW16) with groundwater elevations ranging from 14.53 to 18.45 ft amsl. This data was used in conjunction with top of casing elevation survey data to produce a potentiometric surface map of the water table within Site 23 (**Figure 5-1).** As shown on **Figure 5-1**, groundwater in the immediate vicinity of Site 23 appears to flows to the northeast with an estimated horizontal hydraulic gradient of 0.029 ft/ft.

5.2 Environmental Sampling and Results

Based on the site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs as described in **Section 3**. Surface soil data was not analyzed since the site is paved.

5.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site 23 in July 2009, and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs. VOCs, pesticides, herbicides, and PCBs were not detected above applicable screening criteria. Two SVOCs, benzo(a)pyrene and benzo(b)flouranthene, were detected in soil collected from sampling location IR23-IS02 at concentrations exceeding regulatory criteria. Arsenic was the only metal detected at a concentration exceeding Base Background and at least one regulatory standard. A summary

of analyte exceedances is presented on **Figure 5-2** and in **Table 5-2**. **Table B-2** presents the laboratory analytical data for all subsurface soil samples collected from Site 23. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 5-2
Summary of Subsurface Soil Exceedances - Site 23

Analyte	IR23-IS02	IR23-IS04	IR23-IS06
Benzo(a)pyrene (µg/kg)	100	NE	NE
Benzo(b)flouranthene (µg/kg)	170 J	NE	NE
Arsenic (mg/kg)	NE	**2.2**	**2.4**

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background

5.2.2 Groundwater

Groundwater samples were collected from existing permanent monitoring wells IR78-GW16, IR78-GW17-2, IR78-GW17-4, and USTHPFFC-MW09 in July 2009 and analyzed for metals, VOCs, SVOCs, pesticides, herbicides, and PCBs. SVOCs, pesticides, herbicides, PCBs and metals were not detected in groundwater samples at concentrations exceeding applicable screening criteria. Four VOCs (1,2-Dichloroethane [1,2-DCA], 1,2-Dichloropropane, benzene, and tetrachloroethene [PCE]) were detected at concentrations exceeding NCGWQS and USEPA Adjusted Tap Water RSLs. A summary of VOC exceedances are shown on **Figure 5-3** and in **Table 5-3.** Laboratory analytical results from all groundwater samples collected from Site 23 are presented in **Table C-2** and the raw analytical data is presented in **Appendix C**.

TABLE 5-3
Summary of Groundwater Exceedances - Site 23

Analyte	IR78-GW17-2
1,2-Dichloroethane (µg/L)	**9.5**
1,2-Dichloropropane (µg/L)	**0.78 J**
Benzene (µg/L)	**6.3**
Tetrachloroethene (µg/L)	**0.74 J**

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL
J - Analyte present, value may or may not be accurate or precise

5.2.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil and groundwater at Site 23 was performed to provide a preliminary indication of potential risks from constituents of potential concern (COPCs), and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. Risk screenings concluded that subsurface soil did not pose unacceptable risk to human receptors. Four VOCs (1,2-dichloroethane, 1,2-dichloropropane, benzene, and tetrachloroethene) were identified as COPCs in groundwater.

5.3 Ecological Risk Screening Summary

An ERS was conducted using the analytical results from only one soil sample at site 23 because the site is paved. Groundwater was not included in the ERS because the site is located approximately 1.5 miles from the nearest surface water body. Subsurface soil analytical was compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to any media at Site 23. The full ERS report is presented in **Appendix E**.

5.4 Conclusions

The concentrations of arsenic and PAHs detected in subsurface soil samples collected from Site 23 exceeded regulatory and/or Base Background. However, risk screenings concluded that neither arsenic nor PAHs posed unacceptable risk to human or ecological receptors.

One of the groundwater samples collected from an existing, permanent monitoring well (IR78-GW17-4) installed near Site 23 was reported to contain VOCs in excess of the NCGWQS. Risk screening indicated that the detected concentrations of VOCs in groundwater pose a potential risk to human receptors. Monitoring well IR78-GW17-4 is located in the northwest corner of Site 23, hydraulically upgradient of the area where herbicide and pesticide storage associated with Building 1105, are reported to have occurred at Site 23 and downgradient of known areas of VOC contamination within Site 78. No pesticides or herbicides were detected above Base Background or regulatory criteria indicative of past use of the site and VOCs detected above NCGWQS are being addressed as part of the ROD at Site 78.

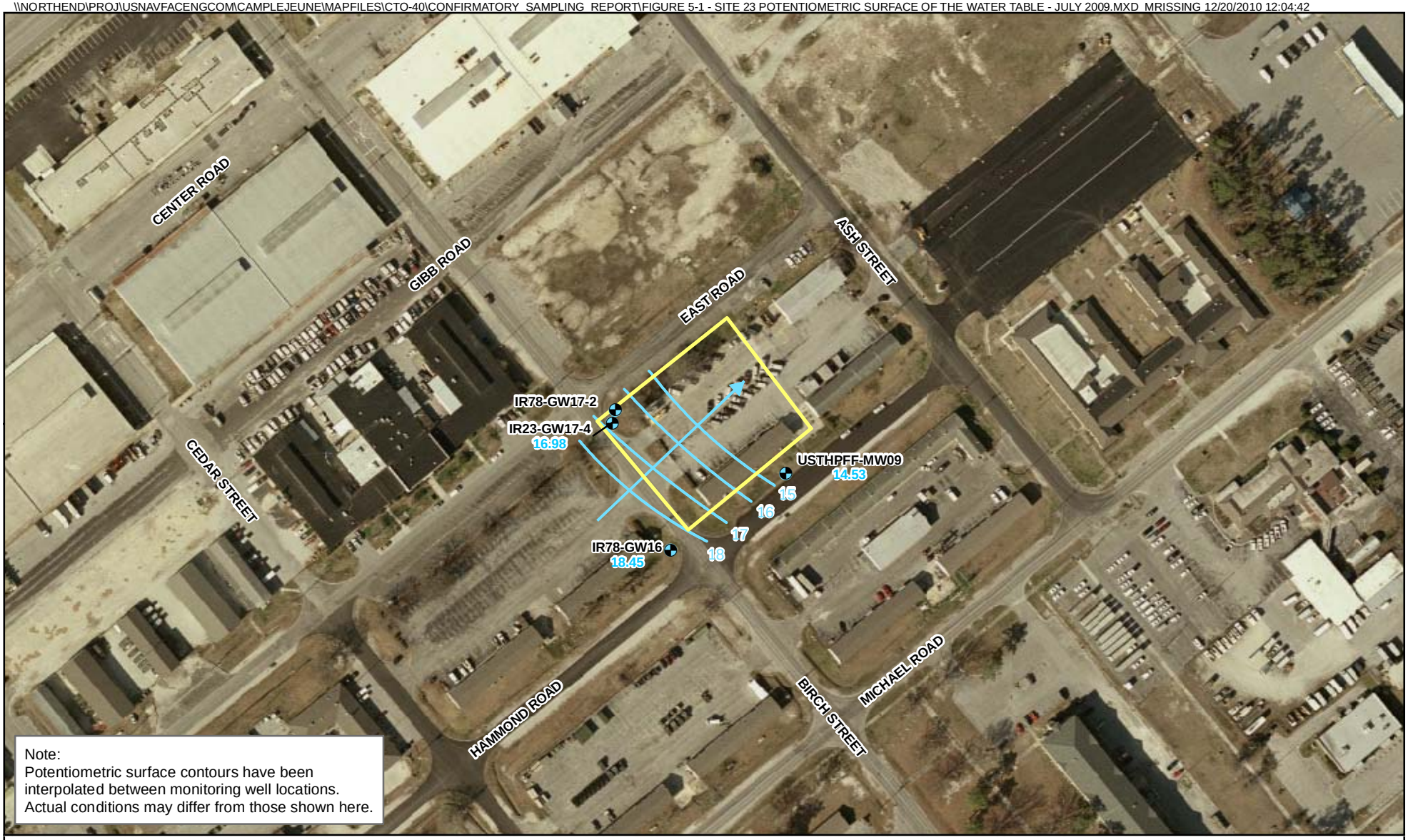
Based on the lack of risk posed by site soils and that the detected impacts to groundwater are likely associated with historical activities within Site 78, no additional investigation of Site 23 is recommended and the site should remain closed.

Table 5-1
Site 23 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
USTHPFF-MW09	7/15/2009	26.74	12.21	14.53
IR78-GW16	7/15/2009	32.40	13.95	18.45
IR78-GW17-2	7/15/2009	32.14	16.01	16.13
IR78-GW17-4	7/15/2009	28.57	11.59	16.98

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 5-1 - SITE 23 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:04:42



Legend

- Monitoring Well
- Site 23 Boundary
- 15 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 18.45 Groundwater elevation (ft amsl)

N

0 100 200 400 Feet

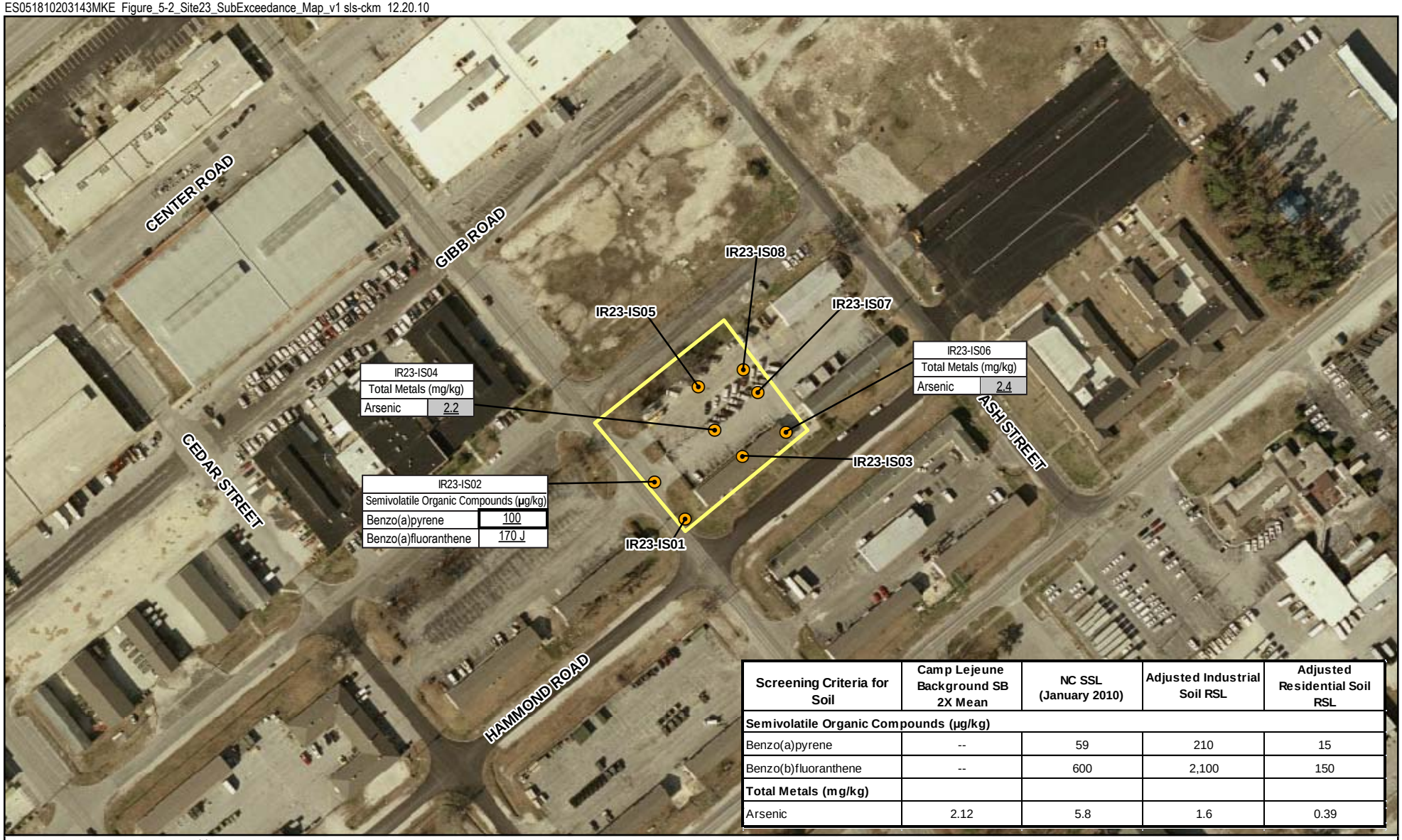
1 inch = 200 feet

Figure 5-1
Site 23 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_5-2_Site23_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Semivolatile Organic Compounds (µg/kg)				
Benzo(a)pyrene	--	59	210	15
Benzo(b)fluoranthene	--	600	2,100	150
Total Metals (mg/kg)				
Arsenic	2.12	5.8	1.6	0.39

Legend
- Soil Sample Location
- Site 23 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg – Micrograms per kilogram
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 5-2
Site 23 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

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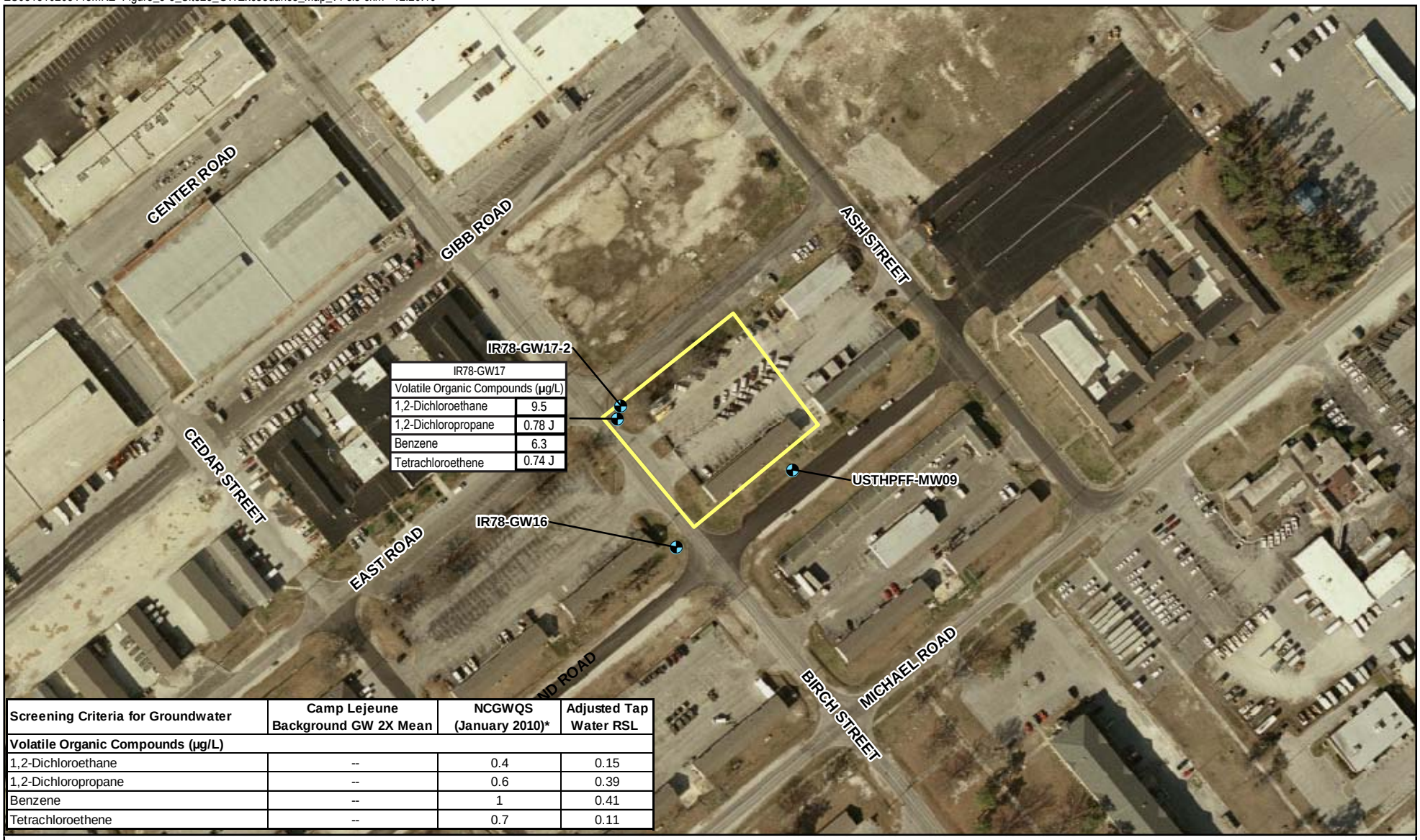

Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Volatile Organic Compounds (µg/L)			
1,2-Dichloroethane	--	0.4	0.15
1,2-Dichloropropane	--	0.6	0.39
Benzene	--	1	0.41
Tetrachloroethene	--	0.7	0.11

Legend
- Groundwater Sample Location
- Site 23 Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – NCGWQS are more conservative than MCLs for all analytes considered.

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 5-3
Site 23 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

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SECTION 6

Site 38—Camp Geiger Construction Dump

Site 38, the Camp Geiger Construction Dump, consists of approximately 3 acres of land located adjacent to NC Highway 24, as shown on **Figure 2-5**. The dump was reportedly used until at least 1983 and reportedly received construction and landscape debris (WAR, 1983). Site 38 is undeveloped with dense undergrowth and trees. Access to Site 38 is controlled by the North Carolina Department of Transportation (NCDOT) and limited by a chain link fence which runs along the southern boundary of Site 38, parallel to NC Highway 24. Debris piles were observed during the February 2010 sampling activities and consisted of concrete, metal and asphalt.

Two drainage features parallel the northern and southern boundaries of Site 38 and discharge into a wetland area located in and along the northeast boundary of Site 38. The majority of the site is generally level, although an abrupt break in slope occurs toward the northeast boundary, as the site transitions from a wooded area into a wetland area, as shown on **Figure 2-5**.

6.1 Site Geology

Shallow soils were found to consist of poorly graded sand with a laterally continuous clayey sand horizon, roughly 3 ft thick, encountered at approximately 2 to 3 ft bgs. Foreign debris was not encountered in soil borings advanced at the site. Soil boring logs are presented in **Appendix A**.

Site-specific hydrogeological information derived from 3 permanent monitoring wells (IR38-MW01 through IR38-MW03) screened across the water table. The groundwater table was encountered at depths ranging from 11.78 ft BTOC (IR38-MW01) to 12.97 ft BTOC (IR38-MW03). This data was used in conjunction with well survey data to calculate groundwater elevations, which ranged from 2.49 to 4.13 ft amsl (**Table 6-1**). A potentiometric surface map of the water table, shown on **Figure 6-1**, was derived using the calculated groundwater elevations. The approximated groundwater flow direction is to the northeast towards the wetland area along the northeast border of Site 38.

6.2 Environmental Sampling and Results

Based on site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and Metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

6.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site 38 in February 2010 and analyzed for VOCs, SVOCs, and metals. VOCs and SVOCs were not detected above applicable regulatory criteria. Arsenic was the only metal detected at concentrations exceeding Base Background as well as regulatory criteria as presented on **Figure 6-2** and summarized in **Table 6-2**.

Table B-3 presents the laboratory analytical data for all subsurface soil samples collected from Site 38. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 6-2
Summary of Subsurface Soil Exceedances - Site 38

Analyte	IR38-IS04	IR38-IS05	IR38-IS06
Arsenic (mg/kg)	**2.58**	**8.78**	**4.19**

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background

6.2.2 Groundwater

Groundwater samples were collected from three permanent monitoring wells (IR38-MW01 through IR38-MW03) in February 2010 and analyzed for VOCs, SVOCs, and metals. VOCs and SVOCs were not detected above applicable regulatory criteria. Chromium was detected at a concentration of 3.53 µg/L, exceeding Base Background (3.13 µg/L) and the Adjusted Tap Water RSL (0.043 µg/L) (**Figure 6-3**). Laboratory analytical results from all groundwater samples collected from Site 38 are presented in **Table C-3** and the raw analytical data is presented in **Appendix C**.

TABLE 6-3
Summary of Groundwater Exceedances - Site 38

Analyte	IR38-GW01
Chromium(µg/L)	**3.53**

Notes:
Bold text indicates an exceedance of the Adjusted Tap Water RSL
Shading indicates exceedance of Base Background

6.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil and groundwater at Site 38 was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were no potential human health risks from exposure to subsurface soil or groundwater at Site 38.

6.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil analytical was compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the

potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to any media at Site 38. The full ERS report is presented in **Appendix E**.

6.5 Conclusions

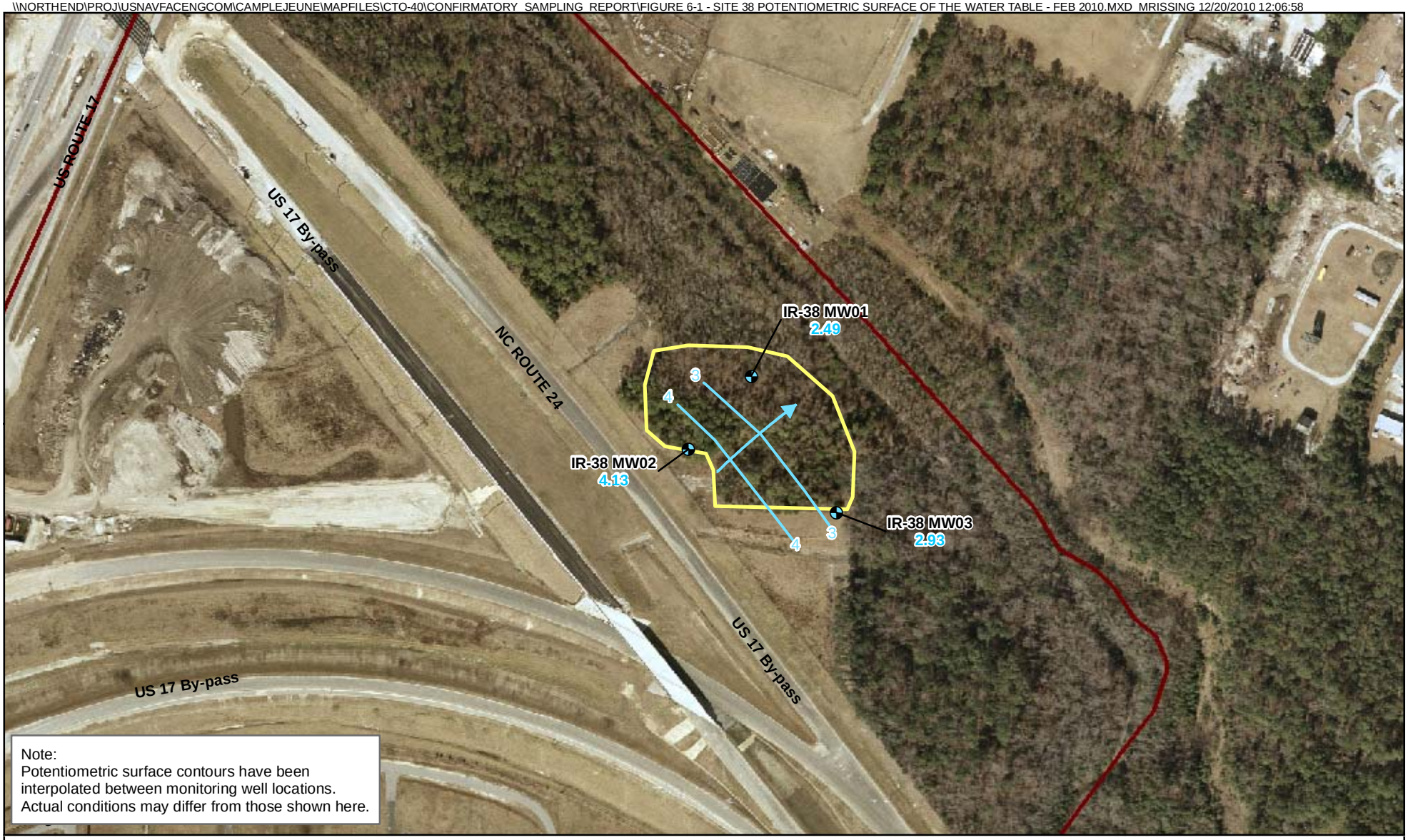
Arsenic was detected in soil samples collected in the central portion of the site at concentrations that exceeded Base Background as well as the Adjusted Industrial RSL and the NC SSL (one location). Chromium was detected in 1 of 3 groundwater samples at a concentration exceeding Base Background and Adjusted Tap Water RSLs. Human health and ecological risk screenings indicate that there is no unacceptable risk to human or ecological receptors from any media at Site 38 and for this reason no additional investigation is recommended, and the site should remain closed.

Table 6-1
Site 38 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR38-MW01	2/25/2010	14.27	11.78	2.49
IR38-MW02	2/25/2010	16.88	12.75	4.13
IR38-MW03	2/25/2010	15.90	12.97	2.93

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 6-1 - SITE 38 POTENTIOMETRIC SURFACE OF THE WATER TABLE - FEB 2010.MXD MRISSING 12/20/2010 12:06:58



Note:
Potentiometric surface contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown here.

Legend

- Monitoring Well
- Site 38 Boundary
- Installation Boundary
- 4 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 4.13 Groundwater elevation (ft amsl)

N

0 150 300 Feet

1 inch = 300 feet

Figure 6-1
Site 38 Potentiometric Map of the Water Table (February 2010)
Confirmatory Sampling Report
MCB CamLej
North Carolina

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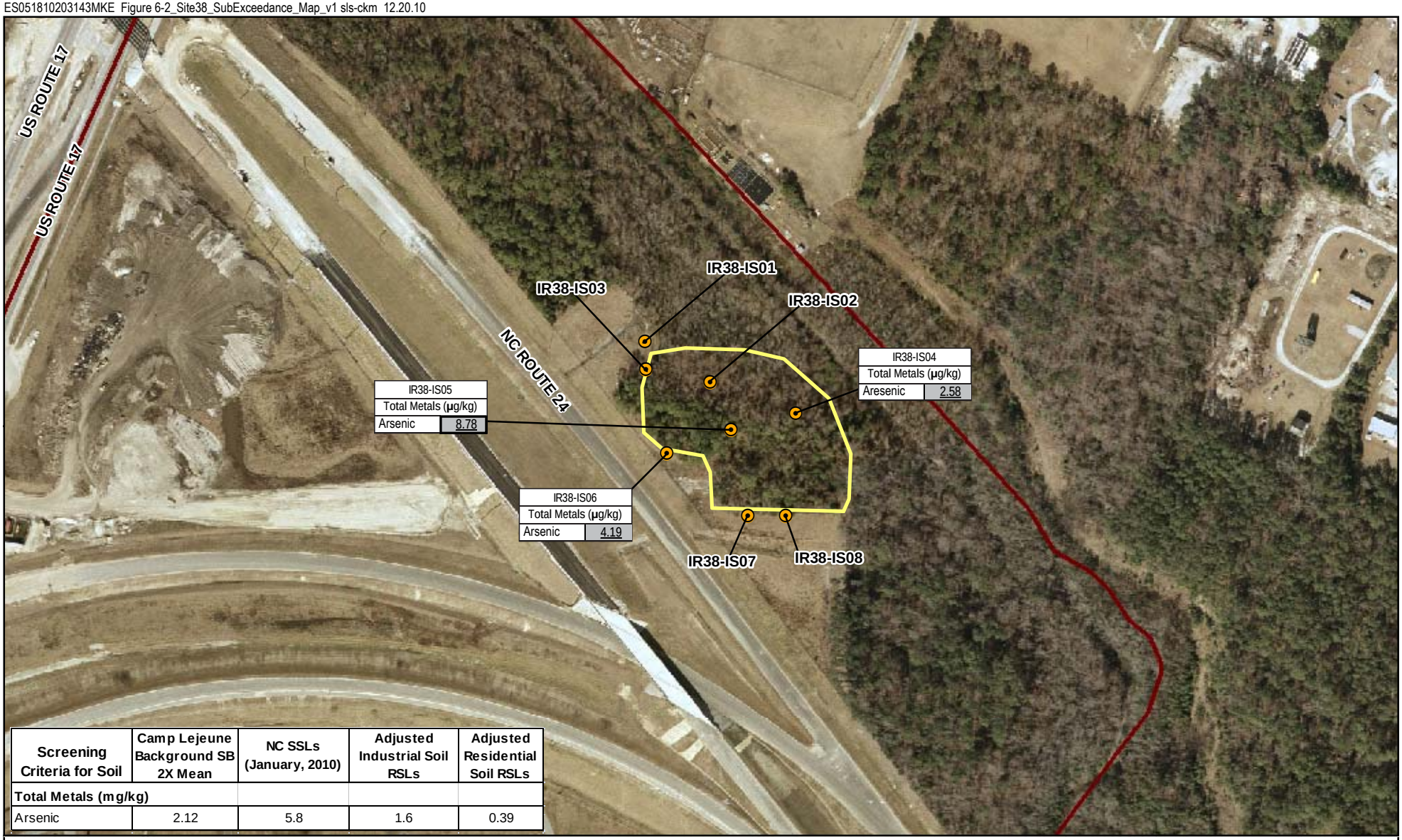
Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure 6-2_Site38_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSLs (January, 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Total Metals (mg/kg)				
Arsenic	2.12	5.8	1.6	0.39

Legend

- Subsurface Soil Sample Location
- Site 38 Boundary
- Installation Boundary

Notes:

Bold text indicates exceedance of Adjusted industrial Soil RSLs

Bold box indicates exceedance of NC SSLs

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

mg/kg – Milligrams per kilogram

J – Analyte present, value may or may not be accurate or precise

N

0 150 300 Feet

1 inch = 300 feet

Figure 6-2
Site 38 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

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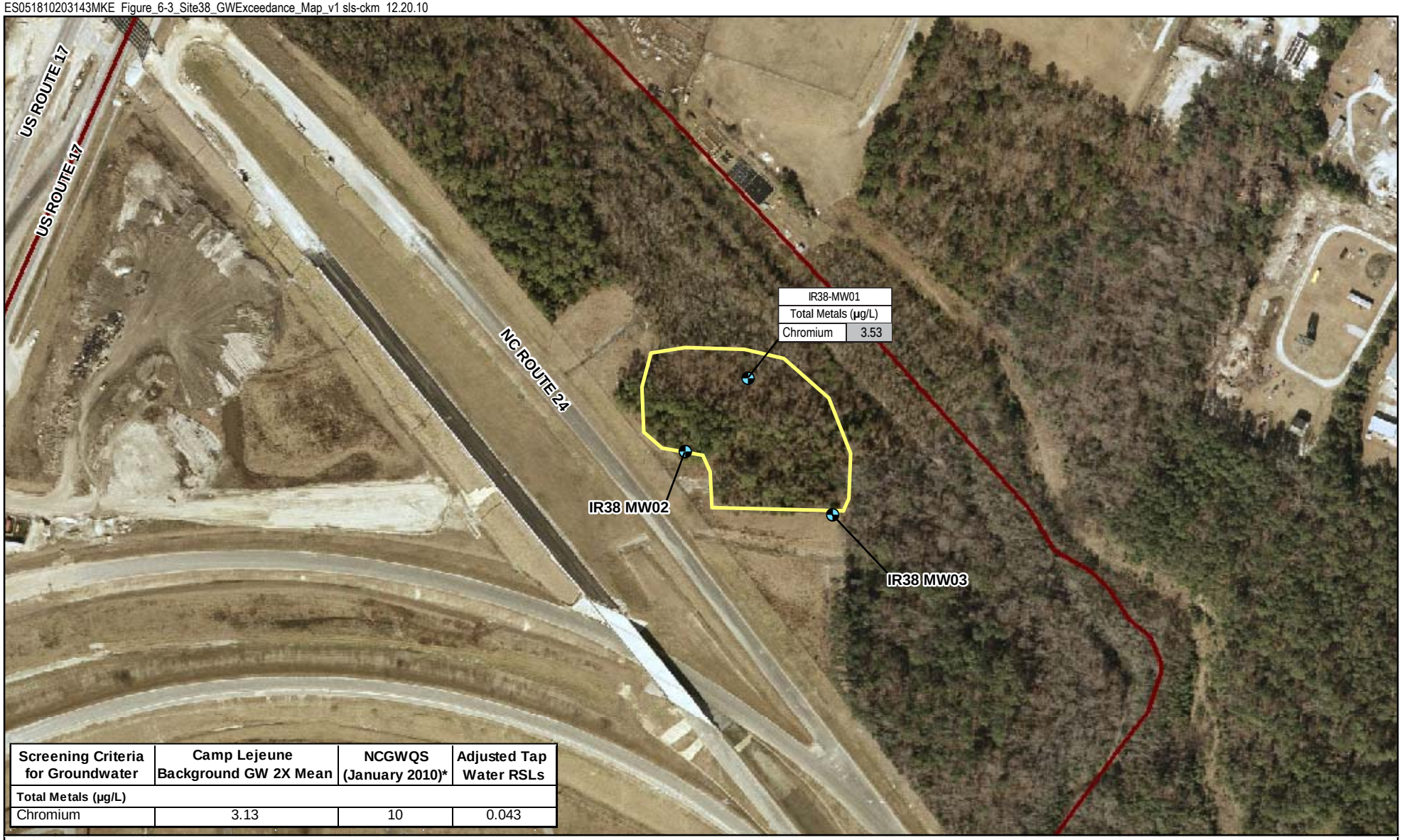
ES051810203143MKE Figure_6-3_Site38_GWExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSLs
Total Metals (µg/L)			
Chromium	3.13	10	0.043

Legend

- Groundwater Sample Location
- Site 38 Boundary
- Installation Boundary

Notes:

Bold text indicates exceedance of Adjusted Tap Water RSL

Bold box indicates exceedance of NCWQS

Shading indicates exceedance of two times the mean base background concentration for Groundwater

µg/L – Micrograms per liter

* – NCWQS are more conservative than MCLs for all analytes considered.

N

0 150 300 Feet

1 inch = 300 feet

Figure 6-3
Site 38 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

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SECTION 7

Site 42—Building 705 Bachelor Officers Quarters Dump

Site 42, the Building 705 Bachelor Officers Quarters (BOQ) Dump, encompasses approximately 2.8 acres within the MCAS New River portion of the Base (**Figure 2-7).** Landscape and construction debris was reportedly disposed of at the site from 1950 to 1960. The eastern half of the site consists of a maintained grassy area containing shallow drainage swales that discharge to Strawhorn Creek to the north. The western half of the site contains wetlands and dense vegetation. The only developed structure within Site 42 is an emergency generator located on the southern border of the site. Ground surface elevations within Site 42 range from roughly 4 ft amsl to mean sea level (**Figure 2-7**).

7.1 Site Geology

Due to the shallow water table at Site 42, soil borings were not advanced to depths greater than 10 ft bgs. Soils encountered from the 8 soil borings advanced at the site, consisted of a mixture of organic rich soils, clays, silts, and sands. Soil boring logs are presented in **Appendix A**.

Site 42 hydrogeological information was derived from 3 temporary monitoring wells (IR42-TW01 through IR42-TW03) screened within the surficial aquifer. Due to the proximity of Site 42 to the New River and a tributary to the New River, located east and north of the site, respectively, as well as the presence of wetlands in the western portion of the site, it is believed that groundwater is strongly tidally influenced and may contain brackish or saltwater. Evidence of tidally influenced groundwater is supported by the elevated specific conductivity measurements in groundwater sampled at the site. Depths to groundwater measurements were collected prior to groundwater sampling (**Table 7-1**), however; a potentiometric surface map was not produced due to the dynamic nature of the tidally influenced water table. Based on the groundwater flow patterns observed at similar sites at MCB CamLej, it is likely that groundwater flows toward the tributary to the New River located north of the site.

7.2 Environmental Sampling and Results

Based on site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and Metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

7.2.1 Subsurface Soil

Seven subsurface soil samples were collected from Site 42 and analyzed for VOCs, SVOCs, and metals. VOCs and SVOCs were not detected above regulatory criteria. Metals detected at concentrations exceeding applicable Base Background and at least one regulatory criterion are presented on **Figure 7-1** and summarized in **Table 7-2**. **Table B-5** presents the

laboratory analytical data for all subsurface soil samples collected from Site 42. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 7-2
Summary of Subsurface Soil Exceedances - Site 42

Analyte	IR42-IS01	IR42-IS04	IR42-IS05	IR42-IS06
Aluminum (mg/kg)	12,100	NE	NE	11,300
Arsenic (mg/kg)	**4.6**	**3.3**	**4.4**	**3.8**
Chromium (mg/kg)	**16.9 J**	NE	NE	NE
Iron (mg/kg)	13,300 J	6,190 J	7,970 J	13,100 J
Vanadium (mg/kg)	66.6	NE	NE	NE

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Metal did not exceed Base Background

7.2.2 Groundwater

Groundwater samples were collected from three temporary monitoring wells (IR42-TW01 through IR42-TW03) and analyzed for metals, VOCs, and SVOCs. VOCs and SVOCs were not detected in groundwater samples at concentrations exceeding applicable regulatory criteria. Metals that exceeded Base Background and at least one regulatory criterion are presented on **Figure 7-2** and summarized in **Table 7-3.** Laboratory analytical results from all groundwater samples collected from Site 42 are presented in **Table C-4** and the raw analytical data is presented in **Appendix C**.

TABLE 7-3
Summary of Groundwater Exceedances - Site 42

Analyte	IR42-TW01	IR42-TW02	IR42-TW03
Aluminum (µg/L)	NE	NE	**8,460 J**
Chromium (µg/L)	NE	NE	**10.9**
Iron (µg/L)	**23,700**	NE	**31,500**
Manganese (µg/L)	**1,280**	NE	NE

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Metal did not exceed Base Background

7.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil and groundwater at Site 42 was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were potential human health risks from exposure to subsurface soil and groundwater. However, the individual constituents were further evaluated based on appropriate screening levels and comparison to background ranges and human nutrient requirement. Based on these evaluations, no potential human health risks from exposure to subsurface soil or groundwater are expected to occur.

7.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil analytical was compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil or groundwater. The full ERS report is presented in **Appendix E**.

7.5 Conclusions

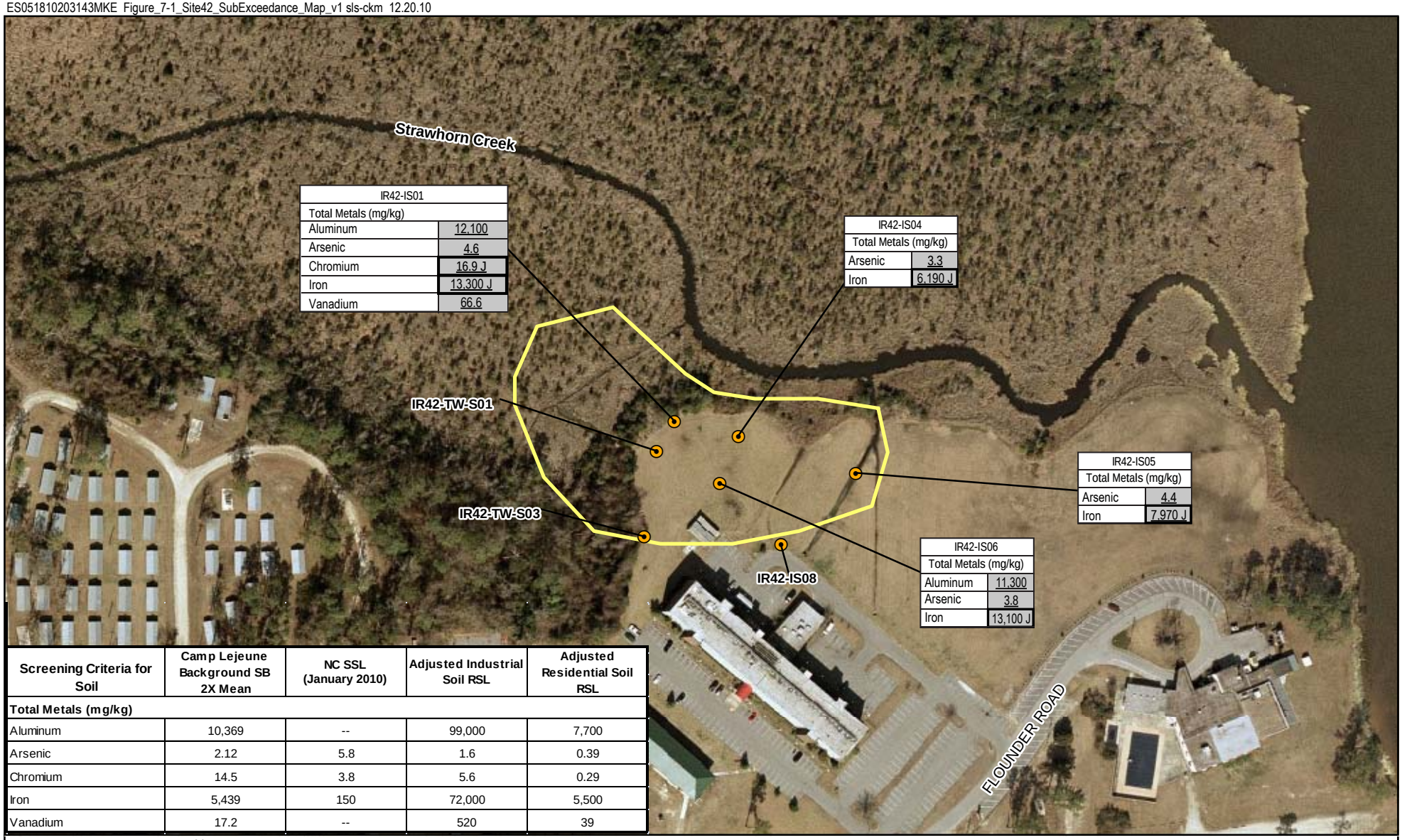
Concentrations of metals exceeding Base Background and regulatory standards were detected in both soil (4 locations) and groundwater (2 locations). Human health and ecological risk screenings indicated that no unacceptable risks were posed to human or ecological receptors. Based on the lack of risk identified, no additional investigation is recommended for Site 42 and the site should remain closed.

Table 7-1
Site 42 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR42-TW01	7/11/2009	3.71	3.60	0.11
IR42-TW02	7/11/2009	2.37	1.95	0.42
IR42-TW03	7/11/2009	4.08	5.10	-1.02

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

ES051810203143MKE Figure_7-1_Site42_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500
Vanadium	17.2	--	520	39

Legend
- Soil Sample Location
- Site 42 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/L – Micrograms per liter
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 100 200 400 Feet

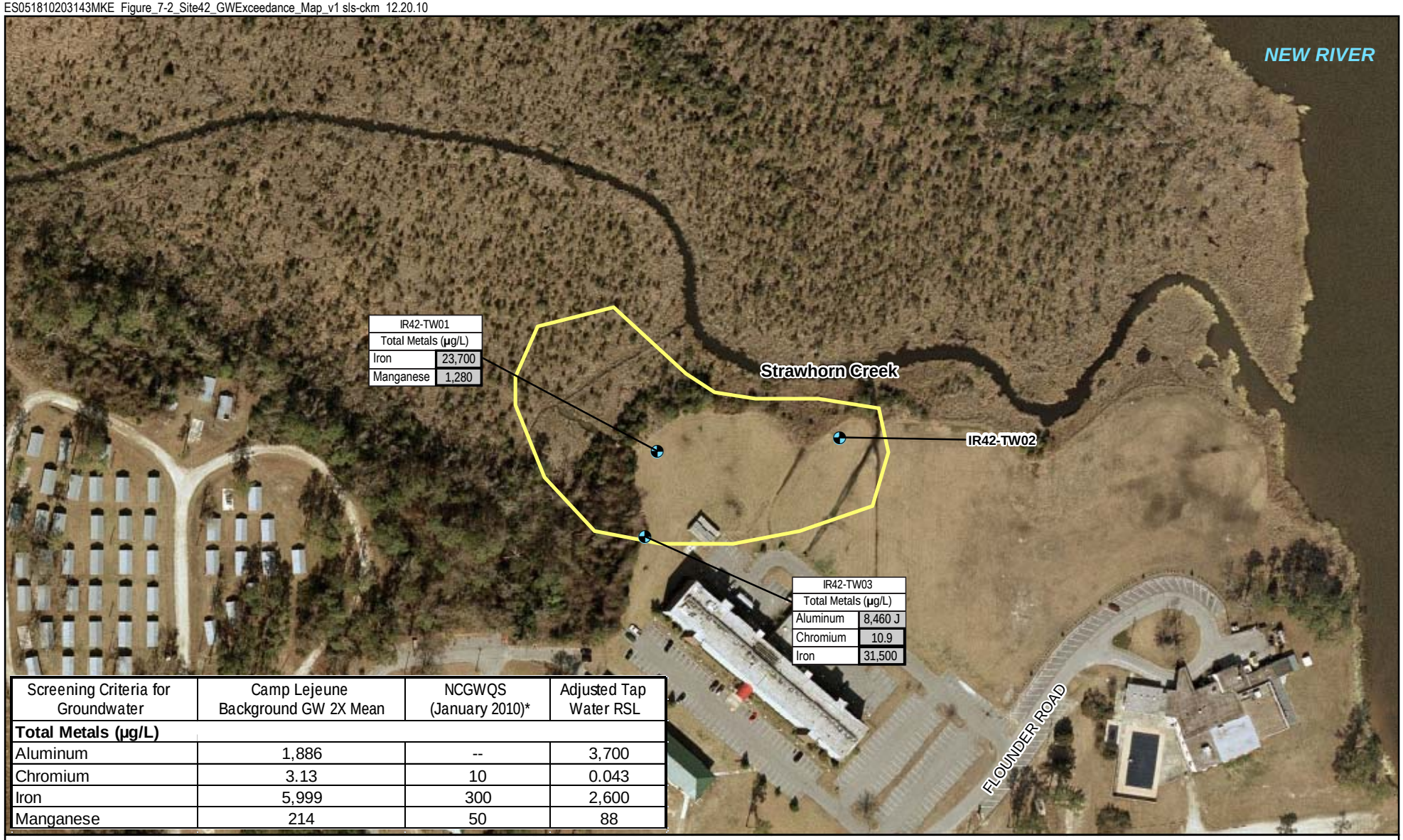
1 inch = 200 feet

Figure 7-1
Site 42 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT

ES051810203143MKE Figure_7-2_Site42_GWExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Total Metals (µg/L)			
Aluminum	1,886	--	3,700
Chromium	3.13	10	0.043
Iron	5,999	300	2,600
Manganese	214	50	88

Legend
- Groundwater Sample Location
- Site 42 Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
Shading indicates exceedance of two times the mean base background concentration for Groundwater
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – The MCL value is reported in place of the NCWQS where the MCL value is more conservative.

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 7-2
Site 42 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

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SECTION 8

Site 53—Marine Corps Air Station Warehouse Building Area

Site 53, the MCAS Warehouse Building Area, consists of approximately 3 miles of roadway located in the southwest portion of the air station, as shown on **Figure 2-8**. According to the IAS report, used crankcase oil, waste oils, jet propulsion fuels, and paint thinners were reportedly sprayed on roads for dust control between 1970 and 1975. Interconnected drainage ditches connect the site to an equipment storage and vehicle fueling area that contains aboveground storage tanks (ASTs) and oil-water separators (OWSs).

Surface elevations within Site 53 range from just over 24 ft amsl in the center of the site to 6 ft amsl along the western border. Surface water runoff appears to flow into a storm water retention pond (jurisdictional wetland) located in the center of the Site.

8.1 Site Geology

Shallow soils at the site consist of sands with varying amounts of clay and silt to at least 20 ft bgs, the maximum extent of the intrusive investigation. Boring logs are presented in **Appendix A**.

Hydrogeological information for the Surficial aquifer was derived from three temporary monitoring wells screened across the water table. The water table was encountered at depths ranging from 6.25 ft BTOC (IR53-TW02) to 12.50 ft BTOC (IR53-TW03) with groundwater elevations ranging from 7.86 to 15.82 ft amsl **(Table 8-1)**. These data were used in conjunction with well survey data to produce a generalized potentiometric surface map of the water table (**Figure 8-1).** As shown in **Figure 8-1,** shallow groundwater within Site 53 generally flows toward the south with an estimated hydraulic gradient of 0.004 ft/ft.

8.2 Environmental Sampling and Results

Based on the site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

8.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site and analyzed for VOCs, SVOCs, metals, and PCBs. VOCs, SVOCs, and PCBs were not detected at concentrations exceeding applicable regulator criteria. Metals detected at concentrations exceeding Base Background and at least one regulatory criterion are presented on **Figure 8-2** and summarized in **Table 8-2**. **Table B-5** presents the laboratory analytical data for all subsurface soil samples collected from Site 53. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 8-2
Summary of Subsurface Soil Exceedances – Site 53

Analyte	IR53-IS03	IR53-IS05	IR53-IS06	IR53-IS07	IR53-IS08
Aluminum (mg/kg)	NE	15,400	14,700	14,300	12,600
Arsenic (mg/kg)	**2.3 J**	**2.4 J**	**7.5 J**	NE	**2.8 J**
Chromium (mg/kg)	NE	**14.7 J**	**26.9 J**	**15.6 J**	**18 J**
Iron (mg/kg)	5,740 J	10,200 J	12,300 J	NE	NE

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Metal did not exceed Base Background

8.2.2 Groundwater

Groundwater samples were collected from three temporary monitoring wells (IR53-TW01 through IR53-TW03) during the July 2009 field event and analyzed for metals, VOCs, SVOCs, and PCBs. To confirm the elevated arsenic concentrations detected during the July 2009 sampling event, permanent monitoring well IR53-MW03 was installed in February 2010 at the site to collect an additional groundwater sample for arsenic analysis only. This sample did not contain detectable levels of arsenic.

VOCs, SVOCs, and PCBs were not detected in groundwater samples at concentrations exceeding NCGWQS or USEPA Adjusted Tap Water RSLs; however, seven metals were detected at concentrations exceeding Base Background and at least one applicable regulatory criterion. Metals exceeding Base Background and at least one applicable regulatory criterion are presented on **Figure 8-3** and summarized in **Table 8-3.** Laboratory analytical results from all groundwater samples collected from Site 53 are presented in **Table C-5** and the raw analytical data is presented in **Appendix C**.

TABLE 8-3
Summary of Groundwater Exceedances - Site 53

Analyte	IR53-TW01	IR53-TW02	IR53-TW03	IR53-MW03
Aluminum (µg/L)	NE	**6,910 J**	**50,300**	NA
Arsenic (µg/L)	NE	NE	**25.7**	ND
Chromium (µg/L)	NE	**11.6**	**71.2**	NA
Cobalt (µg/L)	NE	NE	**28.9**	NA
Iron (µg/L)	**29,300**	NE	**93,900**	NA
Lead (µg/L)	NE	NE	28.8	NA
Vanadium (µg/L)	NE	NE	**80.2**	NA

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
ND –Not detected above the reporting limit
NA – Not analyzed

8.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil and groundwater at Site 53 was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The HHRS indicated there were no unacceptable risks to human receptors from soil at site 53. Several metals were initially identified as COPCs in groundwater. Additional sampling in February 2010 confirmed that the elevated metals concentrations in groundwater samples taken at the site were attributable to high turbidity in the samples. Therefore groundwater was determined not to pose an unacceptable risk to human receptors.

8.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil and groundwater analytical results were compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil or groundwater at Site 53. The full ERS report is presented in **Appendix E.**

8.5 Conclusions

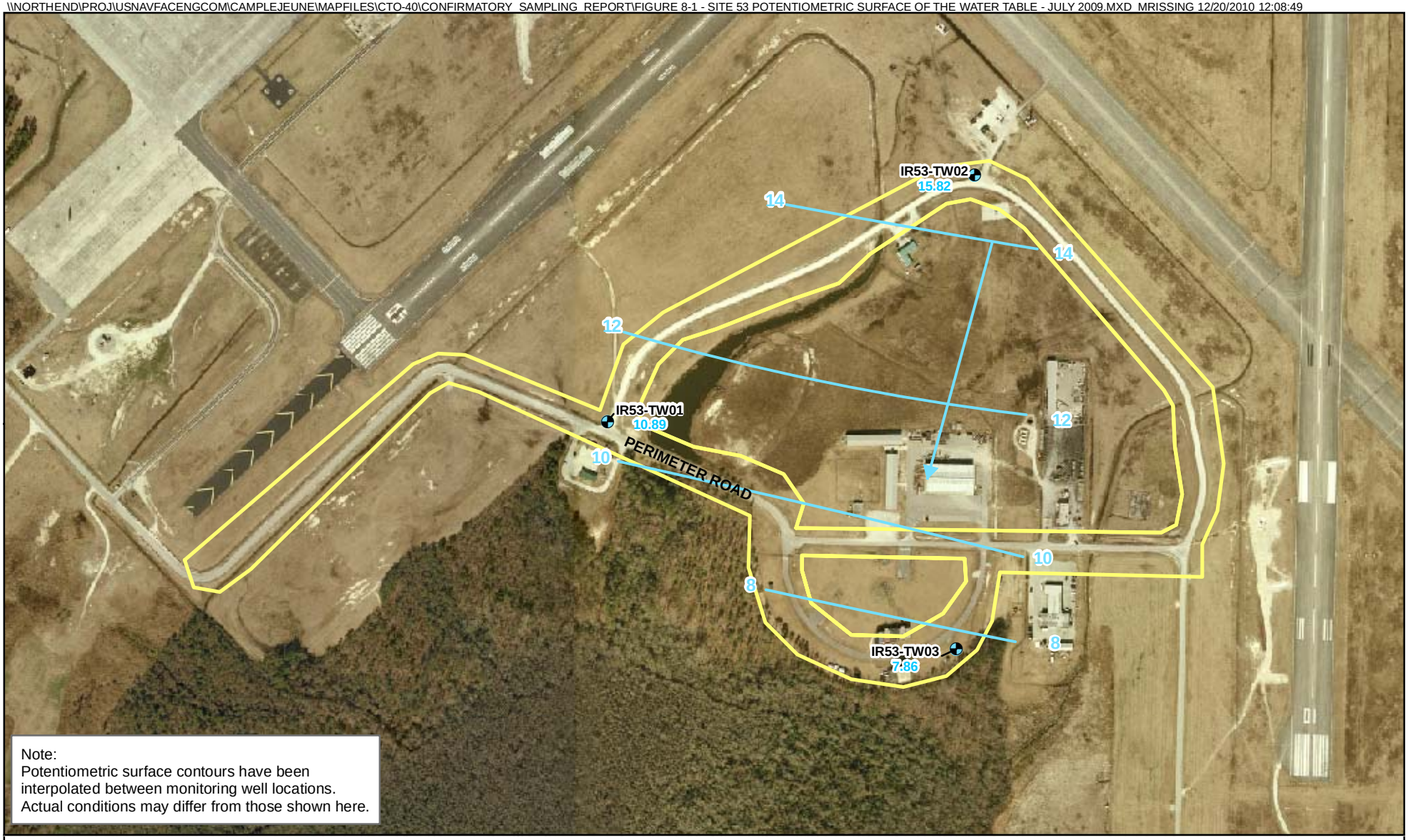
Concentrations of metals in soil exceeded Base Background concentrations, Adjusted Residential and Industrial RSL values, and NC SSLs. Concentrations of metals in groundwater also exceeded Base Background criteria as well as Adjusted Tap Water RSLs and NCGWQS. Risk screenings concluded that no unacceptable risks were posed to human or ecological receptors from any media at Site 53. Therefore, no additional sampling or assessment is recommended for Site 53 and the site should remain closed.

Table 8-1
Site 53 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR53-TW01	7/12/2009	18.53	7.64	10.89
IR53-TW02	7/11/2009	22.07	6.25	15.82
IR53-TW03	7/9/2009	20.36	12.50	7.86
IR53-MW03	2/24/2010	17.88	5.90	11.98

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: *Jeff Albano*
Checked by: *David Lubell*

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 8-1 - SITE 53 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:08:49



Legend

- Monitoring Well
- Site 53 Boundary
- 12 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 10.89 Groundwater elevation (ft amsl)

N

0 250 500 1,000 Feet

1 inch = 500 feet

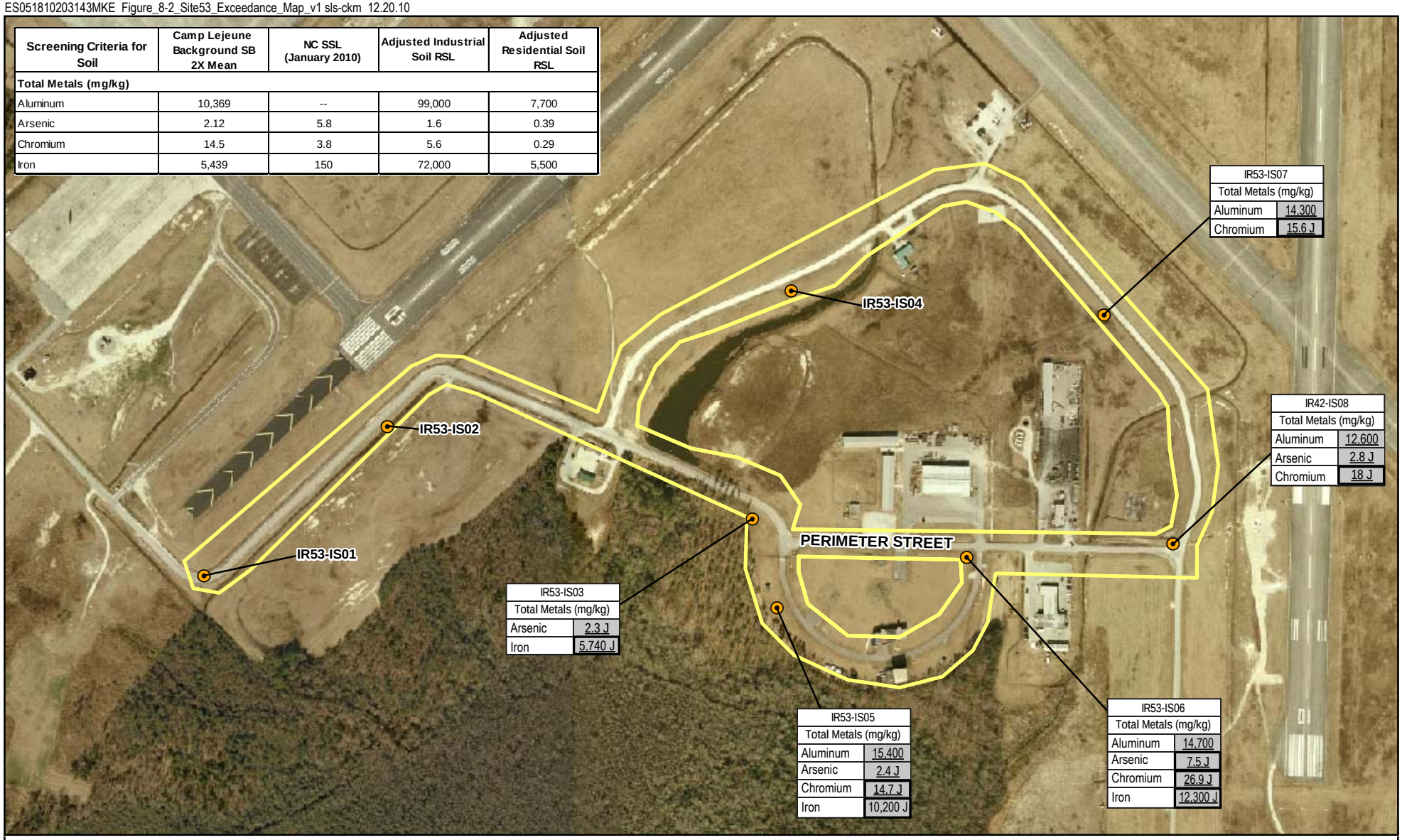
Figure 8-1
Site 53 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_8-2_Site53_Exceedance_Map_v1 sls-ckm 12.20.10

Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500



Legend
- Soil Sample Location
- Site 53 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/L – Micrograms per liter
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 250 500 1,000 Feet

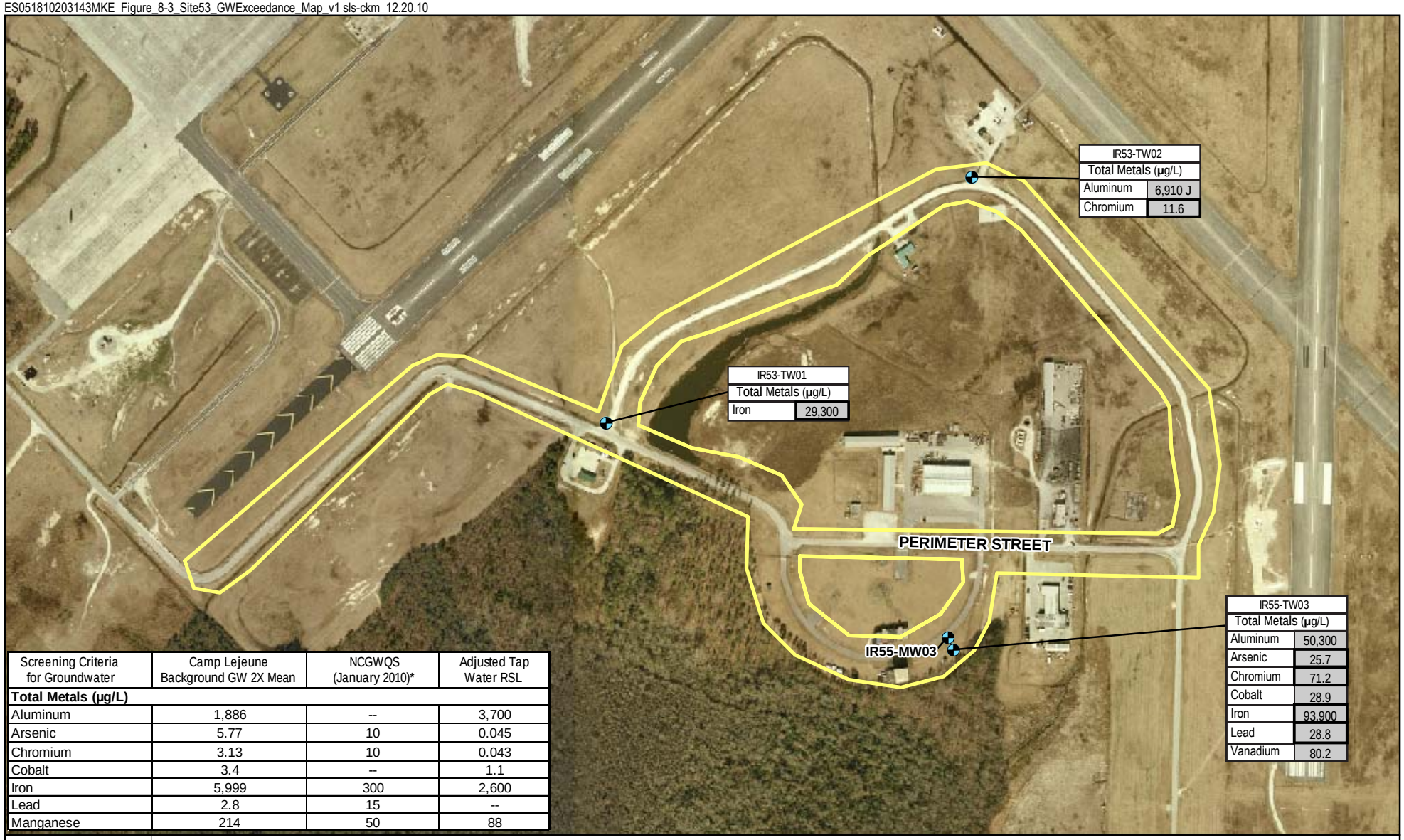
1 inch = 500 feet

Figure 8-2
Site 53 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT

ES051810203143MKE Figure_8-3_Site53_GWExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Total Metals (µg/L)			
Aluminum	1,886	--	3,700
Arsenic	5.77	10	0.045
Chromium	3.13	10	0.043
Cobalt	3.4	--	1.1
Iron	5,999	300	2,600
Lead	2.8	15	--
Manganese	214	50	88

Legend
- Groundwater Sample Location
- Site 53 Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
Shading indicates exceedance of two times the mean base background concentration for Groundwater
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – The MCL value is reported in place of the NCWQS where the MCL value is more conservative.

N

0 250 500 1,000 Feet

1 inch = 500 feet

Figure 8-3
Site 53 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT

SECTION 9

Site 55—Air Station East Perimeter Dump

Site 55, the Air Station East Perimeter Dump, consists of approximately 3.5 acres of developed or wooded land, roughly 2.5 acres of the New River, and includes a marina and recreational area, as shown on **Figure 2-10**. The surface topography of Site 55 slopes toward the New River with elevations ranging from approximately 18 ft amsl to mean sea level at the shoreline. (**Figure 2-10**).

The dump was reportedly used from the 1950s until 1960, and was apparently used for the disposal of barrels of unknown contents or quantity, tires, trash of unknown content, metal planking, and telephone poles. During the 2008 reconnaissance by CH2M HILL, evidence of the historical waste disposal practices was not observed. An underground storage tank is located along the eastern shore of the site.

9.1 Site Geology

Shallow soils consisting of a mixture of sand, sandy clay, clayey sand, clay, and silty sand were encountered to at least 10 ft bgs, the maximum depth of the intrusive investigation. No debris was encountered in soil borings advanced at the site. Boring logs are presented in **Appendix A**.

Hydrogeological information was derived from three temporary monitoring wells (IR55-TW01 through IR55-TW03) installed at the site. The water table was encountered at depths ranging from 2.36 feet BTOC (IR55-TW01) to 13.94 feet BTOC (IR55-TW03) with groundwater elevations ranging from 1.5 to 4.47 ft amsl (**Table 9-1**). These data were used in conjunction with well survey data to produce a potentiometric surface map for the surficial aquifer (**Figure 9-1).** As shown on **Figure 9-1**, groundwater at Site 55 generally flows to the southeast towards the New River with an estimated hydraulic gradient of 0.01 ft/ft.

9.2 Environmental Sampling and Results

Based on the site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

9.2.1 Subsurface Soil

Seven subsurface soil samples were collected from Site 55 and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs. One VOC, methylene chloride, and one SVOC, pentachlorophenol, were detected in the soil sample collected from sampling location IR55-IS03 at concentrations exceeding their respective NCGWQS of 23µg/kg and 31 µg/kg. Four metals including; aluminum, arsenic, chromium, and iron were detected at concentrations exceeding Base Background and at least one applicable regulatory standard. Analytes detected at concentrations exceeding their respective screening criteria are presented on **Figure 9-2** and summarized in **Table 9-2**. **Table B-6** presents the laboratory analytical data

for all subsurface soil samples collected from Site 55. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 9-2
Summary of Subsurface Soil Exceedances - Site 55

Analyte	IR55-IS01	IR55-IS02	IR55-IS03	IR55-IS04	IR55-IS06	IR55-IS07
Methylene chloride (µg/kg)	NE	NE	43	NE	NE	NE
Pentachlorophenol (µg/kg)	NE	61 J	NE	NE	NE	NE
Aluminum (mg/kg)	NE	NE	NE	10,800	17,500	NE
Arsenic (mg/kg)	**7**	**3.5**	NE	**3.4**	**5.1**	**4.6**
Chromium (mg/kg)	NE	NE	NE	**16 J**	**21.8**	**15.4 J**
Iron (mg/kg)	NE	NE	NE	6,980 J	9,010	8,620 J

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Metal did not exceed Base Background

9.2.2 Groundwater

Groundwater samples were collected from three temporary monitoring wells (IR55-TW01 through IR55-TW03) and analyzed for metals, VOCs, SVOCs, pesticides, herbicides, and PCBs. VOCs, SVOCs, pesticides, herbicides, and PCBs were not detected at concentrations exceeding NCGWQS or USEPA Adjusted Tap Water RSLs. Metals that exceeded Base Background and at least one regulatory criterion are presented on **Figure 9-3** and summarized in **Table 9-3**. Laboratory analytical results from all groundwater samples collected from Site 55 are presented in **Table C-6** and the raw analytical data is presented in **Appendix C**.

TABLE 9-3
Summary of Groundwater Exceedances - Site 55

Analyte	IR55-TW02	IR55-TW03
Aluminum (µg/L)	**10,600 J**	**29,900**
Arsenic (µg/L)	**6.1 J**	**17.9**
Chromium (µg/L)	**14.2**	**44.3**
Iron (µg/L)	**15,500**	**59,700**
Manganese (µg/L)	NE	**353**
Vanadium (µg/L)	NE	**45.3**

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background

9.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil and groundwater at Site 55 was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. Human health screening showed that there were no unacceptable risks to human receptors from any media at site 53. Several metals were initially identified as COPCs in groundwater. Additional sampling in February 2010 confirmed that the elevated metals concentrations in groundwater samples taken at the site are attributable to high turbidity in the groundwater samples.

9.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil and groundwater analytical results were compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil or groundwater at Site 55. The full ERS report is presented in **Appendix E.**

9.5 Conclusions

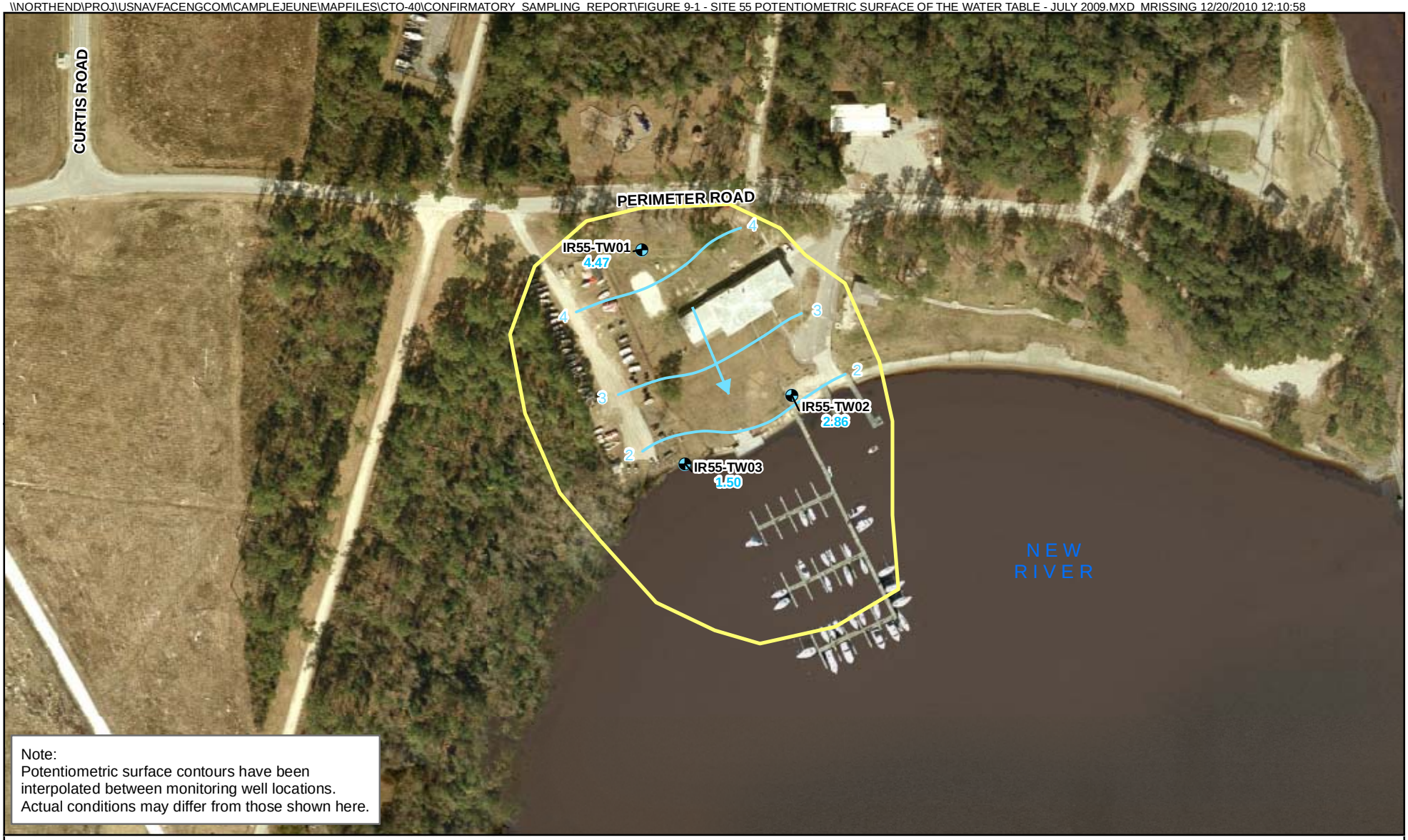
Methylene chloride and pentachlorophenol were each detected in one subsurface soil sample collected from Site 55 and were likely introduced by the analytical laboratory. Concentrations of metals exceeding Base Background and regulatory standards were detected in both soil samples (5 locations) and groundwater samples (2 locations). Human health and ecological risk screenings indicated that no unacceptable risks were posed to human or ecological receptors from any media at Site 55 therefore, no additional investigation is recommended and the site should remain closed.

Table 9-1
Site 55 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR55-TW01	7/12/2009	18.41	13.94	4.47
IR55-TW02	7/12/2009	6.11	3.25	2.86
IR55-TW03	7/12/2009	3.86	2.36	1.50

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 9-1 - SITE 55 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:10:58



Note:
Potentiometric surface contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown here.

Legend

- Groundwater Sample Location
- Site 55 Boundary
- 2 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 1.50 Groundwater elevation (ft amsl)

N

0 100 200 400 Feet

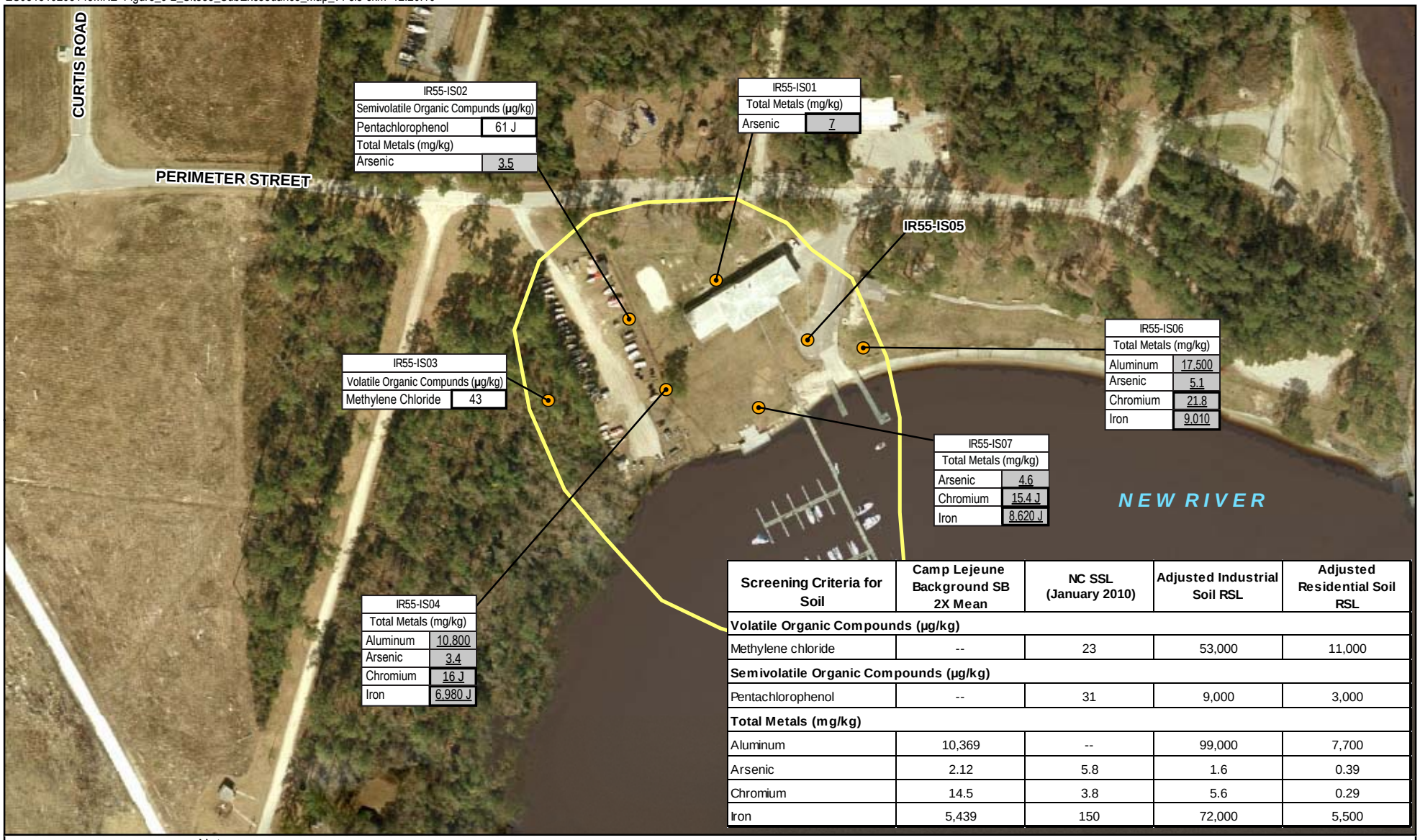
1 inch = 200 feet

Figure 9-1
Site 55 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_9-2_Site55_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Volatile Organic Compounds (µg/kg)				
Methylene chloride	--	23	53,000	11,000
Semivolatile Organic Compounds (µg/kg)				
Pentachlorophenol	--	31	9,000	3,000
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500

Legend
- Soil Sample Location
- Site 55 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg – Micrograms per kilogram
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

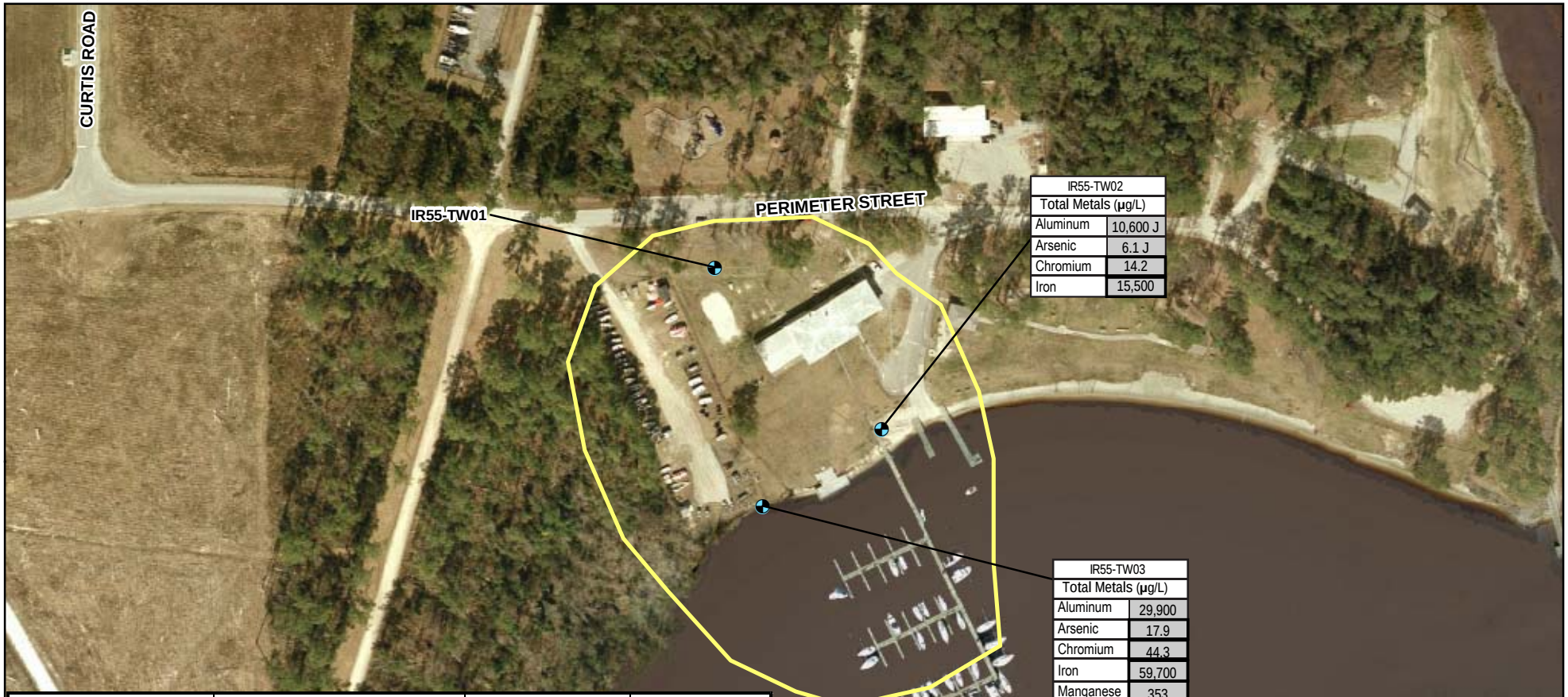
0 100 200 400 Feet

1 inch = 200 feet

Figure 9-2
Site 55 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Total Metals (µg/L)			
Aluminum	1,886	--	3,700
Arsenic	5.77	10	0.045
Chromium	3.13	10	0.043
Iron	5,999	300	2,600
Manganese	214	50	88
Vanadium	4.72	--	18

Legend
- Groundwater Sample Location
- Site 55 Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
Shading indicates exceedance of two times the mean base background concentration for Groundwater
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – NCWQS are more conservative than MCLs for all analytes considered.

N

0 100 200 400 Feet

1 inch = 200 feet

Figure 9-3
Site 55 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated by: Lauren Petty/CLT Checked by: Jeff Albano/CLT

SECTION 10

Site 61—Rhodes Point Road Dump

Site 61 is located near the Camp Devil Dog area, south of MCAS New River and consists of the Rhodes Point Road Dump. According to the IAS report, the site was apparently used for training activities that may have included the disposal of 'bivouac waste' (e.g. Meals Ready to Eat (MRE) wrappers) and encompasses an area of approximately 6 acres (**Figure 2-12**). The northern boundary of Site 61 includes a broad southwest-northeast trending ridge and parallel drainage feature (planning wetland), that discharges to a tributary of the New River. Surface topography ranges from roughly 22 ft amsl in the southwestern portion of the site to approximately 2 ft amsl in the northern portion of the site (**Figure 2-12**).

10.1 Site Geology

Shallow soils consist of interlayered sands, silts, and clays to at least 20 ft bgs, the maximum depth of the intrusive investigation. A shelly hash in a clay matrix was encountered in soil boring IR61-TW-S03/TW01 at approximately 10.5 feet bgs. Boring logs are presented in **Appendix A**.

Hydrogeological information was derived from three temporary monitoring wells (IR61-TW01 through IR61-TW03) installed at the site. The water table was encountered at depths ranging from 5.79 feet BTOC (IR61-TW01) to 14.60 BTOC feet bgs (IR61-TW02) with groundwater elevations ranging from 0.99 to 3.05 ft amsl (**Table 10-1**). These data were used in conjunction with top of casing elevation survey data to produce a potentiometric surface map for the surficial aquifer (**Figure 10-1).** As shown on **Figure 10-1**, groundwater at Site 61 generally flows to the southeast towards a tributary to the New River with an estimated hydraulic gradient of 0.008 ft/ft.

10.2 Environmental Sampling and Results

Based on site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

10.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site 61 and analyzed for VOCs, SVOCs, and metals. VOCs and SVOCs were not detected above regulatory criteria. Metals detected at concentrations exceeding Base Background and at least one regulatory criterion are presented on **Figure 10-2** and summarized in **Table 10-2**. Subsurface soil analytical data for Site 61 is presented in **Table B-7**. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 10-2
Summary of Subsurface Soil Exceedances - Site 61

Analyte	IR61-TW-S01	IR61-IS01	IR61-IS04	IR61-IS05	IR61-IS07	IR61-IS08
Methylene chloride (µg/kg)	NE	NE	NE	NE	86	NE
Aluminum (mg/kg)	11,500	NE	NE	13,500	NE	10,400
Iron (mg/kg)	10,200	7,030	6,560	7,170	NE	NE

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
NE – Analyte did not exceed Base Background

10.2.2 Groundwater

Groundwater samples were collected from three temporary monitoring wells (IR61-TW01 through IR61-TW03) during the July 2009 field event and analyzed for VOCs, SVOCs, and metals. To confirm the elevated arsenic concentrations detected during the July 2009 sampling event, permanent monitoring well IR61-MW03 was installed at the site in February 2010 in order to collect an additional groundwater sample for arsenic analysis only. The concentrations of arsenic detected in this sample did not exceed background levels.

SVOCs were not detected in groundwater samples at concentrations exceeding NCGWQS or USEPA Adjusted Tap Water RSLs. Chloroform was detected above the Adjusted Tap Water RSL (0.19 µg/L). Nine metals were detected at concentrations exceeding Base Background and at least one applicable regulatory criterion. Analytes that exceeded Base Background and at least one applicable regulatory criterion are presented on **Figure 10-3** and summarized in **Table 10-3**. Laboratory analytical results from all groundwater samples collected from Site 61 are presented in **Table C-7** and the raw analytical data is presented in **Appendix C**.

TABLE 10-3
Summary of Groundwater Exceedances - Site 61

Analyte	IR61-TW01	IR61-TW02	IR61-TW03	IR61-MW03
Chloroform (µg/L)	NE	NE	**2**	NA
Aluminum (µg/L)	**109,000**	NE	**9,830**	NA
Arsenic (µg/L)	**53.6**	NE	**14.4**	NE
Cadmium (µg/L)	**2.2 J**	NE	NE	NA
Chromium (µg/L)	**150**	NE	**30.2**	NA
Cobalt (µg/L)	**12.9 J**	**5.5 J**	NE	NA
Iron (µg/L)	**147,000 J**	NE	**23,300 J**	NA
Lead (µg/L)	93.4	NE	NE	NA
Manganese (µg/L)	**643**	**NE**	**287**	NA
Vanadium (µg/L)	**167**	NE	**33.1**	NA

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL

Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background
NA – Not Analyzed

10.3 Human Health Risk Screening Summary

A HHRS evaluation for subsurface soil and groundwater at Site 61 was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were no potential human health risks from exposure to subsurface soil at Site 61, but possible risks from exposure to groundwater. However, the individual constituents in groundwater were further evaluated based on possible lab contamination, attribution to high levels of turbidity in the wells, appropriate screening levels, and comparison to background range and human nutrient requirements. Based on these evaluations, no potential human health risks from exposure to groundwater are expected to occur.

10.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil and groundwater sampling. Subsurface soil and groundwater analytical results were compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil or groundwater at Site 4. The full ERS report is presented in **Appendix E**.

10.5 Conclusions

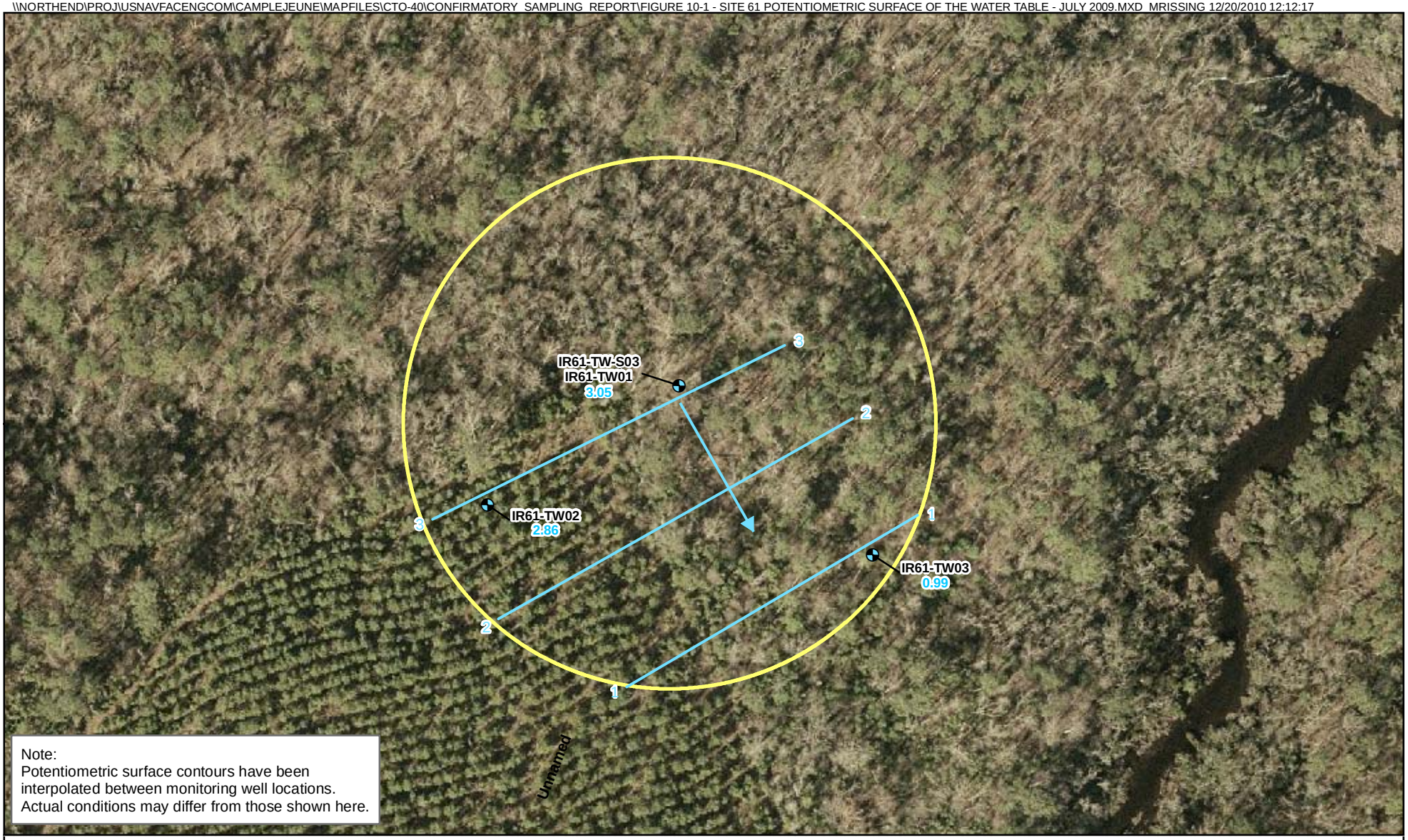
Concentrations of metals detected in subsurface soil samples collected from Site 61exceeded Base Background as well as Adjusted Residential and Industrial RSL values, and NC SSLs. Concentrations of metals detected in groundwater exceeded Base Background as well as Adjusted Tap Water RSLs and NCGWQS. Human health and ecological risk screenings indicated that no unacceptable risks were posed to human or ecological receptors from any media at Site 61; therefore, no additional sampling or assessment is recommended for Site 61 and the site should remain closed.

Table 10-1
Site 61 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR61-TW01	7/15/2009	8.84	5.79	3.05
IR61-TW02	7/15/2009	17.46	14.60	2.86
IR61-TW03	7/14/2009	8.40	7.41	0.99
IR61-MW01	2/24/2010	17.82	12.33	5.49

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 10-1 - SITE 61 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:12:17



Note:
Potentiometric surface contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown here.

Legend

- Groundwater Sample Location
- Site 61 Boundary
- 2 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 3.05 Groundwater elevation (ft amsl)

N

0 75 150 300 Feet

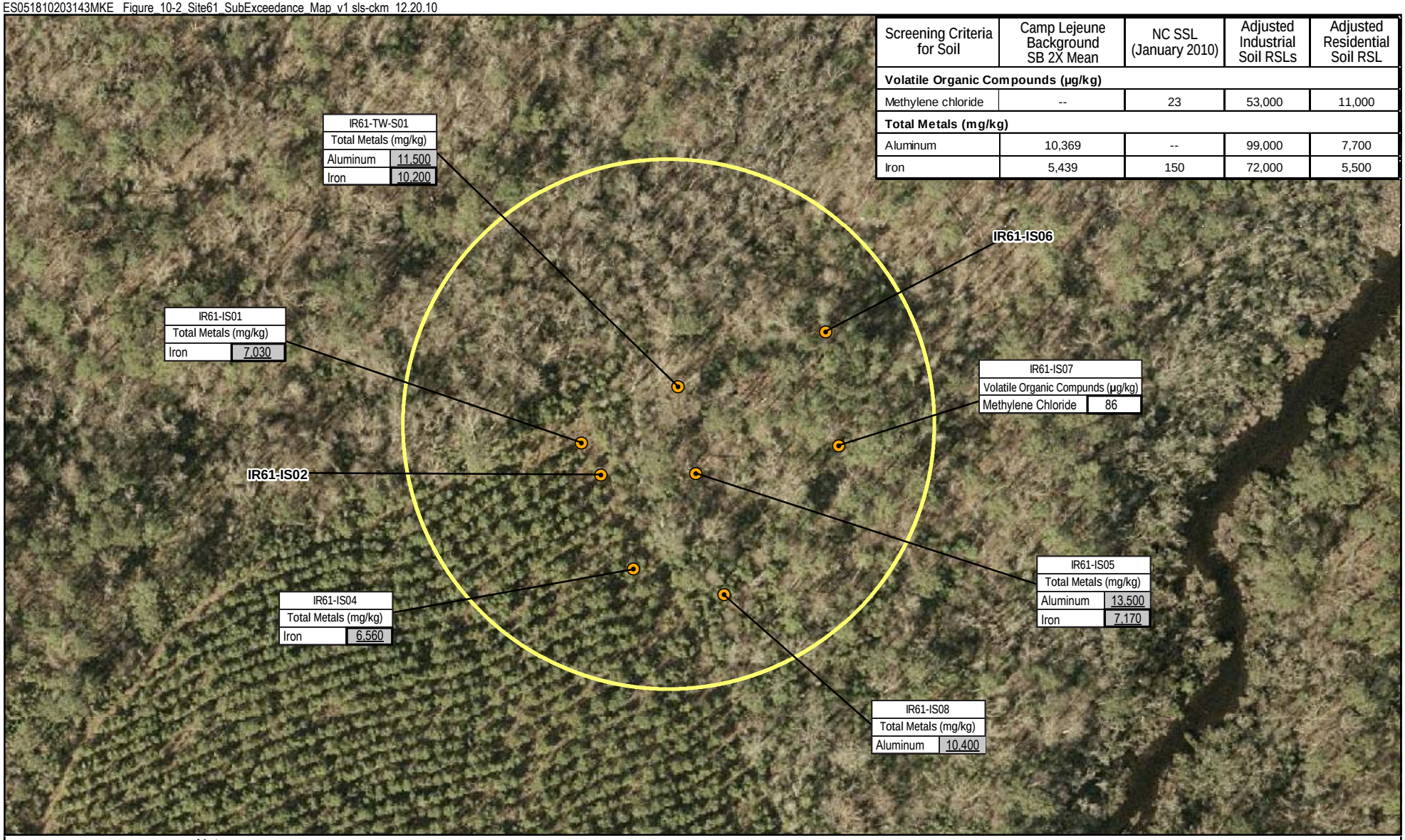
1 inch = 150 feet

Figure 10-1
Site 55 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_10-2_Site61_SubExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSL
Volatile Organic Compounds (µg/kg)				
Methylene chloride	--	23	53,000	11,000
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Iron	5,439	150	72,000	5,500

Legend
- Soil Sample Location
- Site 61 Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg – Micrograms per kilogram
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 10-2
Site 61 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

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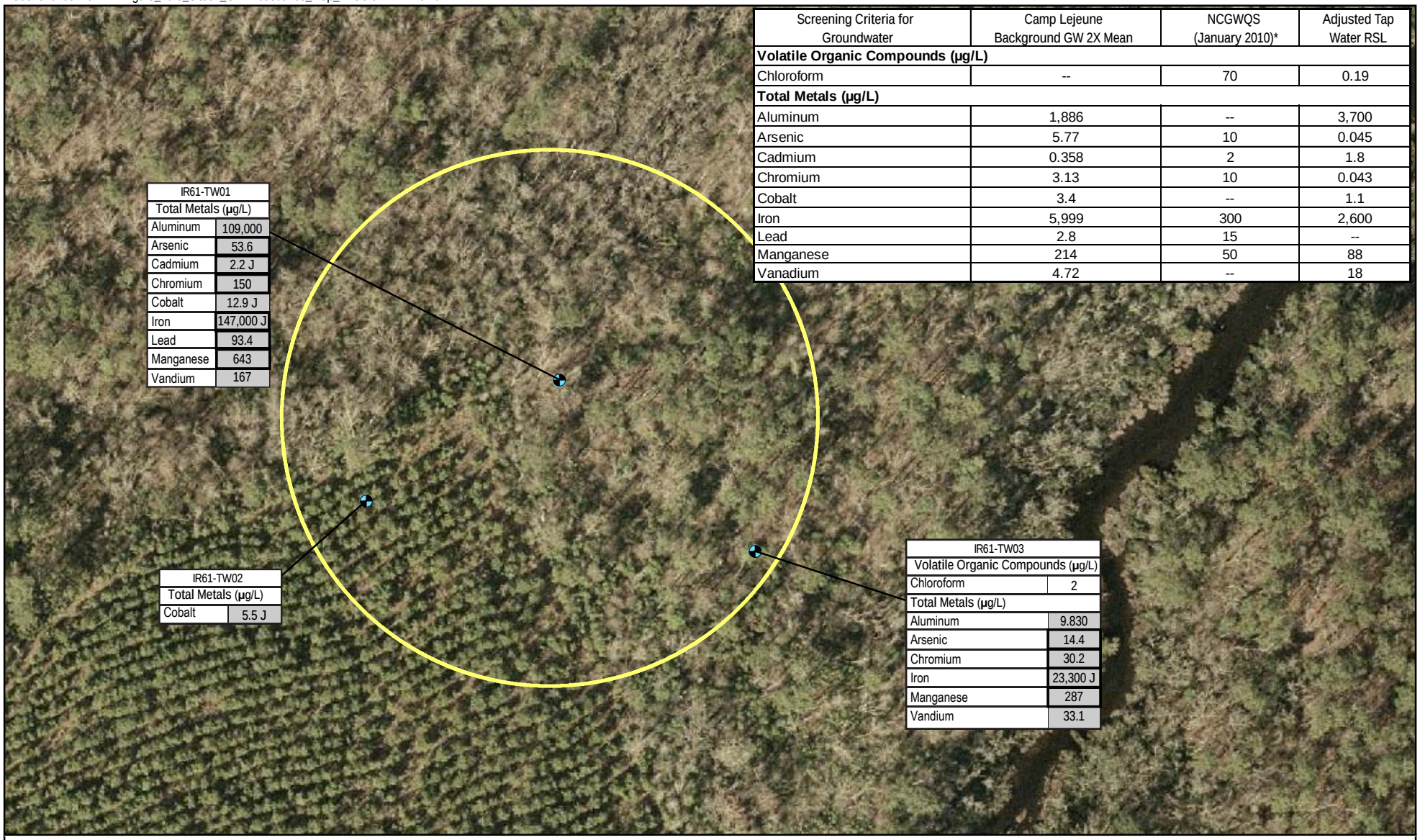
ES051810203143MKE Figure_10-3_Site61_GWExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Volatile Organic Compounds (µg/L)			
Chloroform	--	70	0.19
Total Metals (µg/L)			
Aluminum	1,886	--	3,700
Arsenic	5.77	10	0.045
Cadmium	0.358	2	1.8
Chromium	3.13	10	0.043
Cobalt	3.4	--	1.1
Iron	5,999	300	2,600
Lead	2.8	15	--
Manganese	214	50	88
Vanadium	4.72	--	18

Legend
- Groundwater Sample Location
- Site 61 Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
Shading indicates exceedance of two times the mean base background concentration for Groundwater
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – NCWQS are more conservative fro all analytes considered.

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 10-3
Site 61 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

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SECTION 11

Site 62—Race Course Area Dump

Site 62, the Race Course Area Dump, is located 2 miles south of the MCAS New River and is approximately 2 acres in size, as shown on **Figure 2-14**. According to the IAS report, the site was apparently used for training activities that may have included the disposal of 'bivouac waste'. The site is currently used for military training and site access and use are restricted. The site is accessible by unpaved dirt roads, although the majority of the interior is densely wooded.

The topographic relief at Site 62 is relatively steep and ranges from over 46 ft amsl in the center of the site to 12 ft above amsl in the southeastern portion of the site (**Figure 2-14**). The site is heavily wooded with the exception of the area bisected by Mett Road. Based on the topography at Site 62, drainage would be expected to flow towards Mill Run located south of the site.

11.1 Site Geology

Shallow soils generally consisted of interbedded sandy clays and clayey sands with occasional sand and clay lenses to at least 30 ft bgs, the maximum depth of the intrusive investigation. Three temporary monitoring wells (IR61-TW01 through IR61-TW03) were installed at the site however; Site 62 hydrogeological information was not assessed during the investigation. Due to the clayey lithology, it is unlikely that groundwater could have been impacted from historical operations at Site 62; therefore, groundwater was not assessed during the July 2009 sampling events. Boring logs are presented in **Appendix A**.

11.2 Findings

Based on site history and conditions, subsurface soil samples were collected and analyzed for VOCs, SVOCs, and metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

11.2.1 Subsurface Soil

Eight subsurface soil samples were collected from Site 62 during the July 2009 field activities and analyzed for VOCs, SVOCs, and metals. VOCs and SVOCs were not detected in subsurface soil samples at concentrations exceeding regulatory criteria. Metals detected at concentrations exceeding Base Background and at least one regulatory criterion are presented on **Figure 11-1** and summarized in **Table 11-1**. Subsurface soil analytical data is presented in **Table B-8**. The raw subsurface soil analytical results are included in **Appendix B**.

Table 11-1

Summary of Subsurface Soil Exceedances - Site 62

Analyte	IR62-IS02	IR62-IS04	IR62-IS05	IR62-IS06	IR62-IS07	IR62-IS08
Aluminum (mg/kg)	16,500	14,400	13,200	13,300	13,200	18,100
Arsenic (mg/kg)	**3.7**	**7.2**	**3.8**	**4.7**	**4.7**	**7.8**
Chromium (mg/kg)	**18.4 J**	**27.2** J	**20.7** J	**17.6** J	**19.5** J	**25.8 J**
Iron (mg/kg)	14,700	21,400	12,900	12,200	10,300	20,300

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
NE – Analyte did not exceed Base Background

11.2.2 Groundwater

Due to the clayey lithology, it is unlikely that groundwater could have been impacted from historical operations at Site 62; therefore, groundwater was not assessed during the July 2009 sampling events

11.3 Human Health Risk Screening Summary

A conservative HHRS evaluation for subsurface soil was performed to provide a preliminary indication of potential risks from COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were no potential human health risks from exposure to subsurface soil at Site 62.

11.4 Ecological Risk Screening Summary

An ERS was conducted using the analytical results obtained from subsurface soil sampling. Subsurface soil analytical results were compared to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to subsurface soil at Site 62. The full ERS report is presented in **Appendix E**.

11.5 Conclusions

Concentrations of metals detected in subsurface soil samples exceeded Base Background, Adjusted Residential and Industrial RSL values, and NC SSLs. Results of the human health and ecological risk screenings indicated that no unacceptable risks were posed to human or ecological receptors related to soil at Site 62. Consequently, no additional investigation is recommended for Site 62, and the site should remain closed.

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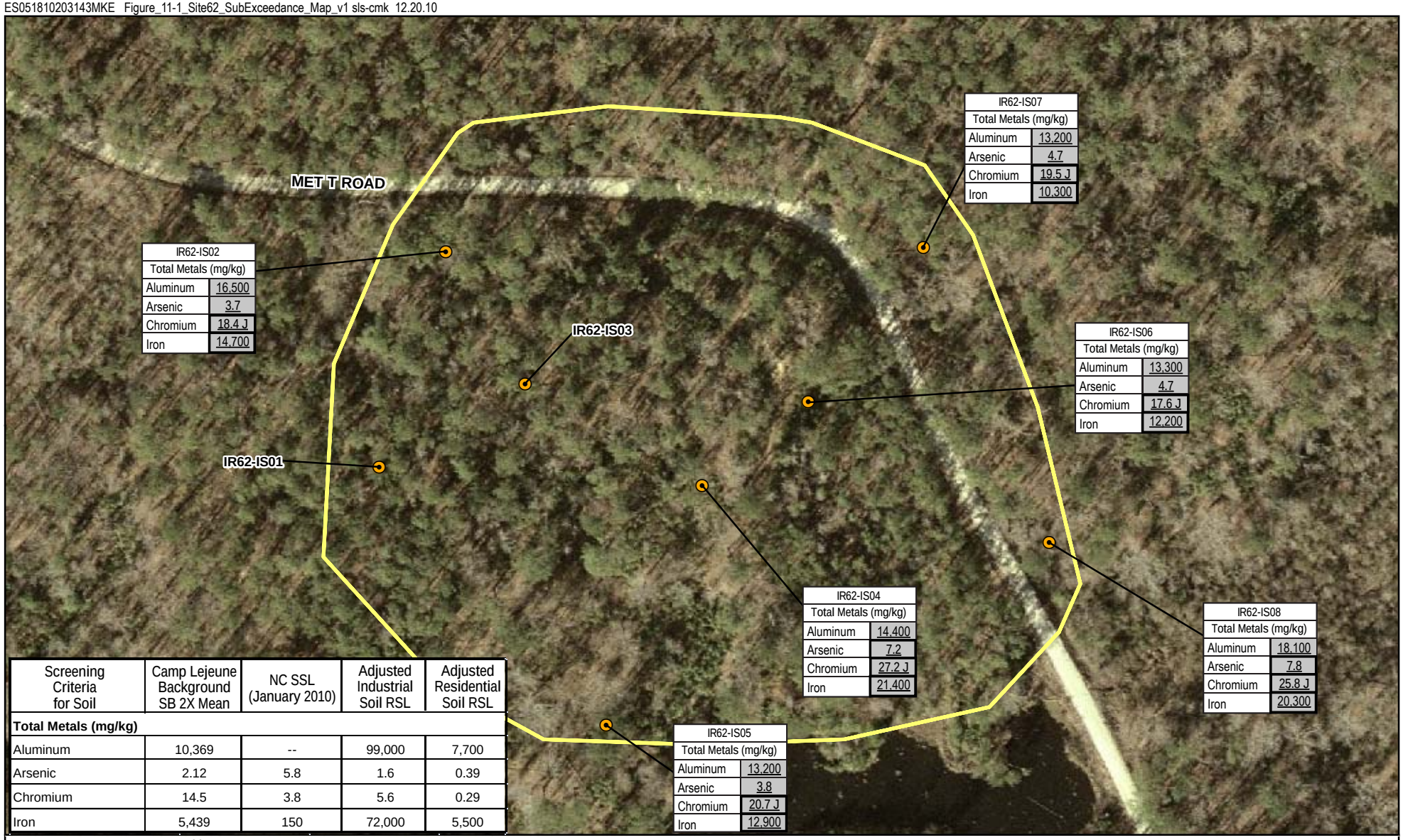

IR62-IS02	
Total Metals (mg/kg)	
Aluminum	16,500
Arsenic	3.7
Chromium	18.4 J
Iron	14,700

IR62-IS07	
Total Metals (mg/kg)	
Aluminum	13,200
Arsenic	4.7
Chromium	19.5 J
Iron	10,300

IR62-IS06	
Total Metals (mg/kg)	
Aluminum	13,300
Arsenic	4.7
Chromium	17.6 J
Iron	12,200

IR62-IS04	
Total Metals (mg/kg)	
Aluminum	14,400
Arsenic	7.2
Chromium	27.2 J
Iron	21,400

IR62-IS08	
Total Metals (mg/kg)	
Aluminum	18,100
Arsenic	7.8
Chromium	25.8 J
Iron	20,300

IR62-IS05	
Total Metals (mg/kg)	
Aluminum	13,200
Arsenic	3.8
Chromium	20.7 J
Iron	12,900

Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500

Legend
- Soil Sample Location
- Site 62

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 11-1
Site 62 - Subsurface Soil Exceedences
Confirmatory Sampling Report
MCB CamLej
North Carolina

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SECTION 12

Site 66—AMTRAC Landing Site and Storage

Site 66, the Amphibious Tractor (AMTRAC) Landing Site and Storage area is located adjacent to Gun Position 32, along the New River near Courthouse Bay and encompasses approximately 40 acres of densely vegetated woodlands, as shown on **Figure 2-15**. According to the IAS, the site was reportedly utilized for AMTRAC maintenance during training activities beginning in the 1950s; however, the exact nature of operations is unknown. Shallow depressions were observed throughout the site and are presumed to be 'foxholes' excavated by marines during training and not artifacts of burial pit activities. The site is currently utilized as an observatory for bald eagles nesting along the New River.

The eastern portion of Site 66 is relatively level, occupying an elevation of 18 to 24 ft amsl, and is bounded to the south by steep bluffs descending to the New River. The western portion of the site is incised by a west-east trending drainage feature and areas of wetland that discharge to the New River. (**Figure 2-15**).

12.1 Site Geology

The soils at the site predominantly consist of sands and clays. Isolated lenses and discontinuous layers of clayey sand, sandy clay, sand, and clay horizons with occasional silty sand lenses where observed throughout. Boring logs are presented in **Appendix A**.

Hydrogeological information for the Surficial aquifer is derived from 12 temporary monitoring wells (IR66-TW01 through IR66-TW12) installed at the site. The temporary monitoring wells were gauged prior to collecting groundwater samples (**Table 12-1)**. This data was used in conjunction with top of casing elevation survey data to produce a potentiometric surface map for the Surficial aquifer, shown on **Figure 12-1.** The water table was encountered at depths ranging from 5.55 feet BTOC (IR66-TW07) to 27.25 feet BTOC (IR66-TW12). July 2009 groundwater elevations ranged from 0.04 (IR66-TW01) to 5.69 ft amsl (IR66-TW04). A perched water table was observed within the immediate vicinity of temporary monitoring well IR66-TW09. As indicated on **Figure 12-1**, groundwater at Site 66 generally flows towards the New River and the estuary inundating a portion of the western side of Site 66. The estimated hydraulic gradients ranged from 0.005 ft/ft to 0.009 ft/ft.

12.2 Environmental Sampling and Results

Based on site history, subsurface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, and metals as described in **Section 3**. Surface soil data was not analyzed due to the amount of time that has passed since operations ceased at the site.

12.2.1 Subsurface Soil

Seventeen subsurface soil samples were collected from Site 66 and analyzed for VOCs, SVOCs, and metals. SVOCs were not detected in subsurface soil samples above regulatory criteria. VOCs and metals detected at concentrations exceeding Base Background and at least one regulatory criterion are presented on **Figure 12-2** and summarized in **Table 12-2**. **Table B-9** presents the laboratory analytical data for all subsurface soil samples collected from Site 66. The raw subsurface soil analytical results are included in **Appendix B**.

TABLE 12-2
Summary of Subsurface Soil Exceedances - Site 66

Analyte	IR66-IS02	IR66-IS03	IR66-TW-S04	IR66-IS04	IR66-IS05	IR66-TW-S06	IR66-TW-S10	IW66-TW-S03
Methylene chloride (µg/kg)	NE	NE	NE	NE	NE	53	NE	NE
Aluminum (µg/kg)	NE	10,900	NE	NE	NE	NE	NE	11,500
Arsenic (µg/kg)	**3**	**10**	**8**	**6.7**	**3.7**	**2.2**	**2.7**	**NE**
Chromium (µg/kg)	NE	**20.2 J**	**16 J**	**15.9 J**	NE	NE	NE	NE
Iron (µg/kg)	NE	16,200 J	12,700 J	12,900 J	6,040 J	NE	NE	10,200
Manganese (µg/kg)	NE	132 J	212 J	NE	NE	NE	NE	NE

Notes:
Bold Box indicates an exceedance of NC SSL
Underlined text indicated an exceedance of the Residential RSL
Bold text indicates an exceedance of the Adjusted Industrial RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background

12.2.2 Groundwater

Groundwater samples were collected from 12 temporary monitoring wells (IR66-TW01 through IR66-TW12) and analyzed for VOCs, SVOCs, and metals. SVOCs were not detected in groundwater samples at concentrations exceeding regulatory criteria. Chloroform, was detected at a concentration of 1.7µg/L, exceeding the Adjusted Tap Water RSL of 0.19 µg/L. Six metals including, aluminum, arsenic, chromium, cobalt, iron, and manganese were detected at concentrations exceeding Base Background and at least one regulatory criterion. Analytes detected at concentrations exceeding Base Background and applicable regulatory criteria are presented on **Figure 12-3** and summarized in **Table 12-3**. Laboratory analytical results from all groundwater samples collected from Site 61 are presented in **Table C-8** and the raw analytical data is presented in **Appendix C**.

TABLE 12-3
Summary of Groundwater Exceedances - Site 66

Analyte	IR66-TW01	IR66-TW02	IR66-TW03	IR66-TW06	IR66-TW07	IR66-TW08	IR66-TW09	IR66-TW10	IR66-TW12
Chloroform (µg/L)	**1.7**	NE	NE	NE	NE	NE	NE	NE	NE
Aluminum (µg/L)	NE	NE	**6,600**	**4,410 J**	NE	NE	NE	NE	NE
Arsenic (µg/L)	NE	NE	NE	NE	NE	NE	NE	NE	NE
Chromium (µg/L)	NE	NE	**16.3**	**30.2**	NE	NE	NE	NE	NE
Cobalt (µg/L)	NE	**5.4 J**	NE	NE	NE	**6.2 J**	NE	**17.2**	NE
Iron (µg/L)	NE	NE	**10,800**	**9,070**	**7,160**	**11,600**	**26,600**	**10,900**	NE
Manganese (µg/L)	NE	**220**	**220**	**420**	NE	**297**	**374**	**2,710**	NE

Notes:
Bold Box indicates an exceedance of NCGWQS
Bold text indicates an exceedance of the Adjusted Tap Water RSL
Shading indicates exceedance of Base Background
J - Analyte present, value may or may not be accurate or precise
NE – Analyte did not exceed Base Background

12.2.3 Surface Water

Surface water samples were collected from Site 66 at two separate locations (IR66-SW02 and IR66-SW03) during the July 2009 field event, and analyzed for VOCs, SVOCs, and metals. The July 2009 results indicated elevated metal concentrations above regulatory criteria, however, these concentrations were likely attributable to the sample being collected from a stagnant area with high turbidity and not indicative of potentially impacted surface water resulting from site activities. In February 2010, a second surface water sample was collected from IR66-SW02 to confirm the elevated metals concentrations detected in the July 2009 sampling event. No metals were detected at concentrations that exceeded any regulatory criteria in this sample.

Surface water analytical results were compared to North Carolina Administrative Code 15A NCAS 02B, Surface Water and Wetland Standards,(NC2B) -SW-Human Health + Water Supply, National Recommended Water Quality Criteria (NRWQC)-Human Health – Water + Organisms (standard for the consumption of water and organisms), and Adjusted Tap Water RSLs.

VOCs and SVOCs were not detected at concentrations in exceedance of the applicable regulatory criteria. Five metals were detected at concentrations exceeding Base Background and at least one other regulatory criterion and are summarized in **Table 12-4** and illustrated on **Figure 12-4**. There were no exceedances for any target analytes in the IR66-SW02 sample collected in February 2010. Surface water analytical data for Site 66 is presented in **Table F-1** and the raw analytical results are included in **Appendix F.**

TABLE 12-4
Summary of Surface Water Exceedances - Site 66

Analyte	IR66-SW02	IR66-SW03	IR66-SW02 (February 2010)
Arsenic (µg/L)	**27.4 J**	**4.6 J**	NE
Cadmium (µg/L)	**8.5 J**	NE	NE
Iron (µg/L)	**169,000 J**	**17,800**	NE
Manganese (µg/L)	**330 J**	**213**	NE

Notes:
Bold box indicates exceedance of NC2B-SW-Human Health + Water Supply
Shading indicates exceedance of NRWQC-Human Health - Water+ Organisms
Bold text indicates exceedance of Adjusted Tap Water RSLs
1 - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria
2 - NRWQC-Human Health - Water+ Organisms and NRWQC-Human Health Organisms were combined to show the most conservative criteria
NE – Analyte did not exceed any regulatory criteria
J - Analyte present, value may or may not be accurate or precise

12.2.4 Sediment

Sediment samples were collected from Site 66 at four locations (IR66-SD01 through IR66-SD04) during the July 2009 field event and analyzed for the presence of VOCs, SVOCs, and metals. The analytical data was compared to NC SSLs, and the Adjusted Residential and Industrial RSLs.

VOCs were not detected at concentrations in exceedance of the above the regulatory screening criteria. One SVOC, dibenz(a,h)anthracene was detected at a concentration of 64 µg/kg, exceeding the Adjusted Residential Soil RSL of 15 µg/kg. Four metals were detected in sediment samples collected from Site 66 at concentrations exceeding the above regulatory screening criteria including: aluminum, arsenic, chromium, and iron. A summary of the metal exceedances in sediment collected from Site 66 during the July 2009 field event is listed in **Table 12-5** and illustrated on **Figure 12-5**. **Table F-2** presents the laboratory analytical data for all sediment samples collected from Site 66 and the raw analytical results are presented in **Appendix F**.

TABLE 12-5
Summary of Sediment Exceedance - Site 66

Analyte	IR66-SD02	IR66-SD04
Dibenz(a,h)anthracene (µg/kg)	64	NE
Arsenic (mg/kg)	**4**	**2.2**
Iron (mg/kg)	7,360	NE

Notes:
Bold box indicates exceedance of NCSSL
Shading indicates exceedance of Base Background
Underlined text indicates exceedance of Adjusted Residential Soil RSL
Bold text indicates exceedance of Adjusted Industrial Soil RSL

12.3 Human Health Risk Screening Summary

A conservative HHRS evaluation was performed to provide a preliminary indication of potential risks from constituents of potential COPCs, and was used to help evaluate whether future unrestricted (i.e., residential) use of the site is acceptable based on human health risks or if the site requires further evaluation (e.g., a baseline risk assessment, additional data collection and evaluation). The HHRS was conducted in two phases and the full report is presented in **Appendix D**. The results indicated that there were no potential human health risks from exposure to subsurface soil or sediment at Site 66 but possible risks from exposure to groundwater and surface water. High levels of contaminants in surface water were determined to be from offsite contributions and not associated with Site 66. The individual constituents in groundwater were further evaluated based on possible lab contamination, attribution to high levels of turbidity in the wells, appropriate screening levels, and comparison to human nutrient levels. Based on these evaluations, no potential human health risks from exposure to any media are expected to occur.

12.4 Ecological Risk Screening Summary

An ERS was conducted by comparing subsurface soil, groundwater, surface water, and sediment analytical results to screening values intended to be protective of ecological receptors. Regarding the potential for risk, additional considerations included frequency of detection, average exposure concentration, and the potential for constituents to be unrelated to a site release (e.g., nutrients, laboratory contaminants, concentrations similar to background). No unacceptable risks were identified for populations of ecological receptors from exposure to any media at Site 66. The full ERS report is presented in **Appendix E**.

12.5 Conclusions

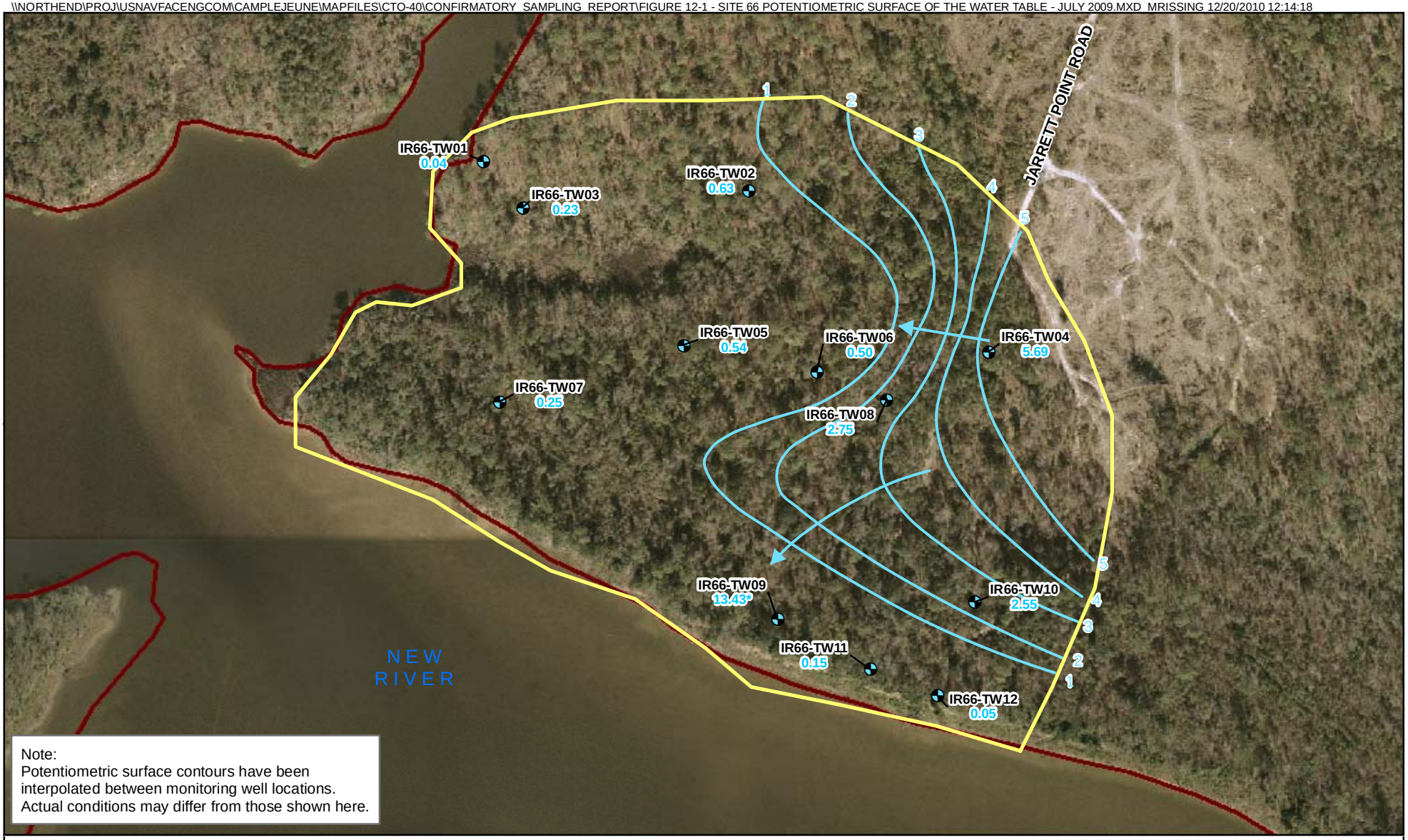
Metal concentrations in all media exceeded Base Background as well as applicable regulatory standards. Due to the clayey lithology present at Site 66, metals were assumed to be naturally occurring and human health and ecological risk screenings indicated that no unacceptable risks were posed to human or ecological receptors. Therefore, no additional investigation is recommended for Site 66, and the site should remain closed.

Table 12-1
Site 66 Groundwater Elevation Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Temporary Well ID	Date of Measurement	Top of Casing Elevation (ft amsl)	Depth to Water (ft BTOC)	Groundwater Elevation (ft amsl)
IR66-TW01	7/13/2009	11.37	11.33	0.04
IR66-TW02	7/13/2009	18.23	17.60	0.63
IR66-TW03	7/13/2009	20.43	20.20	0.23
IR66-TW04	7/12/2009	22.58	16.89	5.69
IR66-TW05	7/12/2009	10.95	10.41	0.54
IR66-TW06	7/14/2009	22.68	22.18	0.50
IR66-TW07	7/13/2009	5.80	5.55	0.25
IR66-TW08	7/12/2009	20.68	17.93	2.75
IR66-TW09	7/13/2009	27.03	13.60	13.43
IR66-TW10	7/14/2009	26.52	23.97	2.55
IR66-TW11	7/13/2009	23.18	23.03	0.15
IR66-TW12	7/12/2009	27.30	27.25	0.05

Notes:
ft amsl - feet above mean sea level
ft BTOC- feet below top of casing
Created by: Jeff Albano
Checked by: David Lubell

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\CTO-40\CONFIRMATORY_SAMPLING_REPORT\FIGURE 12-1 - SITE 66 POTENTIOMETRIC SURFACE OF THE WATER TABLE - JULY 2009.MXD MRISSING 12/20/2010 12:14:18



Legend

- Groundwater Sample Location
- Site 66 Boundary
- Installation Boundary
- 2 Potentiometric Surface contour
- Estimated direction of groundwater flow
- 0.23 Groundwater elevation (ft amsl)

* - Not used for contour development

N

0 150 300 600 Feet

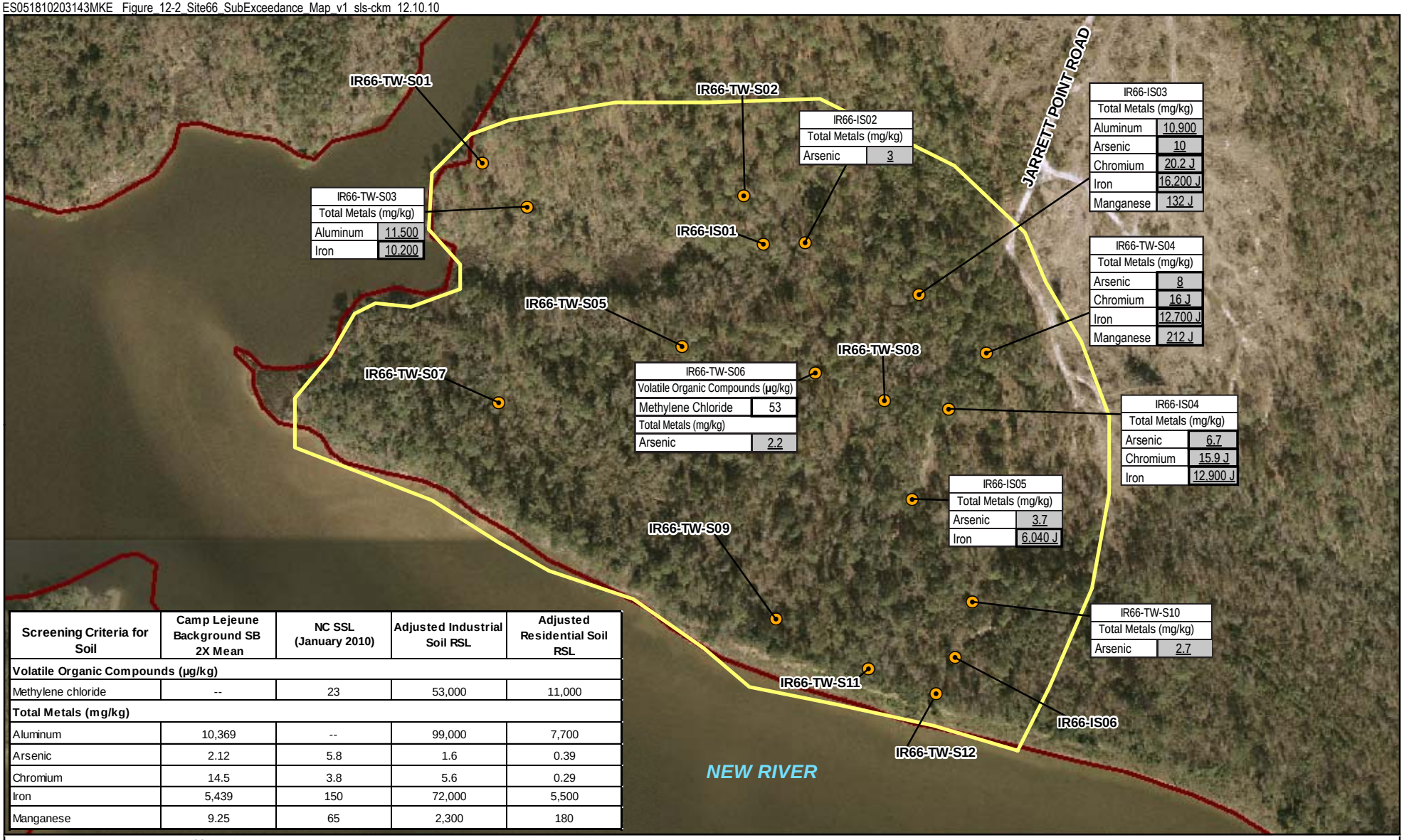
1 inch = 300 feet

Figure 12-1
Site 66 Potentiometric Map of the Water Table (July 2009)
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_12-2_Site66_SubExceedance_Map_v1 sls-ckm 12.10.10



Screening Criteria for Soil	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL
Volatile Organic Compounds (µg/kg)				
Methylene chloride	--	23	53,000	11,000
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500
Manganese	9.25	65	2,300	180

Legend
- Soil Sample Location
- Site 66 Boundary
- Installation Boundary

Notes:
Bold text indicates exceedance of Adjusted industrial Soil RSLs
Bold box indicates exceedance of NC SSLs
Shading indicates exceedance of two times the mean base background concentration for subsurface soil
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg – Micrograms per kilogram
mg/kg – Milligrams per kilogram
J – Analyte present, value may or may not be accurate or precise

N

0 150 300 600 Feet

1 inch = 300 feet

Figure 12-2
Site 66 - Subsurface Soil Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

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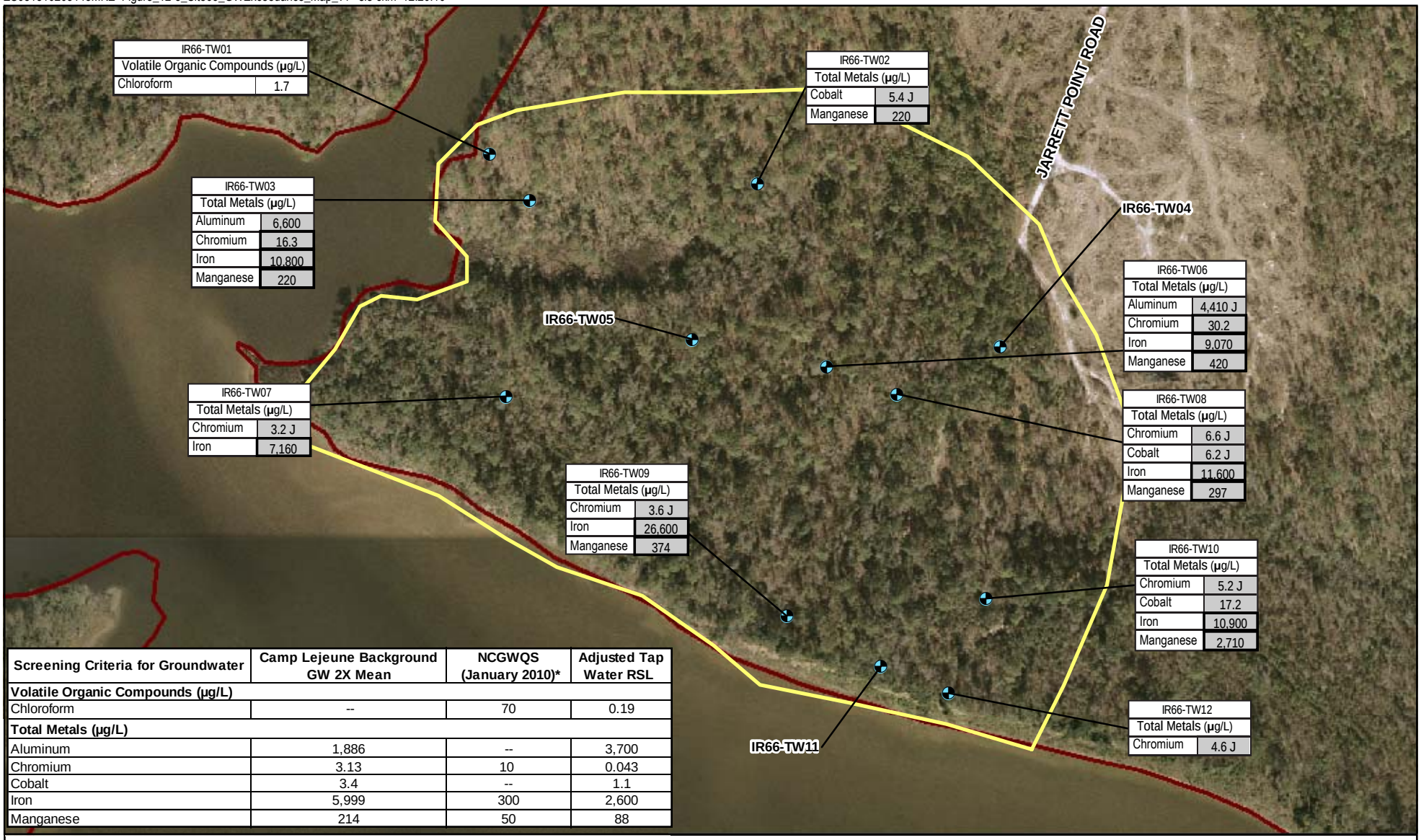
ES051810203143MKE Figure_12-3_Site66_GWExceedance_Map_v1 sls-ckm 12.20.10



Screening Criteria for Groundwater	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010)*	Adjusted Tap Water RSL
Volatile Organic Compounds (µg/L)			
Chloroform	--	70	0.19
Total Metals (µg/L)			
Aluminum	1,886	--	3,700
Chromium	3.13	10	0.043
Cobalt	3.4	--	1.1
Iron	5,999	300	2,600
Manganese	214	50	88

Legend
- Groundwater Sample Location
- Site 66 Boundary
- Installation Boundary

Notes:
Bold text indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCWQS
Shading indicates exceedance of two times the mean base background concentration for Groundwater
µg/L – Micrograms per liter
J – Analyte present, value may or may not be accurate or precise
* – NCWQS are more conservative than MCLs for all analytes considered.

N

0 150 300 600 Feet

1 inch = 300 feet

Figure 12-3
Site 66 - Groundwater Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL

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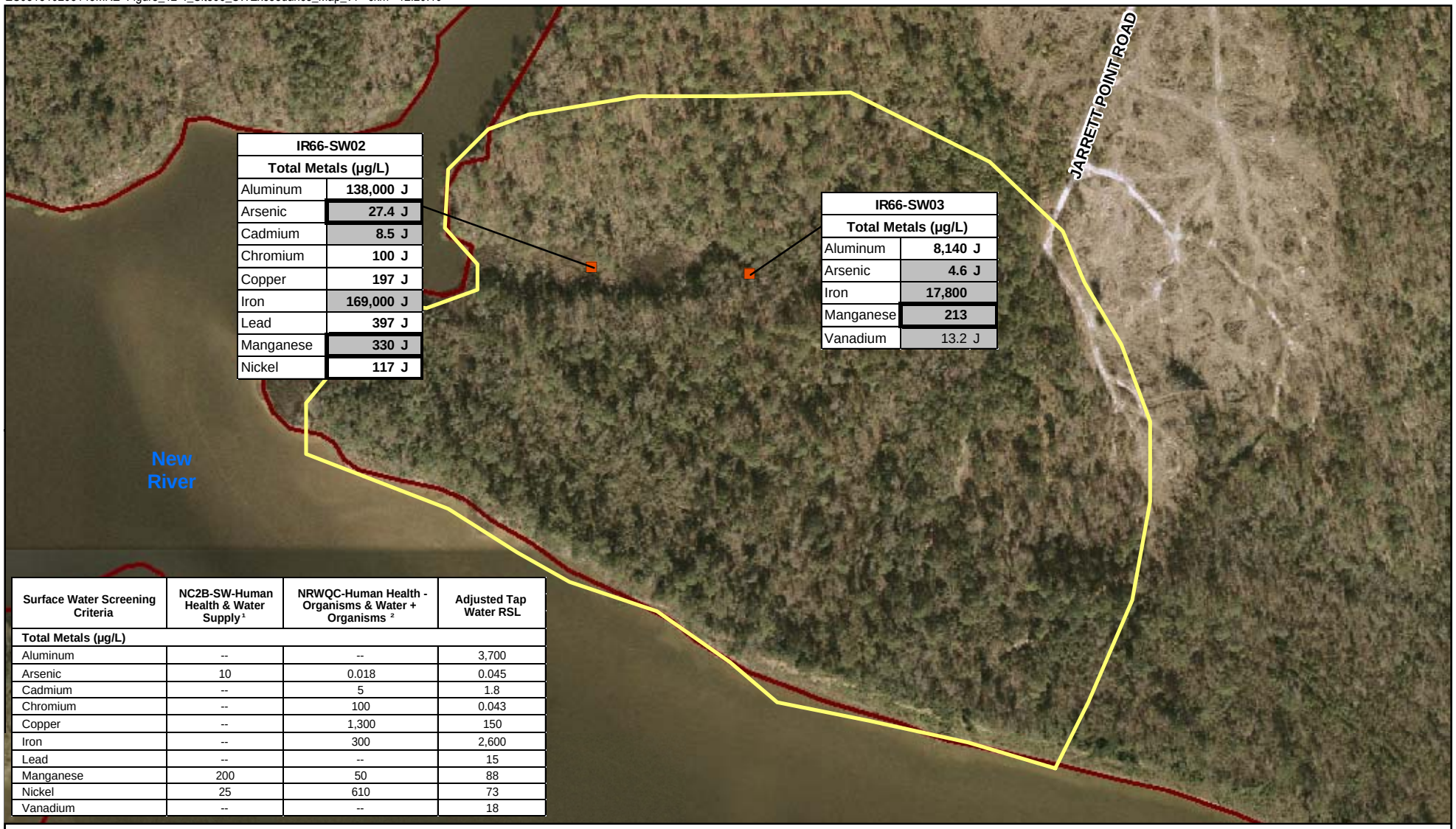


IR66-SW02	
Total Metals (µg/L)	
Aluminum	**138,000 J**
Arsenic	**27.4 J**
Cadmium	**8.5 J**
Chromium	**100 J**
Copper	**197 J**
Iron	**169,000 J**
Lead	**397 J**
Manganese	**330 J**
Nickel	**117 J**

IR66-SW03	
Total Metals (µg/L)	
Aluminum	**8,140 J**
Arsenic	**4.6 J**
Iron	**17,800**
Manganese	**213**
Vanadium	13.2 J

Surface Water Screening Criteria	NC2B-SW-Human Health & Water Supply [1]	NRWQC-Human Health - Organisms & Water + Organisms [2]	Adjusted Tap Water RSL
Total Metals (µg/L)			
Aluminum	--	--	3,700
Arsenic	10	0.018	0.045
Cadmium	--	5	1.8
Chromium	--	100	0.043
Copper	--	1,300	150
Iron	--	300	2,600
Lead	--	--	15
Manganese	200	50	88
Nickel	25	610	73
Vanadium	--	--	18

Legend

- Sediment/Surface Water Sample Location
- Site 66
- Installation Boundary

Notes:

Bold text indicates exceedance of Adjusted Tap Water RSL

Bold box indicates exceedance of NC2B-SW-Human Health + Water Supply

Shading indicates exceedance of NRWQC-Human Health - Water+ Organisms

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

J - Analyte present, value may or may not be accurate or precise

µg/L – Micrograms per liter

1 - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria

2 - NRWQC-Human Health - Water+ Organisms and NRWQC-Human Health Organisms were combined to show the most conservative criteria

N

0 150 300 600 Feet

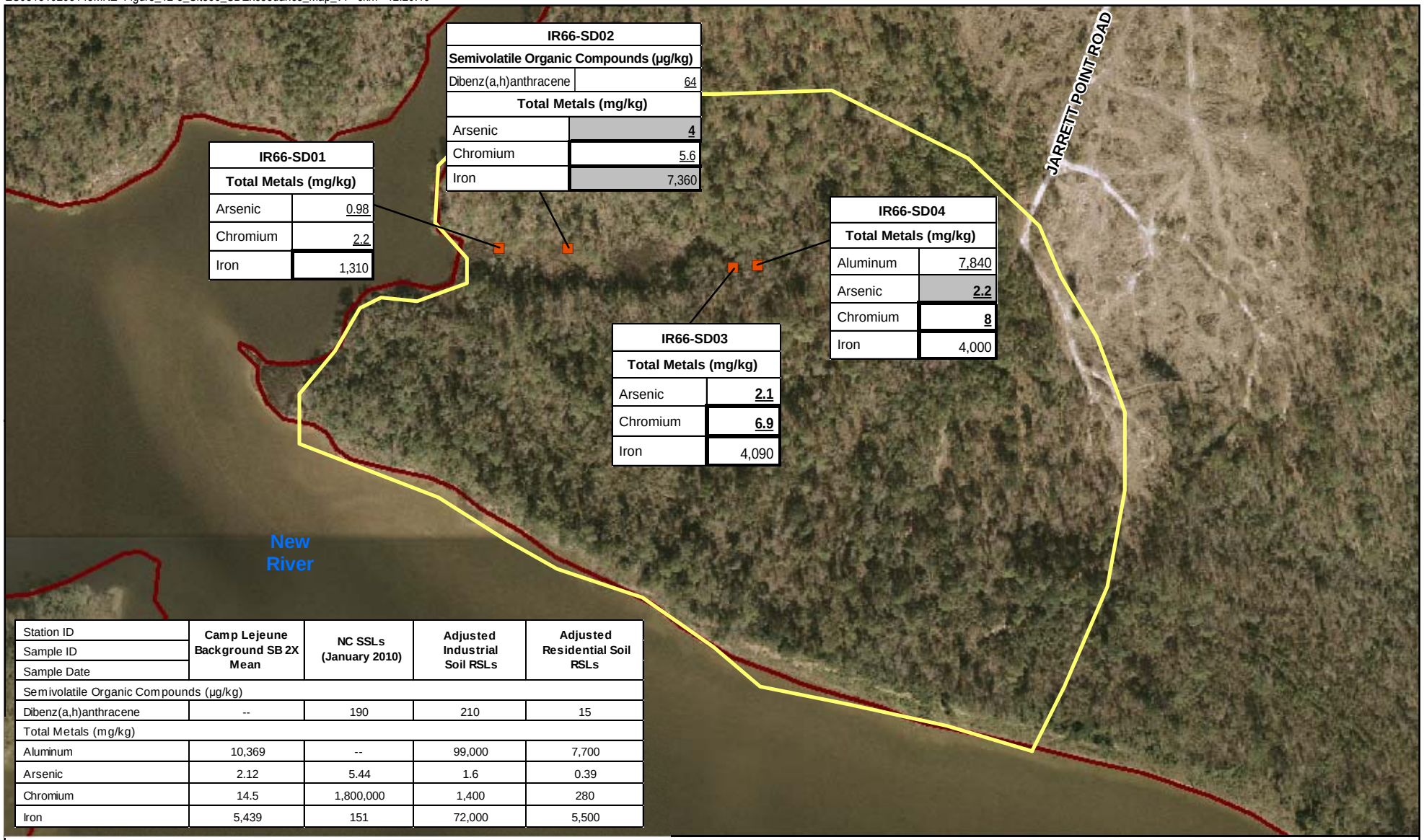
1 inch = 300 feet

Figure 12-4
Site 66 - Surface Water Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

ES051810203143MKE Figure_12-5_Site66_SDExceedance_Map_v1 ckm 12.20.10



IR66-SD02	
Semivolatile Organic Compounds (µg/kg)	
Dibenz(a,h)anthracene	64
Total Metals (mg/kg)	
Arsenic	**4**
Chromium	5.6
Iron	7,360

IR66-SD01	
Total Metals (mg/kg)	
Arsenic	0.98
Chromium	2.2
Iron	1,310

IR66-SD04	
Total Metals (mg/kg)	
Aluminum	7,840
Arsenic	**2.2**
Chromium	**8**
Iron	4,000

IR66-SD03	
Total Metals (mg/kg)	
Arsenic	**2.1**
Chromium	**6.9**
Iron	4,090

Station ID Sample ID Sample Date	Camp Lejeune Background SB 2X Mean	NC SSLs (January 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Semivolatile Organic Compounds (µg/kg)				
Dibenz(a,h)anthracene	--	190	210	15
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.44	1.6	0.39
Chromium	14.5	1,800,000	1,400	280
Iron	5,439	151	72,000	5,500

Legend

- Sediment/Surface Water Sample Location
- Site 66
- Installation Boundary

Notes:

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Bold box indicates exceedance of NC SSLs

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

mg/kg - Milligrams per kilogram µg/kg – Micrograms per kilogram

N

0 150 300 600 Feet

1 inch = 300 feet

Figure 12-5
Site 66 - Sediment Exceedances
Confirmatory Sampling Report
MCB CamLej
North Carolina

CH2MHILL.

Generated By: *Lauren Petty* Checked by: *Jeff Albano*

SECTION 13

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Appendix A
Soil Boring Logs

Boring Number: IR04-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/11/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** light brown, dry, loose, very fine grained	0	FID (ppm) w/o charcoal 0.0
	0-5	HA	100	NA				0.0 0.0 0.0
5								0.0 0.0
	5-10	DP-1	100	NA		wet		0.0 0.0 0.0
10							-10	
						End of Log	10	Collected IR4-IS01-5-6-09C from 5-6' bgs.
15								
20								

Boring Number: IR04-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/11/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** light brown, dry, loose, very fine grained	0	FID (ppm) w/o charcoal 0.0
	0-5	HA	100	NA				0.0 0.0 0.0
5								0.0 0.0 0.0
	5-10	DP-1	100	NA				0.0 0.0
10								Collected IR4-IS02-10-11-09C from 10-11' bgs.
	10-15	DP-2	100	NA		moist		0.0 0.0 0.0
15							-15	0.0
						End of Log	15	
20								

Boring Number: IR04-IS03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/11/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** brown to light brown, dry to slightly moist, loose	0	FID (ppm) w/o charcoal 0.0
	0-5	HA	100	NA				0.0 0.0 0.0
5								0.0
	5-10	DP-1	100	NA		wet		
10						End of Log	-10 10	Collected IR4-IS03-4-5-09C from 4-5' bgs.
15								
20								

Boring Number: IR04-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** light brown to grey, dry, loose	0	FID (ppm) w/o charcoal
	0-5	HA	60	NA		some clay present from 2.5-5'		0.0
5								0.0
	5-10	DP-1	60	NA				
10						End of Log	-10 10	Collected IR4-IS04-4-5-09C from 4-5' bgs.
15								
20								

Boring Number: IR04-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/11/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** brown, dry, loose	0	FID (ppm) w/o charcoal w/charcoal 0.0
	0-5	HA	100	NA		some clay 2.5-5'		361 0.0 0.0 0.0
5								0.0
	5-10	DP-1	100	NA		wet	-8	
						Silty Sand (SM0 grey, wet, dense, fine grained	8	
10							-10	Collected IR4-IS05-4-5-09C from 4-5' bgs.
						End of Log	10	
15								
20								

Boring Number: IR04-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown to grey, dry, loose, very fine grained, poorly graded	0	FID (ppm) w/o charcoal
	0-5	HA	60	NA				0.0
5								0.0
	5-10	DP-1	60	NA				
10							-10	
						End of Log	10	Collected IR4-IS06-5-6-09C from 5-6' bgs.
15								
20								

Boring Number: IR04-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown to light brown, dry, loose, poorly graded	0	FID (ppm) w/o charcoal / w/charcoal
	0-5	HA	60	NA		some clay present from 3.5-5.0'		4.4 / 0.0 1.2 / 0.0 1.0 / 0.0 0.0 0.0
5	5-10	DP-1	60	NA		color change to light grey		0.0 0.0
						Sand (SP) light grey, wet, dense, fine to very fine grained, poorly graded	-9 9	0.0
10						End of Log	-10 10	Collected IR4-IS07-5-6-09C from 5-6' bgs.
15								
20								

Boring Number: IR04-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Poorly Graded Sand (SP)** light brown, dry, loose, very fine grained some clay present from 3.5-5.0' color change to light grey	0	FID (ppm) w/o charcoal / w/charcoal 18.2 / 0.0 3.9 / 0.0 0.0 0.0 3.5 / 0.0
5	5-10	DP-1	60	NA		**Poorly Graded Sand (SP)** light grey, moist, dense, fine to very fine grained wet @ 8.5'	-7 7	0.0
10						End of Log	-10 10	Collected IR4-IS08-5-6-09C from 5-6' bgs.
15								
20								

Boring Number: IR04-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** brownt to light brown, dry to moist, loose, very fine grained	0	FID (ppm) w/o charcoal 0.0 for all depths
	0-5	HA	60	NA				
5								
	5-10	DP-1	60	NA				
10								
	10-15	DP-2	60	NA				
15								Set IR04-TW01 to 20' bgs Screen: 10-20' Sand: 8-20'
	15-20	DP-3	60	NA				
20							-20 20	

Boring Number: IR23-IS03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments: FID (ppm) w/o charcoal	w/charcoal
						Ground Surface	0		
0						**Asphalt**	0		
							-1		
						Silty Sand (SM) brown, moist, loose	1	0.0	0.0
	0-5	HA	60	NA			-3		
						Clayey Sand (SC) tan/orange, moist, loose	3	0.0	0.0
5								0.0	0.0
							-7		
	5-10	DP-1	60	NA		**Sand (SP)** White/tan, wet, loose, medium to fine grained	7		
								0.0	0.0
10							-10		
						End of Log	10	Collected IR23-IS03-09C from 7-8' bgs.	
15									
20									

Boring Number: IR23-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Concrete**	0	FID (ppm) w/o charcoal / w/charcoal
							-1	
						Silty Sand (SM) brown, slightly moist, loose	1	0.0 / 0.0
	0-5	HA	60	NA		color change to orange/tan moist		0.0 / 0.0
5								0.0 / 0.0
							-7	
						Sand (SP) tan/orange, moist, loose	7	
	5-10	DP-1	54	NA		**Silty Sand (SM)** orange/tan, moist, loose		0.0 / 0.0
						Sand (SP) moist, loose, medium to very fine grained		
							-10	
10						wet @ 8.8'	10	Collected IR23-IS04-09C from 7-8' bgs.
						No Recovery		
						End of Log		
15								
20								

Boring Number: IR23-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Concrete**	0	FID (ppm) w/o charcoal / w/charcoal
							-1	
						Silty Sand (SM) brown, slightly moist, loose	1	0.0 / 0.0
	0-5	HA	60	NA		color change to orange/tan moist		
5								0.0 / 0.0
							-7	
						Sand (SP) tan/orange, moist, loose	7	
	5-10	DP-1	48	NA		**Silty Sand (SM)** orange/tan, moist, loose		0.0 / 0.0
						Sand (SP) moist, loose, medium to very fine grained		
							-10	
10						wet @ 8.5'	10	Collected IR23-IS05-09C from 7-8' bgs.
						No Recovery		
						End of Log		
15								
20								

Boring Number: IR23-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Asphalt**	0 / -1	FID (ppm) w/o charcoal / w/charcoal
	0-5	HA	60	NA		**Silty Sand (SM)** brown, slightly moist, very loose, fine to very fine grained	1 / -3	0.0 / 0.0
						Clayey Sand (SC) tan/orange, moist, loose, fine to very fine grained	3 / -5	0.0 / 0.0
5	5-10	DP-1	48	NA		**Silty Sand (SM)** orange/tan, moist, loose, fine to very fine grained wet @ 8.5'	5 / -9	0.0 / 0.0
						No Recovery	9 / -10	
10						End of Log	10	Collected IR23-IS06-09C from 7-8' bgs.
15								
20								

Boring Number: IR23-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments: FID (ppm) w/o charcoal	w/charcoal
						Ground Surface	0		
0						**Concrete**	0 / -1		
	0-5	HA	60	NA		**Silty Sand (SM)** brown, slightly moist, loose, fine to very fine grained	1 / -3	0.0	0.0
						Clayey Sand (SC) brown, moist, loose	3 / -6	0.0	0.0
5								0.0	0.0
	5-10	DP-1	60	NA		**Silty Sand (SM)** orange/tan, moist, loose, fine to very fine grained	6 / -9	0.0	0.0
						wet @ 9'	9		
10						**No Recovery**	-10 / 10		
						End of Log		Collected IR23-IS07-09C from 7-8' bgs.	
15									
20									

Boring Number: IR23-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-23
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/13/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Concrete**	0 -1	FID (ppm) w/o charcoal
						Silty Sand (SM) brown, slightly moist, very loose	1 -2	
	0-5	HA	60	NA		**Sandy Clay (CL)** brown/tan, moist, soft	2 -4	
						Clayey Sand (SC) brown to tan, moist, loose	4 -6	
5						**Silty Sand (SM)** tan/orange, moist, loose	6	
	5-10	DP-1	48	NA		fine to medium grained, trace silt wet @ 8.5'	-9	
						No Recovery	9 -10	
10						End of Log	10	Collected sample IR23-IS08-09C from 7-8' bgs.
15								
20								

Boring Number: IR04-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** brown, dry, loose some clay from 1.5-15.0' color change to grey, moist	0	FID (ppm) w/o charcoal / w/charcoal 9.7 / 0.0 0.0 24.4 / 11.7 101 / 24.1
	0-5	HA	60	NA				
5						wet @ 5'		67 / 23.2 0.0
	5-10	DP-1	57.6	NA				
10								
	10-15	DP-2	60	NA				
15						End of Log	-15 15	Set IR04-TW02 to 15' bgs Screen: 5-15' Sand: 3-15'
20								

Boring Number: IR04-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-04
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Poorly Graded Sand (SP)** brown, dry, loose	0	FID (ppm) w/o charcoal
	0-5	HA	60	NA		some clay from 2.0-5.0' color change to light grey		0.0 for all depths
5						moist		
	5-10	DP-1	60	NA			-9	
						Silty Sand (SM) light grey, wet, dense, fine grained, poorly graded	9	
10	10-15	DP-2	60	NA			-15	
15						**No Recovery**	15	
	15-17	DP-3	0	NA			-17	
						End of Log	17	IR04-TW03 set to 17' bgs Screen: 7-17' Sand: 5-17'
20								

CH2MHILL

Well Number: IR38-IS01

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
0						Ground Surface	0.0	
	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, very loose	0.0 -3.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm
						SC - Clayey Sand tan, very moist, fine to very fine grained, loose	3.0 -5.0	FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	100	N/A		**SP - Sand** tan, moist, very moist at 10 ft bgs, fine grained, loose	5.0 -10.0	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9) - 0.0 ppm FID (9-10) - 0.0 ppm
10						**End of Boring at 10 ft bgs**	10.0	Collected IR38-IS01-6-7-10A for metals, SVOCs, and VOCs
15								
20								

CH2MHILL

Well Number: IR38-IS02

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, very loose	0.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
						SC - Clayey Sand tan, very moist, loose	-2.5 2.5	
5	DP-1	MC	90	N/A		**SP - Sand** tan, moist, very moist at 9.5 ft bgs, fine grained, loose	-5.5 5.5	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9) - 0.0 ppm
						No Recovery	-9.5 9.5	FID (9-9.5) - 0.0 ppm
10						**End of Boring at 10 ft bgs**		Collected IR38-IS02-6-7-10A for metals, SVOCs, and VOCs
15								
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CH2MHILL

Well Number: IR38-IS03

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, very loose	0.0 -3.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm
						SC - Clayey Sand tan, very moist, fine to very fine grained, loose	3.0 -5.0	FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	70	N/A		**SP - Sand** tan, moist, fine grained, loose	5.0 -8.5	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm
						No Recovery	8.5 -10.0	FID (8-8.5) - 0.0 ppm
10						**End of Boring at 10 ft bgs**	10.0	Collected IR38-IS03-6-7-10A and IR38-IS03D-6-7-10A for metals, SVOCs, and VOCs
15								
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CH2MHILL

Well Number: IR38-IS04

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -3.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm
						SC - Clayey Sand tan, moist, fine to very fine grained, loose	3.0 -5.3	FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	90	N/A		**SP - Sand** tan, moist, very moist at 9 ft bgs, fine grained, loose	5.3 -9.5	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9.5) - 0.0 ppm
10						**No Recovery**	9.5	
						End of Boring at 10 ft bgs		Collected IR38-IS04-6-710A, IR38-IS04MS-6-7-10A, and IR38-IS04SD-6-7-10A for metals, SVOCs, and VOCs
15								
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CH2MHILL

Well Number: IR38-IS04

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -3.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm
						SC - Clayey Sand tan, moist, fine to very fine grained, loose	3.0 -5.3	FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	90	N/A		**SP - Sand** tan, moist, very moist at 9 ft bgs, fine grained, loose	5.3 -9.5	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9.5) - 0.0 ppm
10						**No Recovery**	9.5	
						End of Boring at 10 ft bgs		Collected IR38-IS04-6-710A, IR38-IS04MS-6-7-10A, and IR38-IS04SD-6-7-10A for metals, SVOCs, and VOCs
15								
20								

CH2MHILL

Well Number: IR38-IS05

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -2.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm
						SC - Clayey Sand tan, moist, fine to very fine grained, loose	2.0 -4.5	FID (2-3) - 0.0 ppm FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	93	N/A		**SP- Sand** tan, moist, very moist at 9 ft bgs, fine grained, loose	4.5 -9.6	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9) - 0.0 ppm FID (9-9.6) - 0.0 ppm
10						**No Recovery** **End of Boring at 10 ft bgs**	9.6	Collected IR38-IS05-6-7-10A for metals, SVOCs, and VOCs
15								
20								

CH2MHILL

Well Number: IR38-IS06

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -3.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm
						SC - Clayey Sand tan, moist, fine to very fine grained, loose	3.0 -5.0	FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	100	N/A		**SP - Sand** tan, moist, very moist at 9.5 ft bgs, fine grained, loose	5.0 -10.0	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9) - 0.0 ppm FID (9-10) - 0.0 ppm
10						**End of Boring at 10 ft bgs**	10.0	Collected IR38-IS06-6-7-10A for metals, SVOCs, and VOCs
15								
20								

CH2MHILL

Well Number: IR38-IS07

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -2.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm
						SC - Clayey Sand tan, moist, very fine to fine grained, loose	2.0 -4.5	FID (2-3) - 0.0 ppm FID (3-4) - 0.0 ppm
5	DP-1	MC	70	N/A		**SP - Sand** tan, moist, fine grained, loose	4.5 -8.5	FID (4-5) - 0.0 ppm FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-8.5) - 0.0 ppm
						No Recovery	8.5 -10.0	
10						**End of Boring at 10 ft bgs**	10.0	Collected IR38-IS07-6-7-10A for metals, SVOCs, and VOCs
15								
20								

CH2MHILL

Well Number: IR38-IS08

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: Direct Push Technology
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/19/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm FID (2-3) - 0.0 ppm FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
						SC - Clayey Sand tan, moist, very fine to fine grained, loose	-3.5 3.5	
5	DP-1	MC	80	N/A		**SP - Sand** tan, moist, very moist at 9 ft bgs, fine grained, loose	-5.3 5.3	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm FID (8-9) - 0.0 ppm
						No Recovery	-9.0 9.0	
10						**End of Boring at 10 ft bgs**	-10.0 10.0	Collected IR38-IS08-6-7-10A for metals, SVOCs, and VOCs
15								
20								

Well Number: IR38-MW01

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: DPT/HSA
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/18/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0						**Top Soil** black and moist	0.0	
						SP - Sand tan, very moist, fine grained, loose		FID (0-2) - 0.0 ppm
	HA-1	HA	N/A	N/A				FID (2-5) - 0.0 ppm
5								FID (5-8) - 0.0 ppm
	DP-1	MC	63	N/A			-8.2	
						No Recovery	8.2	
10							-10.0	
						SP - Sand tan, wet, fine grained, loose	10.0	FID (10-12) - 0.0 ppm
	DP-2	MC	80	N/A			-14.0	FID (12-15) - 0.0 ppm
						SC - Clayey Sand red to tan, wet, fine to very fine grained, loose	14.0 -15.0	
15						**End of Boring at 15 ft bgs**	15.0	
								Well installed using HSA. Set IR38-MW01 to 15 ft bgs. Screened 15' - 5' bgs, 0.01" machine slot PVC screen, 2" PVC riser, sand from 15' - 3' bgs (4 bags, #3 sand)
20								

CH2MHILL

Well Number: IR38-MW02

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: DPT/HSA
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/18/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, very loose	0.0 -3.0	FID (0-3) - 0.0 ppm
						SC - Clayey Sand tan, very moist, loose	3.0 -6.5	FID (3-5) - 0.0 ppm FID (5-7) - 0.0 ppm
5	DP-1	MC	80	N/A		**SP - Sand** tan, moist, fine grained	6.5 -9.0	FID (7-9) - 0.0 ppm
						No Recovery	9.0 -10.0	
10	DP-2	MC	80	N/A		**SP - Sand** tan, moist, wet at 11 ft bgs, fine grained	10.0 -14.0	FID (10-14) - 0.0 ppm
						No Recovery	14.0 -15.0	
15		N/A	N/A	N/A		**SP - Sand** tan, moist, fine grained	15.0 -18.0	FID (15-18) - 0.0 ppm Well installed using HSA. Set IR38-MW02 to 18 ft bgs. Screened 18' - 8' bgs, 0.01" machine slot PVC screen, 2" PVC riser, sand from 18' - 6' bgs (6 bags, #3 sand)
						End of Boring at 18 ft bgs	18.0	
20								

CH2MHILL

Well Number: IR38-MW03

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: DPT/HSA
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/18/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
						Ground Surface	0.0	
0	HA-1	HA	N/A	N/A		**SP - Sand** tan, moist, fine grained, loose	0.0 -2.0	FID (0-1) - 0.0 ppm FID (1-2) - 0.0 ppm
						SC - Clayey Sand tan, moist, fine grained to very fine grained, loose	2.0 -5.3	FID (2-3) - 0.0 ppm FID (3-4) - 0.0 ppm FID (4-5) - 0.0 ppm
5	DP-1	MC	60	N/A		**SP - Sand** tan, very moist, fine to very fine grained, loose	5.3 -8.0	FID (5-6) - 0.0 ppm FID (6-7) - 0.0 ppm FID (7-8) - 0.0 ppm
						No Recovery	8.0 -10.0	
10	DP-2	MC	50	N/A		**SP - Sand** tan, very moist, wet at 10.4 ft bgs, fine to very fine grained, loose	10.0 -12.5	FID (10-11) - 0.0 ppm FID (11-12) - 0.0 ppm FID (12-12.5) - 0.0 ppm
						No Recovery	12.5 -15.0	
15	DP-3	MC	66	N/A		**SP - Sand** tan, very moist, fine to very fine grained, loose	15.0 -17.0	FID (15-16) - 0.0 pmm FID (16-17) - 0.0 ppm
						No Recovery	17.0 -18.0	Well installed using HSA. Set IR38-MW03 to 18 ft bgs. Screened 18' - 8' bgs, 0.01" machine slot PVC screen, 2" PVC riser, sand from 18' - 6' bgs (5 bags, #3 sand)
20						**End of Boring at 18 ft bgs**	18.0	

Boring Number: IR42-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-2	HA	24	NA		**Organic Soil (OL)** black, slightly moist, loose, 50% roots/pine needle/ organic debris	0 -1	FID (ppm) w/o charcoal: 3.7 w/charcoal: 0.0 448 328
						Sandy Clay (CL) black, wet, stiff to soft	1 -2 2	
						End of Log		
5								Collected IR42-IS01-1-2-09C from 1-2' bgs.
10								
15								
20								

Boring Number: IR42-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sandy Clay (CL)** brown, slightly moist, medium stiff to stiff	0 -2	FID (ppm) w/o charcoal 0.0 w/charcoal 0.0 330 194 4761 2500
						Silty Sand (SM) black, wet, dense	2 -4	
						Organic Soil (OL) brown, wet, very soft	4 -6	
5	5-10	DP-1	36	NA		**No Recovery**	6 -8	Collected IR42-IS02-2-3-09C from 2-3' bgs.
						Silty Sand (SM) grey, wet, dense	8 -10	
10						End of Log	10	
15								
20								

Boring Number: IR42-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sandy Clay (CL)** brown, slightly moist, soft, very fine grained sand color change to black, becoming moist	0 -4	FID (ppm) w/o charcoal / w/charcoal 4.8 / 0.0 1.3 / 0.0 50.1 / 16.6
						Organic Soil (OL) black, wet, very soft, roots common up to 1" thick	4 -5	4570 / 1367
5						End of Log	5	
10								Collected IR42-IS04-2-3-09C from 2-3' bgs.
15								
20								

Boring Number: IR42-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** brown, slightly moist, loose	0 -1	FID (ppm) w/o charcoal: 3.6 w/charcoal: 0.0
						Silty Sand (SM) dark brown, moist, dense	1 -2	0.4 w/charcoal: 0.0 0.0
						Sandy Clay (CL) black, moist, soft, 10% roots	2 -3	0.0
						Organic Soil (OL) brown, wet, very soft	3 -5	
5						End of Log	5	

Collected IR42-IS05-2-3-09C from 2-3' bgs.

10

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Boring Number: IR42-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/8/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sandy Clay (CL)** brown, slightly moist, soft	0	FID (ppm) w/o charcoal / w/charcoal 20.2 / 0.0 0.8 / 0.0
	0-4	HA	48	NA		**Sand (SP)** grey, slightly moist, loose, poorly graded	-2 2	4.0 / 0.0 1.0 / 0.0
						End of Log	-4 4	
5								Collected IR42-IS06-3-4-09C from 3-4' bgs.
10								
15								
20								

Boring Number: IR42-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/8/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, dry, loose, poorly graded	0 -1	FID (ppm) w/o charcoal w/charcoal 20.2 0.0
						Organic Silt (OL) black, slightly moist, loose	1	1.3 0.0 65 2.0
	0-5	HA	60	NA		wet @ 3' bgs		0.0
5								0.0
	5-10	DP-1	60	NA				Collected IR42-IS07-2-3-09C from 2-3' bgs.
						Sandy Clay (CL) grey, wet, soft	-8 8 -10	
10						End of Log	10	
15								
20								

Boring Number: IR42-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-3	HA	36	NA		**Sand (SP)** brown, slightly moist, loose, poorly graded	0 -1	FID (ppm) w/o charcoal w/charcoal 0.0 0.0
						Silty Sand (SM) dark brown, moist, medium dense	1 -2	0.0 0.0
						Sandy Clay (CL) grey, wet, very stiff, very fine grained	2 -3	0.0 0.0
						End of Log	3	
5								Collected IR42-IS08-1-2-09C from 1-2' bgs.
10								
15								
20								

Boring Number: IR42-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-42
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: D. Miller/KNV
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sandy Clay (CL)** olive brown, moist, soft, very fine grained sand, fill material black gravel up to 1/4"	0	FID (ppm) w/o charcoal / w/charcoal 29.4 / 0.8 474 / 180 2422 / 577
						Organic Soil (OL) brown, wet, very soft, roots common	-3 3	6975 / 5550
5	5-10	DP-1	60	NA				0.0
10						End of Log	-10 10	
15								Set IR42-TW02 to 11.5' bgs Screen: 1.5-11.5' Sand: 0-11.5'
20								

Boring Number: IR53-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Clayey Sand (SC)** light tan, dry, loose, fine grained	0 -1	FID (ppm) w/o charcoal w/charcoal 2.0 0.0
	0-6	HA	72	NA		**Sand (SP)** light grey/black, loose, very fine grained, trace clay trace silt	1 -4	10.6 1.8
5						**Clayey Sand (SC)** black, slightly moist, some roots/wood fragments wet, very fine grained	4 -6	879 573.7 Water @ 7' bgs
						No Recovery	6 -7	348.2 169.1
	6-10	DP-1	38	NA		**Clayey Sand (SC)** same as 4-6'	7 -9	
10						**Sand (SP)** grey, wet, medium dense, very fine grained, trace clay	9 -10 10	Collected sample IR53-IS01-4-5-09C from 1-2' bgs
						End of Log		
15								
20								

Boring Number: IR53-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Clayey Sand (SC)** brown to dark tan, dry, dense	0 -2	FID (ppm) w/o charcoal w/charcoal 0.0
	0-5	HA	60	NA		**Sandy Clay (CL)** grey with orange, dry, very stiff	2 -3	0.4
						Clayey Sand (SC) tan with orange, loose	3 -4	1.5 0.0
						Sand (SP) very light grey, moist, sugary texture, loose, fine grained	4 -6	0.5
5						**No Recovery**	6	Water @ 6' bgs
	5-10	DP-1	55	NA		**Silty Sand (SM)** light grey with orange, wet, medium dense	-8	0.2
						Clay (CL) dark grey to black, wet, loose, medium plasticity	8 -10	79.8 36.8
10						End of Log	10	Collected sample IR53-IS02-3.5-4.5-09C from 3.5-4.5' bgs
15								
20								

Boring Number: IR53-IS03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/8/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, dry, trace silt, very fine grained	0	FID (ppm) w/o charcoal w/charcoal 0.0
						Clayey Sand (SC) tan/orange, dry to moist, dense, clay content increases with depth		0.2
	0-5	HA	60	NA				1.4 0.0
								0.0
5						**Sandy Clay (CL)** grey/orange, moist, hard, very fine grained	-5 5	0.0
								0.9 0.0
	5-10	DP-1	55	NA				
						Clayey Sand (SC) grey/orange, wet, some silt, very fine grained	-8 8	Water @ 8' bgs
10						End of Log	-10 10	Collected sample IR53-IS03-6-7-09C from 6-7' bgs
15								
20								

Boring Number: IR53-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** light tan, dry to slightly moist, loose, very fine grained	0 -4	FID (ppm) w/o charcoal w/charcoal 0.0 0.2
						Sand (SP) light grey, moist to wet, medium dense, very fine grained	4 -5	1.1
5	5-10	DP-1	52	NA		**No Recovery**	5	
						Sand (SP) same as 4-5'	-7	
						Clayey Sand (SC) grey with orange, wet, medium dense, very fine grained, trace silt	7 -8	Water @ 7' bgs 0.0
						Sand (SP) grey to orange, wet, dense, fine to coarse grained	8 -10	0.0
10						**Clay (CL)** grey, wet, very fine grained	10	Collected sample IR53-IS04-4-5-09C and ms/msd from 4-5' bgs.
						End of Log		
15								
20								

Boring Number: IR53-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/8/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** orangish brown, slightly moist, trace clay, very fine grained	0	FID (ppm) w/o charcoal / w/charcoal 0.0 / 0.2
	0-5	HA	60	NA				8.1 / 0.0 9.0 / 0.0 6.0 / 0.0
5						**No Recovery**	-5 5	3.4 / 0.0
						Sandy Clay (CL) grey with orange, moist, very hard	-6 6	
	5-10	DP-1	52	NA				1.0 / 0.0
						Clayey Sand (SC) light grey with some orange, dense, little silt, fine to very fine grained	-9 9	1.7 / 0.1 Water @ 9' bgs
10						End of Log	-10 10	Collected sample IR53-IS05-2-3-09C from 2-3' bgs.
15								
20								

Boring Number: IR53-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/8/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** dark tan/grey, moist, trace silt, very fine grained, loose	0	FID (ppm) w/o charcoal / w/charcoal 1.2 / 0.0 1.7 / 0.0 2.4 / 0.5
						Sandy Clay (CL) grey with orange, moist, very hard, very fine grained	-4 4	2.1 / 0.0 3.6 / 0.0 3.3 / 0.0
5	5-10	DP-1	52	NA		**Sand (SP)** orange/red, wet, medium dense, fine to coarse grained with few larger fragments (>3 mm)	-7 7	Water @ 7.5' bgs 4.0 / 0.1
						Clay (CL) grey, wet, hard, very fine grained, high plasticity		2.5 / 0.0
10						**Silty Sand (SM)** grey with orange, wet, dense, trace clay	-10 10	Collected sample IR53-IS06-5-6-09C from 5-6' bgs.
						End of Log		
15								
20								

Boring Number: IR53-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Clayey Sand (SC)** grey with orange, moist, very dense, very fine to fine grained	0	FID (ppm) w/o charcoal / w/charcoal
								6.6 / 0.0
								3.0 / 0.6
	0-5	HA	60	NA				6.4 / 0.0
						Sandy Clay (CL) grey with orange, moist, very stiff, very fine grained	-3 3	3.6 / 0.0
5								
	5-10	DP-1	60	NA			-8 8	Water @ 7.5' bgs
						Silty Sand (SM) grey with orange, wet, dense, fine to coarse grained		4.1 / 0.0
10						End of Log	-10 10	Collected sample IR53-IS07-1-2-09C from 1-2' bgs
15								
20								

Boring Number: IR53-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/8/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** dark brown, dry, loose, some roots	0	FID (ppm) w/o charcoal w/charcoal 0.0 0.0 0.0 0.0
						Sandy Clay (CL) grey/orange, moist, very hard, sand decreases with depth	-4 4	
5	5-10	DP-1	55	NA				0.0
						Clayey Sand (SC) grey, wet, dense, very fine grained	-8 8	Water @ 8' bgs Collected sample IR53-IS08-7-8-09C from 7-8' bgs.
10						End of Log	-10 10	
15								
20								

Boring Number: IR53-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Silty Sand (SM)** brown, slightly moist, some clay, some organic matter	0 -1	FID (ppm) w/o charcoal w/charcoal 2.8 0.0
	0-5	HA	60	NA		**Clayey Sand (SC)** tan, slightly moist, medium dense, fine grained, increasing clay and density with depth color change to dark brown color change to grayish brown	1 -4	6.3 0.6 18.3 2.6 8.9 1.5
						Sandy Clay (CL) grey, wet, very dense, very fine grained	4 -5	Water @ 4' bgs 3.5 0.2
5	5-10	DP-1	60	NA		**Silty Sand (SM)** grey, wet, loose, very fine grained	5 -8	
						Silty Sand (SM) dark grey, wet, medium dense, fine grained, little wood @ 8.5' color change to light grey	8 -11	
10	10-13	DP-2	36	NA		**Clayey Sand** light grey, wet, medium dense, very fine to medium grained, roots from 10.5-11'	11 -13	
						End of Log	13	Set IR53-TW01 to 13' bgs Screen: 3-13' Sand: 3-13' Bentonite: 0-3'
15								
20								

Boring Number: IR53-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand/Peat (Pt)**	0	FID (ppm) w/o charcoal
							-1	0.6
						Sandy Clay (CL) gray with orange, moist, very stiff, very fine grained	1	0.6
	0-5	HA	60	NA				0.0
								0.9
							-4	
						Clay (CL) same as 1-4' less sand	4	2.7
5								
							-7	
	5-10	DP-1	60	NA		**Silty Sand (SM)** grey, wet, medium dense, fine grained	7	Water @ 7.5' bgs
								22.4
							-10	
10						**No Recovery**	10	
	10-14	DP-2	0	NA				
							-14	
						End of Log	14	Set IR53-TW02 to 14' bgs Screen:4-14' Sand: 4-6' Bentonite: 0-4'
15								
20								

Boring Number: IR53-TW03R

Client: NAVFAC
Project: CTO-040 LSA Sites/Site53
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM Environmental Services
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" Macrocore
Logged by: J. Albano/CLT
Start/Finish Date: 2/16/2010

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**SP - Sand** grey, moist, very fine to fine grained, loose	0 -2	
	HA-1	HA	N/A	N A		**SC - Clayey Sand** tan, moist, fine grained to very fine grained, loose	2 -4	FID (0-5) - 0.0 ppm
						CL - Sandy Clay tan, moist, soft, meduim plasticity, cohesive	4 -7	
5								
	DP-1	MC	100	N A		**SC - Clayey Sand** tan, moist, fine to very fine grained, loose	7 -8	FID (5-10) - 0.0 ppm
						CL - Clay tan, medium plasticity, very fine to fine grained, stiff, cohesive, trace sand	8 -10	
10								
	DP-2	MC	100	N A		**SC - Clayey Sand** tan, moist, fine to very fine grained, loose	10 -12	
						CL - Clay tan, medium plasticity, very fine to fine grained, stiff, cohesive, trace sand	12 -14	FID (10-15) - 0.0 ppm
						SC - Clayey Sand brown, wet, very fine to fine grained, loose	14 -18	
15								
	DP-3	MC	100	N A				FID (15-20) - 0.0 ppm
						SP - Sand grey, wet, fine to very fine grained, meduim dense	18 -20	
20						**End of Boring at 20 ft bgs**	20	Set IR53-TW03R to 13' bgs. Screen: 3-13' Sand:
25								

CH2MHILL

Boring Number: IR55-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** dark brown, dry, loose, some organic matter	0 -1	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Sand (SP)** grey with orange, moist, loose, very fine to fine grained, trace clay	1 -5	
5						**No Recovery**	5 -8	
	5-10	DP-1	30	NA		**Sand (SP)** same as 1-5' but wet	8 -10	Water @ 8.5' bgs
10						End of Log	10	Collected sample IR55-IS01-7-8-09C from 7-8' bgs
15								
20								

CH2MHILL

Boring Number: IR55-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-6	HA	72	NA		**Sand (SP)** gray, dry, loose, fine grained	0	FID (ppm) w/o charcoal w/charcoal 0.5 2.5 0.0 3.0 0.0 2.5 0.0 2.5 0.4 2.6
5							-6	Water @ 6' bgs
						End of Log	6	Collected sample IR55-IS02-4-5-09C from 4-5' bgs
10								
15								
20								

CH2MHILL

Boring Number: IR55-IS03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** reddish brown, dry, loose, some organic matter	0	FID (ppm) w/o charcoal w/charcoal 1.6 3.1 0.0
	0-5.5	HA	60	NA		**Sand (SP)** grey with orange staining, moist to wet, loose, sugary texture	-2 2	0.3 0.0 0.0
5						**No Recovery**	-5 5	Water @ 5' bgs
						End of Log		
								Collected sample IR55-IS03-1-2-09C from 1-2' bgs
10								
15								
20								

CH2MHILL

Boring Number: IR55-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** tan/orange, dry, loose, fine to medium grained	0 -3	FID (ppm) w/o charcoal w/charcoal 4.2 1.7 0.0 1.8 0.0
						Sandy Clay (CL) grey with orange, moist to wet, stiff to very stiff, very fine grained	3 -5	7.2 0.0 140.2
5						End of Log	5	Water @ 4.5' bgs Collected sample IR55-IS04-3-4-09C from 3-4' bgs
10								
15								
20								

CH2MHILL

Boring Number: IR55-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, dry, loose, fine grained, some organic matter	0	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Sand (SP)** greyish tan, moist to wet, loose to medium dense, very fine to fine grained		2.6 0.0 2.0 0.0 2.5 0.0 3.0 0.0
5						End of Log	-5 5	Water @ 4.5' bgs Collected sample IR55-IS05-3-4-09C @ 0920
10								
15								
20								

CH2MHILL

Boring Number: IR55-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: D. Lubell/RDU
Start/Finish Date: 7/13/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, moist, fine grained, trace small gravel and organics	0 / -1	FID (ppm) w/o charcoal w/charcoal 0.0
						Sand (SP) brown, moist, fine grained, loose, some clay	1 / -2	0.2
	0-5	HA	60	NA		**Clayey Sand (SC)** brown, moist, loose	2 / -3	0.3
						Sandy Clay (CL) tan/light brown, moist, soft, some fine grained sand, low plasticity, petrol odor wet @ 4.5'	3	98.4 18.7
5						End of Log	-5 / 5	Water @ 4.5' bgs
								Collected sample IR55-IS06-3-4-09C from 3-4' bgs.
10								
15								
20								

Boring Number: IR55-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, dry, loose, very fine grained	0	FID (ppm) w/o charcoal w/charcoal 1.9 0.3 85 38
							-2	
	0-5	HA	60	NA		**Sandy Clay (CL)** gray with orange, moist to wet, stiff, sand decreases with depth	2	99.9 46.7 Water @ 4' bgs
5							-5	
						End of Log	5	Collected sample IR55-IS07-3-4-09C from 3-4' bgs.
10								
15								
20								

Boring Number: IR55-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** orangeish tan, dry, loose, very fine to fine grained	0	FID (ppm) w/o charcoal w/charcoal 1.3
								1.1
								1.7
						Clayey Sand (SC) gray with orange, slightly moist, very dense, very fine grained	-4 4	1.2
5	5-10	DP-1	44	NA		**Sand (SP)** same as 0-4'	-6 6	1.2
						No Recovery	-8	
						Clayey sand (SC) gray with orange, moist, very dense, very fine grained	8	
10						**Sand (SP)** light grey, dry to moist, loose, sugary texture	-10 10	
						No Recovery	-11 11	
	10-15	DP-2	48	NA		**Sand (SP)** same as 8-10'	-13 13	1.9
						Silty Sand (SM) gray with orange, wet, medium dense, very fine grained,		Water @ 13.5' bgs 1.0
15	15-20	DP-3	60	NA			-18 18	0.4
						Sand (SP) orange, wet, dense, fine to very fine grained	-20 20	
20						End of Log		0.0
25								

CH2MHILL

Boring Number: IR55-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sand (SP)** tan with orange, dry to moist, loose, very fine grained	0	FID (ppm) w/o charcoal w/charcoal	
							-2	2.4	0.0
	0-5	HA	60	NA		**Clayey Sand (SC)** grey, moist to wet	2	32.2	16.2
								223.3	99.8
								198.8	99.5
5							-6	Water @ 5' bgs	
						No Recovery	6	74.7	72.2
	5-10	DP-1	55	NA		**Sandy Clay (CL)** grey, wet, soft, trace sand, increase in sand with depth	-8		
						Clayey Sand (SC) black, wet, some clay, loose, wood fragments	8	1147	563.9
10							-10		
	10-13	DP-2	0	NA		**No Recovery**	10		
							-13		
						End of Log	13	Petroleum odor noted from 5-10' bgs.	
15									
20									
25									

CH2MHILL

Boring Number: IR55-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-55
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S. Beville/RDU
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** brown, dry, loose, fine to medium grained, some organic matter	0	FID (ppm) w/o charcoal w/charcoal 2.5	0.0
						Clayey Sand (SC) light brown with orange, dry, medium dense	-3 3	305	88.0
						Sandy Clay (CL) grey, moist, soft to medium stiff, trace silt	-5	1278	668.8
5	5-10	DP-1	12	NA		**No Recovery**	5	Water @ 4.5' bgs	
						Clayey Sand (SC) black, wet, loose, some silt and clay, some roots with wood fragments	-9 9	862	406
10	10-12	DP-2	24	NA			-12 12		
						End of Log			
15									
20									
25									

Boring Number: IR61-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	DP-1	40	NA		**Sand (SP)** tan, moist, loose	0 -3	FID (ppm) w/o charcoal w/charcoal 0.7 0.7
						Sandy Silt (ML) orange, medium stiff, slightly moist	3 -4	
						No Recovery	4 -5	
5	5-10	DP-2	24	NA		**Sandy Silt (ML)** same as 2.5-3.5'	5 -6	Collected sample IR61-IS01-09C from 5-6' bgs
						Clayey Sand (SC) orange, very moist to wet, medium grained	6	
						No Recovery	-10	
10						End of Log	10	
15								
20								

Boring Number: IR61-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** tan/orange, slightly moist, loose	0 -2	FID (ppm) w/o charcoal w/charcoal
	0-5	DP-1	48	NA		**Sandy Silt (ML)** slightly moist, medium stiff	2 -3	1.2 1.1
						Clay (CL) brown, slightly moist, medium stiff	3	
						No Recovery	-5	
5						**Sand (SP)** tan/white, slightly moist to moist, loose	5 -7	0.0 0.1
	5-10	DP-2	48	NA		**Clayey Sand (SC)** wet, loose, medium grained	7 -9	Collected sample IR61-IS02-09C from 5-6' bgs
						No Recovery	9 -10	
10						End of Log	10	
15								
20								

Boring Number: IR61-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** white/tan, slightly moist, very loose, fine to very fine grained	0 -2	FID (ppm) w/o charcoal w/charcoal
	0-5	DP-1	48	NA		**Sandy Silt (ML)** orange, slightly moist, medium dense	2 -3	1.1 1.2
						Clay (CL) brown, slightly moist, stiff	3	
						Sandy Silt (ML) same as 1.9-2.8'	-5	
5						**No Recovery**	5	
						Sandy Silt (ML) same as 1.9-2.8'	-6	0.9 1.1
						Clayey Sand (SC) orange, wet, loose, medium grained	6 -7	
	5-10	DP-2	24	NA		**No Recovery**	7	
10						End of Log	-10 10	Collected sample IR61-IS04-09C from 5-6' bgs
15								
20								

CH2MHILL

Boring Number: IR61-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** grey, moist, loose	0	FID (ppm) w/o charcoal w/charcoal
						Sandy Clay (CL) orange/tan, moist, medium stiff		
	0-5	HA	60	NA		wet		Collected sample IR61-IS05-09C from 2-3' bgs 0.2 0.1
5							-5 5	
						End of Log		
10								
15								
20								

Boring Number: IR61-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sand (SP)** white/tan, slightly wet, very loose	0 -2	FID (ppm) w/o charcoal w/charcoal	
	0-5	HA	60	NA		**Sandy Silt (ML)** tan/orange, moist, soft to medium stiff	2 -3		
						Sand (SP) same as 0-1.7' but very moist	3 -5	0.3	0.3
5	5-10	DP-1	60	NA		**Sandy Silt (ML)** same as 2.8-5'	5 -8		
						Sandy Clay (CL) orange, wet, medium soft	8 -9	0.9	0.6
10						**Clayey Sand (SC)** orange, wet, medium grained	9		
						End of Log		Collected sample IR61-IS06-09C from 5-6' bgs	
15									
20									

Boring Number: IR61-IS07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** white, slightly moist, very loose	0 -2	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Sandy Silt (ML)** tan/orange, slightly moist, medium stiff	2 -5	0.2 0.3
5						**Sand (SP)** same as 0-1.8' but moist wet	5 -6	Collected sample IR61-IS07-09C from 4-5' bgs
	5-10	DP-1	48	NA		**Sandy Clay (CL)** wet, medium stiff	6 -8	0.3 0.1
						Clayey Sand (SC) orange, wet, loose, medium grained	8 -9	
						No Recovery	9 -10	
10						End of Log	10	
15								
20								

Boring Number: IR61-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Organic Sand** brown, moist, very loose	0	FID (ppm) w/o charcoal w/charcoal
						Sand (SP) tan, moist, very loose		
	0-5	HA	60	NA		**Sandy Clay (CL)** tan/orange, moist, fine grained		0.9 0.7
							-4	
						Clayey Sand (SC) orange, wet, loose, fine to medium grained	4	
5							-5	
						End of Log	5	Collected sample IR61-IS08-09C from 2-3' bgs
10								
15								
20								

Boring Number: IR61-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** grey, slightly moist, loose	0 -2	FID (ppm) w/o charcoal w/charcoal	
						Sandy Silt (ML) orange/tan, slightly moist, medium dense	2 -4	0.3	0.3
						Sandy Clay (CL) orange/tan, wet, soft	4 -7	0.2	0.2
5	5-10	DP-1	60	NA		**Clayey Sand (SC)** orange, wet, medium grained	7 -8		
						Clay (CL) grey, slightly moist, stiff	8 -11		
10	10-15	DP-2	60	NA		wet, shell hash in sandy clay matrix, shells are gravel to pea size	11 -13		
						Clay (CL) same as 8.2-11.2'	13 -15	0.9	0.7
15						End of Log	15	Set IR61-TW01 to 12' with 10' screen	
20									

Boring Number: IR61-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano\CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	DP-1	60	NA		**Sand (SP)** brown, slightly moist, very loose, trace silt, fine to very fine grained color change to tan	0 -3	FID (ppm) w/o charcoal w/charcoal	
5	5-10	DP-2	54	NA		**Sandy Silt (ML)** orange, slightly moist, medium dense	3 -9	1.2 0.7	0.9 0.7
						Clayey Sand (SC) orange, very moist, loose, medium grained	9 -10		
10	10-15	DP-3	48	NA		**No Recovery** **Clayey Sand (SC)** same as 8.5-9.5' but wet	10 -13	0.2	0.1
						Sand (SP) tan, wet	13 -14		
						No Recovery	14 -15		
15	15-20	DP-4	60	NA		**Sand (SP)** same as 13-14'	15 -17		
						Clay (CL) grey, slightly moist, stiff	17 -20	1.9	1.7
20						End of Log	20	Set IR61-TW02 to 16.5' with 10' screen	
25									

Boring Number: IR61-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-61
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 7720 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/12/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sandy Silt (ML)** orange, loose, very fine grained	0 -2	FID (ppm) w/o charcoal w/charcoal	
	0-5	HA	60	NA		**Silty Clay (CL)** tan, very moist, soft	2 -4		
						Clayey Sand (SC) orange, wet, loose, medium grained	4	0.9	0.6
5	5-10	DP-1	60	NA		very loose	-9		
						Sandy Clay (CL) tan, medium stiff	9	0.7 0.3	0.7 0.6
10	10-15	DP-2	60	NA		**Sandy Clay (CL)** grey, slightly moist, medium stiff	-11 11 -12		
						grey, wet, shelly hash in sandy clay matrix, shells range from gravel to pea sized	12 -13		
						Sandy Clay (CL) same as 10.8-12' stiff, increased sand content	13 -15		
15						End of Log	15	Set IR61-TW03 to 12' bgs with 10' screen	
20									

CH2MHILL

Well Number: IR61-MW01

Client: MCB Camp Lejuene
Project: CTO-40 Limited Site Assessment
Location: Site 38
Project Number: 380666.FI.FK.10

Driller: ARM Environmental Services
Drilling Method: DPT/HSA
Sampling Method: Macrocore Sampler
Logged by: J. Albano
Start/Finish Date: 2/16/2010

Depth (ft)	Sample Info: Sample #	Sample Type	Recovery (%)	SPT (6" -6" -6")	Soil Log	Soil Description	Depth/Elev (ft)	Comments
0						Ground Surface	0.0	
	HA-1	HA	N/A	N/A		**SP - Sand** grey, moist, fine grained	0.0 / -1.5	
						SC - Clayey Sand grey-tan, moist, fine grained to very fine grained	1.5 / -3.0	FID (0-5) - 0.0 ppm
						SP - Sand grey, very moist, fine to very fine grained, loose	3.0 / -5.5	
5	DP-1	MC	90	N/A		**CL - Sandy Clay** tan, slightly moist, stiff	5.5 / -7.0	
						SP - Sand tan-orange, wet, coarse grained, loose, trace clay	7.0 / -9.5	FID (5-10) - 0.0 ppm
						No Recovery	9.5	
10	DP-2	MC	100	N/A		**SP - Sand** grey, wet, medium to fine grained, loose, trace clay	-10.8	
						SP - Sand tan-orange, wet, coarse grained, loose, trace clay	10.8 / -15.0	FID (10-15) - 0.0 ppm
15						**End of Boring at 15 ft bgs** End of Log	15.0	Well installed using HSA. Set IR61-MW01 to 15 ft bgs. Screened 15' - 5' bgs, 0.01" machine slot PVC screen, 2" PVC riser, sand from 15' to 3' bgs (6.5 bags, #3 sand)
20								

CH2MHILL

Boring Number: IR62-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** brown, dry, loose, very fine grained	0	FID (ppm) w/o charcoal w/charcoal 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
	0-8	HA	96	NA		**Clayey Sand (SC)** grey with orange, slightly moist, dense, very fine grained	-2 2	
5						**Sandy Clay (CL)** grey with orange, moist, stiff, very fine grained	-5 5	Sample IR62-IS05-7-8-09C taken from 7-8' bgs.
						End of Log	-8 8	
10								
15								
20								

CH2MHILL

Boring Number: IR62-IS08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
0						Ground Surface	0	
	0-8	HA	96	NA		**Sand (SP)** brown, dry, loose, little clay	0 -3	FID (ppm) w/o charcoal w/charcoal 0.0 0.0 0.7 0.9 0.5 0.4 0.0 0.0
						Clayey Sand (SC) tan/gray, moist, dense, very fine grained	3 -5	
5						**Sandy Clay (CL)** tan/gray, moist, stiff, very fine grained	5 -7	Sample IR62-IS08-3-4-09C taken from 3-4' bgs.
						Clayey Sand (SC) gray, moist, dense, very fine to fine grained	7 -8	
						End of Log	8	
10								
15								
20								

Boring Number: IR62-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** brown, dry, some organic material, loose, very fine grained	0	FID (ppm) w/o charcoal w/charcoal 0.0 0.0 0.0 0.0 0.0
						color change to light tan	-3	
						Clayey Sand (SC) orange/tan, slightly moist, medium dense, very fine grained	3	
5	5-10	DP-1	60	NA			-9	
						Sandy Clay (CL) orange/tan, slightly moist, stiff, very fine grained, some metal fragments (possibly barbed wire) > 0.5" long	9	0.0
10							-11	
						Sand (SP) brown, dry, loose, very fine grained	11	
	10-15	DP-2	60	NA		**Sandy Clay (CL)** same as 8.5-10.5'		0.0
15	15-20	DP-3	48	NA			-19	
						Sandy Clay (CL) dark grey, moist, medium stiff to stiff, sand is very fine grained	19	0.0
20								

Boring Number: IR62-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20-25	DP-4	48	NA				
25								0.0
	25-30	DP-5	60	NA			-30	
30						**No Recovery**	30 -32	
	30-35	DP-6	40	NA		**Sand (SP)** dark grey, wet, dense, medium to coarse grained with some cemented pieces up to 10 mm	32 -34	0.0
						Sand (SP) grey, wet, very dense, fine to medium grained	34 -35	
35						End of Log	35	0.0
								Set IR62-TW01 to 32'
40								

Boring Number: IR62-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** gray with orange, mosit, little silt, very fine to fine grained	0 -2	FID (ppm) w/o charcoal w/charcoal metal and plastic fragments
	0-5	HA	60	NA		**Silty Sand (SM)** brown with orange, moist to wet, very fine grained, trace clay	2 -4	0.4
						Sandy Clay (CL) gray with orange, moist, medium stiff, very fine grained	4 -6	0.0 1.1
5	5-10	DP-1	60	NA		**Clay (CL)** gray with orange, moist, medium stiff, trace sand, few small metal fragments (>3 mm)	6	1.4
10	10-15	DP-2	60	NA				1.9
15	15-20	DP-3	60	NA		**Clay (CL)** dark gray, moist, medium stiff soft	-16 16	1.4
20	20-25	DP-4	60	NA		**Sandy Clay (CL)** dark gray, very moist, stiff, very fine grained sand	-22 22	2.0
25	25-27	DP-5	24	NA		wet	-27	1.2
						Clayey Sand (SC) dark gray, dry, very dense	27	Auger refusal @27' Set IR62-TW02 to 27'
						End of Log		
30								

CH2MHILL

Boring Number: IR62-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-62
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: S.Beville/RDU
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Clayey Sand (SC)** tan with orange, dry, very fine grained, dense	0 -5	FID (ppm) w/o charcoal w/charcoal 6.8 2.4 0.0 0.0 0.0
5	5-10	DP-1	60	NA		**Sandy Clay (CL)** gray with orange, moist, stiff, very fine grained	5 -11	metal fragments, old piece of cable @ 5' bgs 0.0
10	10-15	DP-2	60	NA		**Sand (SP)** dark reddish brown, dry **Sandy Clay (CL)** same as 5-11' **Clayey Sand (SC)** orange/grey, wet, dense, very fine grained	11 -12 12 -13 13 -17	0.0 water @ 13' bgs 0.0
15	15-20	DP-3	60	NA		**Clayey Sand (SC)** reddish orange, wet, loose, fine to medium grained, less clay than above	17 -20	0.0
20						End of Log	20	Set IR62-TW03 to 20'
25								

CH2MHILL

Boring Number: IR66-IS01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Silty Sand (SM)** grey, moist, loose, very fine to fine grained	0	FID (ppm) w/o charcoal w/charcoal 3.7 3.5
							-2	
	0-5	HA	60	NA		**Sand (SP)** tan, moist, loose, very fine to fine grained wet	2	1.9 2.6 Water at 3.5' bgs
5							-5	Collected IR66-IS01-09C from 2-3' bgs.
						End of Log	5	
10								
15								
20								

Boring Number: IR66-IS02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Silty Sand (SM)** grey, moist, loose	0 -2	FID (ppm) w/o charcoal w/charcoal 2.1 1.7
	0-5	HA	60	NA		**Clay (CL)** tan, slightly moist, medium stiff, trace sand	2 -3	
						Sand (SP) tan, moist, loose, fine grained	3 -5	4.2 1.9
5	5-10	DP-1	46	NA		**Clayey Sand (SC)** tan/orange, moist, loose to medium dense, very fine to fine grained, mottled	5 -6	Water at 6' bgs
						Sand (SP) grey, wet, loose, fine to very fine grained	6 -9	4.9 4.7
						No Recovery	9 -10	
10						End of Log	10	Collected IR66-IS02-09C and IR66-IS02D-09C from 5-6' bgs.
15								
20								

CH2MHILL

Boring Number: IR66-IS03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/7/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Silty Sand (SM)** grey, moist, loose, fine grained	0	FID (ppm) w/o charcoal w/charcoal	
						Sand (SP) white, moist, loose, fine grained	-3		
						Silty Sand (SM) tan, moist, loose, fine grained	3		
5	5-10	DP-1	60	NA		**Silty Sand (SP)** tan/white, moist, loose, very fine to fine grained, trace silt	-5		
						Clayey Sand (SC) tan/white, slightly moist, dense, fine to very fine grained	5	3.3	3.5
							-7		
							7		
10	10-15	DP-2	60	NA		**Sand (SP)** tan, moist, loose, fine to very fine grained	-10		
						Sandy Clay (CL) slightly moist, medium stiff to stiff, fine grained to very fine grained	10		
						Shelly Hash in clay matrix white shells, brown clay, slightly moist, medium stiff	-12	3.5	3.3
							12		
15	15-20	DP-3	48	NA		**Clay (CL)** grey, slightly moist, medium stiff	-15		
						Clayey Sand (SC) tan, moist, medium dense, fine to very fine grained	15		
						Clay (CL) grey, slightly moist, soft, plastic	-17	4.5	3.3
						Silty Sand (SM) wet, loose to medium loose, fine to very fine grained	17	Water at 18' bgs	
							-19	Collected IR66-IS03-09C from 15-16' bgs.	
20						**No Recovery**	19		
						End of Log	-20		
							20		
25									

CH2MHILL

Boring Number: IR66-IS04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/8/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** grey, moist, loose, fine to very fine grained color change to white	0 -3	FID (ppm) w/o charcoal w/charcoal
						Silty Sand (SM) tan, moist, loose, fine to very fine grained	3 -5	
5	5-10	DP-1	48	NA		**Clayey Sand (SC)** tan, slightly moist, medium dense	5 -8	4.3 4.2
						Shelly Hash in Clay Matrix white shells, tan/brown clay, slightly moist	8 -9	
						No Recovery	9 -10	
10	10-15	DP-2	60	NA		**Shelly Hash in Clay Matrix** white shells, tan/brown clay, slightly moist	10 -13	3.9 3.7
						Clay (CL) tan, moist, plastic, trace sand	13 -15	
15	15-18	DP-3	36	NA		**Sandy Clay (CL)** tan, very moist, soft	15 -17	
						Clayey Sand (SC) tan, wet, loose	17 -18	Water at 17.2' bgs
						End of Log	18	Collected IR66-IS04-09C from 15-16' bgs.
20								

CH2MHILL

Boring Number: IR66-IS05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/8/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** tan, moist, loose, fine to very fine grained	0	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Silty Sand (SM)** tan, moist, loose	-3 3	
5							-7 7	
	5-10	DP-1	60	NA		**Sand (SP)** tan, moist, loose, fine to very fine grained	-9 9	
						Sandy Clay (CL) tan/orange, slightly moist, medium stiff, very fine to fine grained, mottled	-11 11	
10						**Sand (SP)** moist, losoe, very fine to fine grained		
						Sandy Clay (CL) same as 8.5-10'		3.8 3.6
	10-15	DP-2	60	NA		**Silty Sand (SM)** red, moist, loose		
						Sandy Clay (CL) red to tan, slightly moist, stiff		
15						End of Log	-15 15	Collected IR66-IS05-09C from 15-16' bgs.
20								

CH2MHILL

Boring Number: IR66-IS06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Hand Auger
Sampling Method: Hand Auger
Logged by: J.Albano/CLT
Start/Finish Date: 7/10/09

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sandy Clay** tan, moist, soft to medium stiff, very fine to fine grained	0 -2	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Clayey Sand (SC)** moist, loose, very fine to fine grained	2 -4	
						Sand (SP) white to tan, moist, fine grained	4	
5	5-7	DP-1	24	NA			-7	
						End of Log	7	Collected IR66-IS06-09C from 6-7' bgs.
10								
15								
20								

Boring Number: IR66-TW01

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sand (SP)** grey, slightly moist, very loose, very fine to fine grained	0	FID (ppm) w/o charcoal w/charcoal
	0-5	HA	60	NA		**Sandy Clay (CL)** tan/orange, slightly moist	-5	1.9 2.3
5						**Sand (SP)** white, moist, very loose	5 -9	
	5-10	DP-1	48	NA				1.2 1.3
						No Recovery	9 -10	
10						**Sand (SP)** same as 5.3-9'	10 -13	
	10-15	DP-2	60	NA				0.7 0.5
						Clay (CL) tan, very moist, medium stiff	13 -16	
15						**Sand (SP)** white to tan, wet, loose, fine to medium grained	16 -18	
	15-20	DP-3	60	NA				0.9 1.1
						Clay (CL) same as 12.8-15'	18 -20	Set IR66-TW01 to 18' screen: 8-18' sand: 6-18' bentonite: 0-6'
20						End of Log	20	
25								

Boring Number: IR66-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sand (SP)** grey, moist, fine grained	0	FID (ppm) w/o charcoal w/charcoal	
	0-5	HA	60	NA		**Clayey Sand (SC)** tan, moist	-3 3		
5							-7		
	5-10	DP-1	60	NA		**Sand (SP)** tan, moist, loose	7 -8	2.6	1.9
						Sandy Clay (CL) tan, slightly moist, medium stiff	8		
10							-11	0.9	0.7
	10-15	DP-2	60	NA		**Sand (SP)** tan to orange, moist	11		
15							-16		
	15-20	DP-3	60	NA		**Clay (CL)** tan to grey, slightly moist, stiff	16	2.9	2.1
20							-20 20		

Boring Number: IR66-TW02

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/10/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
	20-25	DP-4	60	NA		**Clayey Sand (SC)** tan/grey, wet, loose, very fine to fine grained	-23 23		
						Sandy Clay (CL) tan, wet, medium stiff		4.1	3.9
25							-26 26		
	25-30	DP-5	60	NA		**Clayey Sand (SC)** tan/orange, wet, very loose, very fine grained to medium grained			
30							-30 30	0.9	1.3
						End of Log			
								Set IR66-TW02 to 30' screen: 20-30' sand: 18-30' bentonite: 0-18'	
35									
40									

Boring Number: IR66-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** white to tan, slightly moist, very fine to fine grained	0	FID (ppm) w/o charcoal w/charcoal	
							-5		
5	5-10	DP-1	54	NA		**Silty Sand (SM)** orange, moist, loose, very fine to fine grained	5	0.9	0.7
							-8		
						Clay (CL) brown, slightly moist, medium stiff, trace sand	8		
							-9	0.9	0.8
						Shelly Hash in Clay Matrix white shells, brown clay, slightly moist, medium dense	9		
10	10-15	DP-2	60	NA				0.7	0.8
						No Recovery	-11		
						Clay (CL) Same as 8.2-9'	11		
						Sand (SP) brown, moist, very loose, fine to very fine grained			
						Clay (CL) same as 8.2-9'			
15	15-20	DP-3	48	NA			-15		
						Clayey Sand (SC) orange, moist to very moist, loose, very fine to fine grained	15		
							-17	2.1	1.7
						Clay (CL) same as 8.2-9'	17		
						Sand (SP) tan, wet, loose, very fine to fine grained	-19		
						No Recovery	19		
20							-20		
							20		

Boring Number: IR66-TW03

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20-22.5	DP-4	30	NA		**Sand (SP)** same as 17.6-19' but wet	-22 22	0.7 0.7
						Clay (CL) brown, very moist, soft		
25	22.5-27.5	DP-5	60	NA		**Sand (SP)** same as 17.6-19' but wet		1.1 0.9
	27.5	DP-6	30	NA		**Clay (CL)** same as 22-22.5'	-28 28	
30						End of Log	-30 30	Set IR66-TW03 to 28' screen: 18-28'
35								
40								

Boring Number: IR66-TW04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments: FID (ppm) w/o charcoal	w/charcoal
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** white, moist, loose, fine grained	0 / -3	1.9	2.1
						Silty Sand (SM) tan, moist, loose, fine grained	3 / -5		
5	5-10	DP-1	60	NA		**Sand (SP)** tan, moist, loose, fine to very fine grained	5 / -8	4.4 / 3.2	4.2 / 3.1
						Clayey Sand (SC) tan, slightly moist, medium dense, fine to very fine grained	8 / -11	5.8	4.9
10	10-15	DP-2	60	NA		**Sand (SP)** brown/tan, moist, loose	11		
						Clayey Sand (SC) same as 7.5-10'			
						Shelly Hash in a Clay Matrix white shells, brown clay, slightly moist, medium dense	-14 / 14		
						Clay (CL) brown, slightly moist, medium soft, plastic			
15	15-20	DP-3	60	NA		color change to grey	-18	7.9	5.7
						Clayey Sand (SC) grey, wet, medium dense to loose	18		
20								4.2	4.0

Boring Number: IR66-TW04

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/7/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
							-21		
	20-23	DP-4	36	NA		**Silty Sand (SM)** grey, wet, medium dense, fine to very fine grained	21		
25	23-28	DP-5	48	NA			-27	2.9	2.7
						Clay (CL) grey, wet, medium soft	27 -28		
	28-30	DP-6	24	NA		**Clayey Sand (SC)** grey, wet, loose, fine to very fine grained, sticky	28		
30							-30	4.2	3.9
						End of Log	30		
								Collected IR66-TW-S04-09C @ 15'	
								Set IR66-TW04 to 28' screen: 18-28'	
35									
40									

Boring Number: IR66-TW05

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Organic Silty Sand (SM)** brown, moist, loose, fine grained	0	FID (ppm) w/o charcoal w/charcoal	
						Clayey Sand (SC) tan, fine grained	-4		
						Sand (SP) white to tan, moist, very loose, fine to very fine grained	4		
5	5-10	DP-1	60	NA		very moist	-6		
						Clay (CL) tan, slightly moist, medium stiff	6	4.4	4.1
						Clayey Sand (SC) tan, wet, loose	-9 9		
10	10-15	DP-2	60	NA		**Sand (SP)** white, wet, loose, fine to very fine grained	-10 10		
						Clay (CL) brown, moist, soft			
						Silty Sand (SM) tan to orange, wet, loose, fine to very fine grained	-13	4.1	3.6
						Clay (CL) same as 10.5-11.2'	13		
15						**Sand (SP)** same as 10-10.5'	-15 15	Collected IR66-TW-S05-09C @ 7'	
						End of Log			
20									

Set IR66-TW05 to 13.5'
screen: 3.5-13.5'
sand: 1.5-13.5'
bentonite: 0-1.5'

Boring Number: IR66-TW06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** grey, moist, loose, very fine to fine grained color change to white	0 -3	FID (ppm) w/o charcoal w/charcoal	
						Silty Sand (SM) moist, loose, fine to very fine grained	3 -5		
5						**Sand (SP)** white, moist, loose, fine to very fine grained	5		
	5-10	DP-1	60	NA		**Clayey Sand (SC)** tan/orange, moist, loose, fine to very fine grained	-6 6		
						Sandy Clay (CL) tan/orange, moist, soft to medium stiff	-9		
						Clayey Sand (SC) same as 5-6'	9 -11	4.3	4.1
10	10-15	DP-2	60	NA		**Clay (CL)** tan/orange, slightly moist, medium stiff, trace sand	11 -13	3.4	3.9
						Clayey Sand (SC) same as 8.5-10'	13 -15		
15	15-20	DP-3	60	NA		**Sand (SP)** tan, moist, loose wet	15 -16 16		
						Clay (CL) grey, moist-wet, soft	-19		
						Sand (SP) grey/tan, wet, fine to very fine grained	19	2.1	1.7
20									

Boring Number: IR66-TW06

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20-25	DP-4	60	NA				1.9 1.7
25							-25	
						End of Log	25	Collected IR66-TW-S06-09C @ 13' Set IR66-TW06 to 23' screen: 13-23' sand: 11-23' bentonite: 0-11'
30								
35								
40								

Boring Number: IR66-TW07

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** tan-white, moist, very loose	0 -4	FID (ppm) w/o charcoal w/charcoal
						Clayey Sand (SC) tan-orange, moist, mottled	4 -6	
5	5-10	DP-1	48	NA		**Sand (SP)** tan, wet, loose, fine to very fine grained	6 -8	
						Sand (SP) orange, very moist, loose	8	
						No Recovery	-10	
10	10-15	DP-2	24	NA		same as 8.3-9' but wet	10 -12	
						No Recovery	12	
15						End of Log	-15 15	Set IR66-TW07 to 15' screen: 5-15' sand: 3-15' bentonite: 0-3'
20								

Boring Number: IR66-TW08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sand (SP)** grey, moist, loose, fine to very fine grained	0	FID (ppm) w/o charcoal w/charcoal	
	0-5	HA	60	NA		**Sand (SP)** white, moist, loose, fine to very fine grained	-3		
						Silty Sand (SM) tan, moist, loose, fine to very fine grained	3 -5		
5						**Sand (SP)** white, moist, loose, fine to very fine grained	5 -5		
	5-10	DP-1	60	NA		**Clayey Sand (SC)** tan/orange, moist, medium dense, fine to very fine grained	5 -7		
						Sandy Clay (CL) tan/orange, slightly moist, medium stiff	7	4.6	3.9
10							-12		
	10-15	DP-2	60	NA		**Clayey Sand (SC)** tan/orange, moist, loose, fine to very fine grained	12	5.2	4.4
						Sandy Clay (CL) same as 6.5-10'	-15		
15						**Sand (SP)** tan, wet, loose, fine to very fine grained	15		
	15-20	DP-3	60	NA				3.6	4.1
20									

Boring Number: IR66-TW08

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20-25	DP-4	60	NA				2.2 2.5
25							-25	Collected IR66-TW-S08-09C @ 15'
						End of Log	25	Set IR66-TW08 to 25' screen: 15-25' sand: 13-25' bentonite: 0-13'
30								
35								
40								

CH2MHILL

Boring Number: IR66-TW09

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** tan, moist, loose	0 -4	FID (ppm) w/o charcoal w/charcoal	
						Clayey Sand (SC) tan/orange, very moist, loose, mottled	4 -5	0.9	0.7
5	5-10	DP-1	48	NA		**Sand (SP)** tan and grey, very moist, loose, mottled	5 -9	1.1	0.8
						No Recovery	9 -10		
10	10-15	DP-2	60	NA		**Sand (SP)** same as 5.4-9' but wet	10 -12		
						Clay (CL) grey, very moist, soft	12 -14		
						Sandy Clay (CL) grey, very moist, soft, very fine to fine grained	14	3.9	2.7
15	15-20	DP-3	60	NA		**Sandy Clay (CL)** grey, wet, soft	-19		
						Clay (CL) grey, slightly moist, soft to medium stiff	19 -20		
20						End of Log	20	Collected IR66-TW-S09-09C @ 10'	
25									

CH2MHILL

Boring Number: IR66-TW10

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/8/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0-5	HA	60	NA		**Sand (SP)** grey, moist, loose, fine to very fine grained	0	FID (ppm) w/o charcoal w/charcoal
						Sand (SP) white, moist, loose, fine to very fine grained	-3	
						Silty Sand (SM) tan, moist, loose, fine to very fine grained	3 -5	
5	5-10	DP-1	46	NA		**Clayey Sand (SC)** tan, slightly moist, medium stiff, fine to very fine grained	5	3.9 3.6
						Sandy Silt (ML) orange/tan, slightly moist, medium stiff	-7 7	
						Silty Sand (SM) tan/white, moist, loose, mottled	-9 9	
10	10-15	DP-2	60	NA		**No Recovery**		
						Silty Sand (SM) same as 7-9'	-12	4.0 3.6
						Silty Sand (SM) orange/tan, moist, loose, fine to very fine grained, mottled	12 -15	
15	15-20	DP-3	60	NA		**Sandy Clay (CL)** tan, slightly moist, soft, plastic	15 -16	
						Clayey Sand (SC) tan/white, moist to very moist, medium dense to loose, fine to very fine grained, mottled	16	
						Sandy Clay (CL) grey/brown, wet, medium soft	-20	
20	20-25	DP-4	48	NA		**Sand/Clay** Interbedded lamination of sand and clay, moist, each ranging from 1-5 cm thick. Sands are orange to grey, fine to very fine grained. Clay is the same as 20-22'	20 -22 22 -24 24	Collected IR66-TW-S10-09C @ 12' bgs Set IR66-TW10 to 30' Screen: 20-30' Sand: 18-30' Bentonite: 0-18'
25						**No Recovery**		
						End of Log		
30								

Boring Number: IR66-TW11

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0	0-5	HA	60	NA		**Sand (SP)** tan, moist, very loose color change to grey	0	FID (ppm) w/o charcoal w/charcoal	
								0.9	0.7
5								0.8	0.8
							-6		
	5-10	DP-1	12	NA		**No Recovery**	6 -10		
10	10-15	DP-2	54	NA		**Clay (CL)** grey, wet, soft	10 -12	0.4	0.6
						Clay (CL) grey, moist, medium stiff	12 -15		
15						**No Recovery**	15		
	15-20	DP-3	60	NA		**Clay (CL)** grey, wet, soft	-19	4.9	2.4
						Clay (CL) grey, moist, medium stiff	19 -20		
20	20-25	DP-4	60	NA		**Clay (CL)** wet, soft very moist	20 -25	6.4	2.9
25							25		

Boring Number: IR66-TW11

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/11/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
	25-30	DP-5	60	NA		**Clay (CL)** soft, very moist to wet			
30	30-35	DP-6	60	NA					
							-34		
						Sand (SP) tan/orange, wet, loose, medium grained to fine grained	34	0.7	0.7
35							-35 35	0.9	0.8
						Clay (CL) grey, soupy/saturated, very soft	-36		
							36		
						Clayey Sand (SC) tan, wet, loose	-37		
	35-40	DP-7	60	NA			37		
						Clay (CL) grey, moist, medium stiff			
						Clay (CL) same as 36.3-36.7'	-40		
40							40	Set IR66-TW11 to 40' Screen: 30-40' Sand: 28-40' Bentonite: 0-28'	
						Sand (SP) same as 33.7-35'			
						End of Log			
45									
50									

CH2MHILL

Boring Number: IR66-TW12

Client: NAVFAC
Project: CTO-040 LSA Sites/Site-66
Location: MCB Camp Lejeune, Jacksonville, NC
Project Number: 380666

Driller: ARM
Drilling Method: Geoprobe 6610 DT
Sampling Method: 60" macrocore
Logged by: J.Albano/CLT
Start/Finish Date: 7/9/2009

Depth (ft)	Sample Information: Interval (ft)	Sample Type	Recovery (in)	SPT (6"-6"-6-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments	
						Ground Surface	0		
0						**Sand (SP)** white to tan, moist, very loose, very fine to fine grained	0 -2	FID (ppm) w/o charcoal w/charcoal	
	0-5	HA	60	NA		**Clayey Sand (SC)** tan, moist, loose	2 -6		
5	5-10	DP-1	48	NA		**Sand (SP)** tan, moist, loose	6 -9	1.7	1.9
						No Recovery	9 -10		
10	10-15	DP-2	60	NA		**Sand (SP)** same as 5-5.9'	10 -12		
						Clay (CL) grey, very moist, soft	12 -14	4.6	4.3
						Sandy Clay (CL) grey, very moist, soft, very fine to fine grained	14 -15		
15	15-20	DP-3	60	NA		**Clayey Sand (SC)** tan, moist, loose, fine to very fine grained	15 -17	1.2	0.6
						Sandy Clay (CL) grey, very moist, soft	17 -20		
20	20-25	DP-4	60	NA		**Clay (CL)** grey, moist, soft	20	1.9	1.2
25									

Appendix B
Subsurface Soil Analytical Data

Appendix B, Table B-1
Site 4 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR04-IS01		IR04-IS02	IR04-IS03	IR04-IS04	IR04-IS05	IR04-IS06	IR04-IS07	IR04-IS08
Sample ID					IR04-IS01-5-6-09C	IR04-IS01D-5-6-09C	IR04-IS02-10-11-09C	IR04-IS03-4-5-09C	IR04-IS04-4-5-09C	IR04-IS05-4-5-09C	IR04-IS06-5-6-09C	IR04-IS07-5-6-09C	IR04-IS08-5-6-09C
Sample Date					07/11/09	07/11/09	07/11/09	07/11/09	07/10/09	07/11/09	07/10/09	07/10/09	07/10/09
Chemical Name													
Volatile Organic Compounds (µg/kg)													
Chloroform	--	340	1,500	300	10 U	12 U	11 U	12 U	11 U	10 U	8.3 U	12 U	2.3 J
Ethylbenzene	--	8,100	27,000	5,400	10 U	12 U	1.1 J	12 U	11 U	1.1 J	8.3 U	12 U	9.2 U
Methylene chloride	--	23	53,000	11,000	10 U	12 U	55 J	12 U	11 U	4 J	8.3 U	12 U	9.2 U
Semivolatile Organic Compounds (µg/kg)													
Benzo(a)anthracene	--	180	2,100	150	6.8 J	8.5 J	8.6 J	53 UJ	8.3 J	10 J	7.8 J	8.7 J	8 J
Benzo(a)pyrene	--	59	210	15	5.5 U	5.8 U	5.9 U	5.7 U	6.5 U	6.6 U	1.3 J	1.5 J	5.9 U
Benzo(b)fluoranthene	--	600	2,100	150	52 U	54 U	55 U	53 U	1.9 J	62 U	1.9 J	2.1 J	56 U
Caprolactam	--	18,000	31,000,000	3,100,000	210 U	76 J	220 U	210 U	240 U	250 U	220 U	250 U	220 U
Dibenz(a,h)anthracene	--	190	210	15	5.5 UJ	5.8 UJ	5.9 UJ	5.7 U	14	6.6 UJ	5.9 U	6.8 U	5.9 UJ
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	52 U	26 J	55 U	53 U	61 U	62 U	26 J	30 J	56 U
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	5,330	6,150	5,610	2,700	15,600	10,500	11,900	12,100	14,100
Arsenic	2.12	5.8	1.6	0.39	0.4 J	0.39 J	0.52 J	0.73	1.2	**1.8**	0.6	0.79	0.54 J
Barium	16.6	580	19,000	1,500	4.4	5.2	6.8	3.9	15.1	9.6	11.8	9.7	13.5
Beryllium	0.165	--	200	16	0.26 U	0.27 U	0.27 U	0.26 U	0.1 J	0.1 J	0.06 J	0.09 J	0.1 J
Calcium	441	--	--	--	214 J	274 J	269 U	262 U	304 U	306 U	272 U	321 U	64 J
Chromium	14.5	3.8	5.6	0.29	4.5 J	5.2 J	5.3 J	2.8 J	**14.4 J**	**9.8 J**	**9.9 J**	**12.5 J**	**13.7 J**
Cobalt	0.822	--	30	2.3	0.78 U	0.28 J	0.81 U	0.79 U	0.39 J	0.92 U	0.49 J	0.96 U	0.4 J
Copper	2.56	700	4,100	310	0.52 U	0.43 J	0.59	0.35 J	0.8	1.4	1	1.3	0.82
Iron	5,439	150	72,000	5,500	1,200	1,080	920	1,410	2,890	2,360	1,540	2,330	1,980
Lead	8.49	270	800	400	2.1	2.5	2.2	2.1	6.3	3.7	4.4	5.3	5.3
Magnesium	363	--	--	--	104 J	141 J	117 J	63.4 J	351	259 J	247 J	268 J	374
Manganese	9.25	65.0	2,300	180	1.6	1.9	3	1.7	5	4	3.7	4.6	4.6
Mercury	0.071	1.0	31	2.4	0.033 U	0.036 U	0.038 U	0.033 U	0.038 U	0.043 U	0.031 J	0.041 U	0.019 J
Nickel	2.27	130	2,000	160	1.1	1.5	1.3	1	2	1.2	2.4	1.4	2.2
Potassium	361	--	--	--	129 J	143 J	164 J	88.5 J	394	366	257 J	378	381
Selenium	0.505	2.1	510	39	0.26 U	0.27 U	0.27 U	0.26 U	0.33	0.31 U	0.19 J	0.23 J	0.28 U
Vanadium	17.2	--	520	39	2.7	4.1	3.5	3.5	17.1	14.3	7.1	14.1	10.4
Zinc	6.59	1,200	31,000	2,400	1.5 U	1.9 U	1.8 U	5.25 U	3.8	2.7	2.9	3.2	3.2

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

R - Unreliable Result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-2
Site 23 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR23-IS01		IR23-IS02	IR23-IS03	IR23-IS04	IR23-IS05	IR23-IS06	IR23-IS07	IR23-IS08
Sample ID					IR23-IS01-6-7-09C	IR23-IS01D-6-7-09C	IR23-IS02-6-7-09C	IR23-IS03-09C	IR23-IS04-09C	IR23-IS05-09C	IR23-IS06-09C	IR23-IS07-09C	IR23-IS08-09C
Sample Date					07/11/09	07/11/09	07/11/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09
Chemical Name													
Volatile Organic Compounds (µg/kg)													
4-Methyl-2-pentanone	--	--	3,400,000	530,000	10 U	10 U	0.71 J	16 U	10 U	10 U	12 U	10 U	13 U
Semivolatile Organic Compounds (µg/kg)													
Benzo(a)anthracene	--	180	2,100	150	54 UJ	54 UJ	140 J	56 U	56 U	53 U	55 U	55 U	58 U
Benzo(a)pyrene	--	59	210	15	5.7 U	5.8 U	100	1.3 J	5.9 U	1.2 J	5.9 U	5.9 U	6.2 U
Benzo(b)fluoranthene	--	600	2,100	150	54 U	54 U	170 J	56 U	56 U	53 U	55 U	55 U	58 U
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	220 U	220 U	120 J	220 UJ	220 U	210 U	220 UJ	220 UJ	230 U
Benzo(k)fluoranthene	--	5,900	21,000	1,500	220 UJ	220 UJ	110 J	220 UJ	220 U	210 U	220 UJ	220 UJ	230 U
Caprolactam	--	18,000	31,000,000	3,100,000	220 U	220 U	220 U	220 U	220 U	210 U	220 U	110 J	99 J
Chrysene	--	18,000	210,000	15,000	220 U	220 U	230 J	220 UJ	220 U	210 U	220 UJ	220 UJ	230 U
Fluoranthene	--	330,000	2,200,000	230,000	220 U	220 U	390	220 U	220 U	210 U	220 U	220 U	230 U
Phenanthrene	--	57,000	17,000,000	1,700,000	220 U	220 U	120 J	220 U	220 U	210 U	220 U	220 U	230 U
Pyrene	--	220,000	1,700,000	170,000	220 U	220 U	350	220 UJ	220 U	210 U	220 UJ	220 UJ	230 U
Pesticide/Polychlorinated Biphenyls (µg/kg)													
4,4'-DDE	--	--	5,100	1,400	0.36 U	0.36 U	0.45 J	NA	NA	NA	NA	NA	NA
4,4'-DDT	--	441	7,000	1,700	0.36 U	0.36 U	0.51 J	NA	NA	NA	NA	NA	NA
Herbicides (µg/kg)													
No Detections													
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	4,710	4,220	4,200	5,160	3,970	3,390	1,500	4,380	4,050
Arsenic	2.12	5.8	1.6	0.39	1.4	0.29 J	0.6	0.56 J	**2.2**	0.53 U	**2.4**	0.54 J	0.24 J
Barium	16.6	580	19,000	1,500	5.3	4.9	5.5	5.7	5.1	4.2	2 J	4.2	4.2
Calcium	441	--	--	--	416 J	430 J	2,440 J	282 U	283 U	334 U	271 U	282 U	292 U
Chromium	14.5	3.8	5.6	0.29	**7.5 J**	**5.8 J**	**7.5 J**	**8.2**	**6.9**	5.1	2.9	**6.7**	**6.6**
Copper	2.56	700	4,100	310	0.55	0.29 J	0.81	0.38 J	0.4 J	0.53 U	0.32 J	0.56 U	0.34 J
Iron	5,439	150	72,000	5,500	2,400	1,160	1,430	1,860	4,110	975	1,910	2,390	1,850
Lead	8.49	270	800	400	3	2.6	4.3	2.9	2.6	2.3	1.5	3.2	2.8
Magnesium	363	--	--	--	194 J	187 J	195 J	205 J	174 J	175 J	55.5 J	219 J	220 J
Manganese	9.25	65.0	2,300	180	3.4	3.1	3.9	3.3	3	2.5	0.91	3.3	3.2
Nickel	2.27	130	2,000	160	1.1	1.1	1	1.1	0.95	0.76	0.47 J	1	0.93
Potassium	361	--	--	--	203 J	174 J	199 J	242 J	197 J	167 J	83 J	199 J	197 J
Vanadium	17.2	--	520	39	11	5.2	10.9	8.9	9	5	4.7	6.7	7.8
Zinc	6.59	1,200	31,000	2,400	2.2	1.9	4.2	2.3 U	2 U	1.6 U	1.5 U	2.5 U	2.4 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

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UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-3
Site 38 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NCSSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR38-IS01	IR38-IS02	IR38-IS03		IR38-IS04	IR38-IS05	IR38-IS06	IR38-IS07	IR38-IS08
Sample ID					IR38-IS01-6-7-10A	IR38-IS02-6-7-10A	IR38-IS03-6-7-10A	IR38-IS03D-6-7-10A	IR38-IS04-6-7-10A	IR38-IS05-6-7-10A	IR38-IS06-6-7-10A	IR38-IS07-6-7-10A	IR38-IS08-6-7-10A
Sample Date					02/19/10	02/19/10	02/19/10	02/19/10	02/19/10	02/19/10	02/19/10	02/19/10	02/19/10
Chemical Name													
Volatile Organic Compounds (µg/kg)													
No Detections													
Semivolatile Organic Compounds (µg/kg)													
Benzo(a)pyrene	--	59	210	15	3.94 U	3.61 U	1.09 J	3.79 U	4.05 U	4.34 U	3.71 U	3.74 U	3.85 U
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	3,520	1,640	3,070	4,110	8,900	7,800	6,630	5,620	5,380
Arsenic	2.12	5.8	1.6	0.39	0.937	0.858	1.46	1.1	**2.58**	**8.78**	**4.19**	1.5	0.787
Barium	16.6	580	19,000	1,500	44.1 J	31.6 J	85.3 J	14.9 J	59.8 J	7.69 J	8.83 J	9.44 J	20.7 J
Beryllium	0.165	--	200	16	0.0993 J	0.264 U	0.126 J	0.28 U	0.189 J	0.325 U	0.269 U	0.268 U	0.0622 J
Calcium	441	--	--	--	368 J	53.4 J	222 J	61.1 J	289 J	613 J	661 J	136 J	388 J
Chromium	14.5	3.8	5.6	0.29	**7.15 J**	**5.96 J**	**11.7 J**	**8.49 J**	**13.5 J**	**8.43 J**	**7.71 J**	**6.33 J**	**5.68 J**
Cobalt	0.822	--	30	2.3	0.724 U	0.66 U	0.627 U	0.7 U	0.874	0.345 J	0.673 U	0.475 J	0.35 J
Copper	2.56	700	4,100	310	0.491 J	0.296 J	0.712	1.05	1.41	1	0.798	0.808	0.648
Iron	5,439	150	72,000	5,500	1,190	1,000	1,170	1,510	4,440	4,260	3,670	2,680	2,710
Lead	8.49	270	800	400	1.84	1.34	2.49	3.33	5.42	5.11	4.6	5.73	4.44
Magnesium	363	--	--	--	185 J	143 J	210 J	287 J	420 J	238 J	240 J	193 J	188 J
Manganese	9.25	65	2,300	180	6.82	2.34	4.96	3.36	9.43	2.86	3.08	4.61	4.12
Nickel	2.27	130	2,000	160	1.13	0.372 J	0.412 J	0.438 J	2.75	1.06	0.769	1.08	1.17
Potassium	361	--	--	--	211 J	161 J	265 J	223 J	354 J	254 J	244 J	203 J	148 J
Selenium	0.505	2.1	510	39	0.348 U	0.317 U	0.301 U	0.336 U	0.365 U	0.255 J	0.269 J	0.189 J	0.171 J
Vanadium	17.2	--	520	39	4.51	4.9	5.65	9.24	13.2	9.51	10.2	9.15	8.15
Zinc	6.59	1,200	31,000	2,400	2.51	1.55	1.56	1.8	5.22	2.43	2.28	2.24	2.78

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

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J - Analyte present, value may or may not be accurate or precise

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UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-4
Site 42 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR42-IS01		IR42-IS04	IR42-IS05	IR42-IS06	IR42-IS08	IR42-TW01	IR42-TW03
Sample ID					IR42-IS01-09C	IR42-IS01D-09C	IR42-IS04-09C	IR42-IS05-09C	IR42-IS06-09C	IR42-IS08-09C	IR42-TW-S01-09C	IR42-TW-S03-09C
Sample Date					07/07/09	07/07/09	07/07/09	07/07/09	07/08/09	07/07/09	07/07/09	07/08/09
Chemical Name												
Volatile Organic Compounds (µg/kg)												
2-Butanone	--	16,000	19,000,000	2,800,000	23 UJ	30 UJ	8.3 UJ	8.3 UJ	9.7 UJ	20 J	7.7 UJ	17 UJ
4-Methyl-2-pentanone	--	--	3,400,000	530,000	1.4 J	30 U	8.3 U	8.3 U	9.7 U	0.92 J	7.7 UJ	17 UJ
Acetone	--	24,000	63,000,000	6,100,000	400 J	340	24 UJ	28 J	47 J	85 J	7.7 UJ	160 J
Carbon disulfide	--	3,800	370,000	82,000	23 U	30 U	8.3 U	1.6 J	3.6 J	10 UJ	7.7 UJ	17 UJ
Chloromethane	--	15	50,000	12,000	3.3 J	30 U	8.3 U	8.3 U	9.7 U	10 UJ	7.7 UJ	17 UJ
Ethylbenzene	--	8,100	27,000	5,400	2.6 J	30 U	0.81 J	0.95 J	0.84 J	1 J	7.7 UJ	17 UJ
Methylene chloride	--	23	53,000	11,000	14 J	30 U	8.3 U	8.3 U	9.7 U	10 UJ	7.7 UJ	17 UJ
Toluene	--	5,500	820,000	500,000	9.7 J	30 U	8.3 U	8.3 U	9.7 U	2.5 J	7.7 UJ	17 UJ
Xylene, total	--	6,000	260,000	63,000	6.1 J	30 U	2.3 J	2.6 J	1.6 J	2.6 J	7.7 UJ	17 UJ
Semivolatile Organic Compounds (µg/kg)												
Benzaldehyde	--	--	1,200,000	780,000	610	330 U	240 U	230 U	240 U	240 U	250 U	140 J
Benzo(a)anthracene	--	180	2,100	150	54 J	83 UJ	59 UJ	58 UJ	59 UJ	37 J	63 UJ	74 UJ
Benzo(a)pyrene	--	59	210	15	16	11	6.3 U	6.2 U	6.3 U	24	6.8 U	7.9 U
Benzo(b)fluoranthene	--	600	2,100	150	25 J	11 J	59 U	58 U	59 U	23 J	63 U	10 J
Caprolactam	--	18,000	31,000,000	3,100,000	500 U	270 J	200 J	210 J	190 J	250	150 J	260 J
Di-n-butylphthalate	--	19,000	6,200,000	610,000	500 U	330 U	240 U	230 U	240 U	54 J	250 U	300 U
n-Nitroso-di-n-propylamine	--	--	250	69	63 UJ	42 UJ	30 UJ	29 UJ	30 UJ	30 UJ	13 J	33 J
Total Metals (mg/kg)												
Aluminum	10,369	--	99,000	7,700	12,100	7,560	9,850	9,250	11,300	9,590	3,770	3,520
Arsenic	2.12	5.8	1.6	0.39	**4.6**	**3.2**	**3.3**	**4.4**	**3.8**	1.1	1.1	1
Barium	16.6	580	19,000	1,500	32.6	23.4	29.1	32.1	20.5	22.5	10.9	53.3
Beryllium	0.165	--	200	16	0.22 J	0.13 J	0.12 J	0.12 J	0.12 J	0.097 J	0.085 J	0.37 U
Cadmium	0.023	3.0	80	7	0.5 J	0.26 J	0.085 J	0.087 J	0.085 J	0.092 J	0.078 J	0.15 J
Calcium	441	--	--	--	10,000 J	6,300 J	7,130 J	1,490 J	1,270 J	2,270 J	818 J	4,670 J
Chromium	14.5	3.8	5.6	0.29	**16.9 J**	**10.5 J**	**13.5 J**	**13.7 J**	**14.3 J**	**9.1 J**	3.7 J	3.6 J
Cobalt	0.822	--	30	2.3	0.74 J	0.49 J	0.4 J	0.38 J	0.49 J	0.32 J	0.91 U	1.1 U
Copper	2.56	700	4,100	310	6.6	2.8	1.4	1.6	4	1.5	1.2	2.7
Iron	5,439	150	72,000	5,500	13,300 J	8,050 J	6,190 J	7,970 J	13,100 J	2,650 J	3,100 J	2,330 J
Lead	8.49	270	800	400	18.7	13	7.7	8.3	8.2	9.9	5.6	9.5
Magnesium	363	--	--	--	2,130 J	1,350 J	595 J	478 J	390 J	316 J	242 J	291 J
Manganese	9.25	65.0	2,300	180	18.4 J	10.7 J	6.1 J	4.7 J	6.4 J	8.2 J	6.6 J	16.3 J
Mercury	0.071	1	31	2.4	0.07 J	0.049 J	0.025 J	0.029 J	0.025 J	0.026 J	0.042 U	0.046 J
Nickel	2.27	130.0	2,000	160	8.7	4.3	1.3	1.4	1.3	1.6	0.96	0.95
Potassium	361	--	--	--	944 J	536 J	422 J	341 J	310 J	257 J	111 J	111 J
Selenium	0.505	2.1	510	39	0.93	0.86	0.57	0.61	0.55	0.61	0.48	0.82
Sodium	68.3	--	--	--	5,030	3,310	456	396	98.4 J	286 U	257 J	369 U
Vanadium	17.2	--	520	39	66.6	42.4	19	20.1	25.7	11.2	6.1	6.9
Zinc	6.59	1,200	31,000	2,400	18	11.2	4.4	4.1	6.1	8	4.9	9.8

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

R - Unreliable Result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-5
Site 53 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR53-IS01		IR53-IS02	IR53-IS03	IR53-IS04	IR53-IS05	IR53-IS06	IR53-IS07	IR53-IS08
Sample ID					IR53-IS01-4-5-09C	IR53-IS01D-4-5-09C	IR53-IS02-3_5-4_5-09C	IR53-IS03-6-7-09C	IR53-IS04-4-5-09C	IR53-IS05-2-3-09C	IR53-IS06-5-6-09C	IR53-IS07-1-2-09C	IR53-IS08-7-8-09C
Sample Date					07/07/09	07/07/09	07/07/09	07/08/09	07/07/09	07/08/09	07/08/09	07/07/09	07/08/09
Chemical Name													
Volatile Organic Compounds (µg/kg)													
1,2,4-Trichlorobenzene	--	2,200	28,000	6,200	15 U	0.64 J	10 U	9.8 U	12 UJ	14 U	11 U	13 U	9.2 U
2-Butanone	--	16,000	20,000,000	2,800,000	15 U	100 J	10 U	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Acetone	--	24,000	63,000,000	6,100,000	120 R	340 J	22 U	9.8 U	12 U	42 U	11 U	70 U	13 U
Benzene	--	7.3	5,400	1,100	15 U	16 UJ	1.3 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Carbon disulfide	--	3,800	370,000	82,000	15 U	16 UJ	5.5 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Cyclohexane	--	--	120,000	120,000	15 U	16 UJ	0.61 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Ethylbenzene	--	8,100	27,000	5,400	1.6 J	1.5 J	1.9 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Isopropylbenzene	--	1,300	270,000	210,000	3.1 J	12 J	10 U	9.8 U	12 UJ	14 U	11 U	13 U	9.2 U
Methylcyclohexane	--	--	--	--	15 U	16 UJ	0.73 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Toluene	--	5,500	820,000	500,000	15 U	2.2 J	1.7 J	9.8 U	12 U	14 U	11 U	13 U	9.2 U
Semivolatile Organic Compounds (µg/kg)													
Benzo(a)pyrene	--	59	210	15	1.8 J	2.8 J	1.4 J	1.3 J	1.3 J	2.2 J	2.7 J	1.7 J	1.1 J
Benzo(b)fluoranthene	--	600	2,100	150	2.8 J	3.9 J	2.2 J	62 U	57 U	3.2 J	3.3 J	2.3 J	57 U
Caprolactam	--	18,000	31,000,000	3,100,000	220 J	280 UJ	220 UJ	150 J	230 U	270 U	260 U	230 UJ	150 J
Pesticide/Polychlorinated Biphenyls (µg/kg)													
No Detections					NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	4,540	5,080	4,770	8,340	1,840	15,400	14,700	14,300	12,600
Arsenic	2.12	5.8	1.6	0.39	0.74 J	0.83 J	0.83 J	**2.3 J**	0.31 J	**2.4 J**	**7.5 J**	**1.7 J**	**2.8 J**
Barium	16.6	580	19,000	1,500	25	30.4	9.6	13.4	4.9	25.6	17.4	34.9	11.7
Beryllium	0.165	--	200	16	0.131 J	0.149 J	0.27 U	0.107 J	0.275 U	0.144 J	0.195 J	0.15 J	0.138 J
Cadmium	0.023	3	80	7	0.329 U	0.344 U	0.128 J	0.306 U	0.275 U	0.331 U	0.317 U	0.061 J	0.28 U
Calcium	441	--	--	--	561	716	32,400	296 J	233 J	207 J	363	7,270	140 J
Chromium	14.5	3.8	5.6	0.29	3.9 J	4.4 J	**5.9 J**	**13.5 J**	2.7 J	**14.7 J**	**26.9 J**	**15.6 J**	**18 J**
Cobalt	0.822	--	30	2.3	0.99 U	1 U	0.81 U	0.92 U	0.83 U	1	0.59 J	0.63 J	0.47 J
Copper	2.56	700	4,100	310	0.79	0.78	0.69	1.4	0.55 U	1.8	2.8	2.4	1.6
Iron	5,439	150	72,000	5,500	2,990 J	3,240 J	2,500 J	5,740 J	874 J	10,200 J	12,300 J	3,930 J	3,700 J
Lead	8.49	270	800	400	5.6	7	6.7	4.7	2.4	7.5	10	13.7	5
Magnesium	363	--	--	--	194 J	226 J	624 J	285 J	76.5 J	489 J	621 J	515 J	475 J
Manganese	9.25	65.0	2,300	180	14.5	17.1	10.7	4.6	2.3	13.6	8.1	8.1	5
Mercury	0.071	1.0	31	2.3	0.045	0.056	0.022 J	0.026 J	0.038 U	0.046	0.021 J	0.058	0.037 U
Nickel	2.27	130.0	2,000	160	0.92	0.97	1.1	1.1	0.48 J	4.1	2.1	2.5	1.6
Potassium	361	--	--	--	108 J	123 J	146 J	455 J	99.9 J	296 J	767 J	309 J	580 J
Selenium	0.505	2.1	510	39	0.53	0.6	0.3	0.19 J	0.28 U	0.39	0.39	0.65	0.27 J
Sodium	68.3	--	--	--	329 UJ	344 UJ	68.8 J	306 UJ	275 UJ	331 UJ	317 UJ	275 UJ	280 UJ
Vanadium	17.2	--	520	39	5 J	5.3 J	8 J	17.4 J	3.1 J	23.9 J	35.2 J	16.8 J	16.3 J
Zinc	6.59	1,200	31,000	2,400	3.1	2.7	7	3.9	1.4 U	7.6	7.8	6.1	5.6

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-6
Site 55 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR55-IS01		IR55-IS02	IR55-IS03	IR55-IS04	IR55-IS05	IR55-IS06	IR55-IS07
Sample ID					IR55-IS01-7-8-09C	IR55-IS01D-7-8-09C	IR55-IS02-4-5-09C	IR55-IS03-1-2-09C	IR55-IS04-4-5-09C	IR55-IS05-3-4-09C	IR55-IS06-3-4-09C	IR55-IS07-3-4-09C
Sample Date					07/09/09	07/09/09	07/09/09	07/10/09	07/09/09	07/10/09	07/12/09	07/09/09
Chemical Name												
Volatile Organic Compounds (µg/kg)												
Acetone	--	24000	63,000,000	6,100,000	12 U	11 U	13 U	65 U	12 U	13 R	33 U	36
Ethylbenzene	--	8,100	27,000	5,400	12 U	11 U	10 U	1.1 J	10 U	13 U	1.5 J	9.5 U
Methylene chloride	--	23	53,000	11,000	12 U	11 U	13 U	43	10 U	13 U	9.5 J	9.8
Toluene	--	5,500	820,000	500,000	12 U	11 U	10 U	1.3 J	10 U	13 U	11 U	9.5 U
Semivolatile Organic Compounds (µg/kg)												
Benzo(a)anthracene	--	180	2,100	150	54 UJ	7.4 J	7.3 J	52 UJ	8.4 J	54 UJ	8.4 J	7.8 J
Benzo(a)pyrene	--	59	210	15	5.8 U	6 U	6 U	5.6 U	1.3 J	5.8 U	6.8 U	6.4 U
Benzo(b)fluoranthene	--	600	2,100	150	54 U	57 U	56 U	52 U	62 U	54 U	2.5 J	60 U
Caprolactam	--	18,000	31,000,000	3,100,000	220 UJ	230 UJ	87 J	210 U	250 UJ	220 U	160 J	240 UJ
Dibenz(a,h)anthracene	--	190	210	15	5.8 U	6 U	13	5.6 UJ	6.6 U	5.8 UJ	6.8 U	6.4 U
Pentachlorophenol	--	31.0	9,000	3,000	58 U	60 U	61 J	17 U	66 U	18 U	21 U	63 U
Pesticide/Polychlorinated Biphenyls (µg/kg)												
4,4'-DDD	--	240	7,200	2,000	0.72 U	0.76 U	0.75 U	0.36 J	3.5	0.36 U	4.6	0.8
4,4'-DDE	--	--	5,100	1,400	0.72 U	0.76 U	0.75 U	3.9	0.65 J	0.36 U	1.9	0.28 J
4,4'-DDT	--	340	7,000	1,700	0.72 U	1	0.75 U	0.65 J	0.85	0.36 U	1.8	0.8 U
alpha-BHC	--	--	270	77	0.36 U	0.38 U	0.37 U	0.35 U	0.42 U	0.36 U	0.42 U	0.29 J
beta-BHC	--	--	960	270	0.36 U	0.38 U	0.37 U	0.35 U	0.42 U	0.36 U	0.42 U	0.26 J
Endosulfan II	--	--	370,000	37,000	0.59 J	0.76 U	0.75 U	0.7 U	0.83 U	0.36 U	0.85 U	0.8 U
gamma-BHC (Lindane)	--	1.8	2,100	520	0.36 U	0.38 U	0.37 U	0.35 U	0.42 U	0.36 U	0.42 U	0.17 J
Herbicides (µg/kg)												
No Detections					NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (mg/kg)												
Aluminum	10,369	--	99,000	7,700	1,450	1,750	4,110	3,160	10,800	1,040	17,500	7,510
Arsenic	2.12	5.8	1.6	0.39	**4.4**	**7**	**3.5**	1	**3.4**	0.6	**5.1**	**4.6**
Barium	16.6	580	19,000	1,500	4.8	10.7	8.8	10	12.1	3.8	24.9	9.6
Beryllium	0.165	--	200	16	0.27 U	0.28 U	0.28 U	0.26 U	0.14 J	0.27 U	0.23 J	0.139 J
Calcium	441	--	--	--	207 J	265 J	406 J	143 J	101 J	150 J	2,250 U	100 J
Chromium	14.5	3.8	5.6	0.29	**6.6 J**	**8.1 J**	**12.1 J**	3.7 J	**16 J**	3.2 J	**21.8**	**15.4 J**
Cobalt	0.822	--	30	2.3	0.8 U	0.85 U	0.84 U	0.78 U	0.55 J	0.81 U	0.98 J	0.38 J
Copper	2.56	700	4,100	310	1.1	1.6	1.2	0.61	2.4	0.54 U	7.8	2.6
Iron	5,439	150	72,000	5,500	2,390 J	3,390 J	2,220 J	2,050	6,980 J	738	9,010	8,620 J
Lead	8.49	270	800	400	2.9	6.4	4.1	4.3	6.8	2.1	11.2	5.1
Magnesium	363	--	--	--	121 J	139 J	173 J	127 J	484 J	269 U	621 J	434 J
Manganese	9.25	65.0	2,300	180	11.2	10.6	4.2	4.1	9.6	6.2	14.6	8.1
Mercury	0.071	1.0	31	2.4	0.034 U	0.038 U	0.037 U	0.027 J	0.021 J	0.039 U	0.02 J	0.017 J
Nickel	2.27	130	2,000	160	0.22 J	0.26 J	0.64	1	2.3	0.38 J	4.6	1.6
Potassium	361	--	--	--	125 J	142 J	198 J	109 J	483	54.1 J	604 J	439
Selenium	0.505	2.1	510	39	0.3	0.32	0.33	0.26 U	0.33	0.27 U	0.49 J	0.53
Silver	0.129	--	510	39	0.53 U	0.57 U	0.56 U	0.52 U	0.61 U	0.54 U	1.3 U	0.06 J
Vanadium	17.2	--	520	39	7.2	8.8	12.3	5.2	19.5	3.4	28.3	19.8
Zinc	6.59	1,200	31,000	2,400	1.4 U	1.5 U	2.7 U	3.3	5.9	0.79 J	9.8 U	5.1

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-7
Site 61 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR61-IS01	IR61-IS02	IR61-IS04	IR61-IS05	IR61-IS06	IR61-IS07		IR61-IS08	IR61-TW01
Sample ID					IR61-IS01-09C	IR61-IS02-09C	IR61-IS04-09C	IR61-IS05-09C	IR61-IS06-09C	IR61-IS07-09C	IR61-IS07D-09C	IR61-IS08-09C	IR61-TW-S01-09C
Sample Date					07/13/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09	07/13/09
Chemical Name													
Volatile Organic Compounds (µg/kg)													
Chloroform	--	340	1,500	300	9.5 U	9.1 U	11 U	9.3 U	12 U	9.5 U	7.8 U	1.5 J	10 U
Ethylbenzene	--	8,100	27,000	5,400	0.74 J	9.1 U	0.84 J	0.7 J	1 J	9.5 U	7.8 U	0.71 J	0.86 J
Methylene chloride	--	23	53,000	11,000	9.5 J	9.1 UJ	11 U	9.3 U	1.7 J	9.5 U	86	8.4 U	10 U
Semivolatile Organic Compounds (µg/kg)													
Benzo(a)pyrene	--	59	210	15	6 U	6 U	6.1 U	1.3 J	1.4 J	6.8 U	7 U	1.4 J	6.2 U
Caprolactam	--	18,000	31,000,000	3,100,000	220 U	220 U	87 J	240 U	220 U	250 U	260 U	120 J	80 J
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	10,300	6,740	9,450	13,500	3,510	6,670	2,910	10,400	11,500
Arsenic	2.12	5.8	1.6	0.39	1.2	0.79	1.4	1.1	0.44 J	0.62 J	0.32 J	0.8	1.2
Barium	16.6	580	19,000	1,500	16.1	7.9	12.7	27.5	7.3	10.2	4.9	24	19.8
Beryllium	0.165	--	200	16	0.12 J	0.094 J	0.08 J	0.24 J	0.28 U	0.32 U	0.33 U	0.16 J	0.16 J
Calcium	441	--	--	--	911	78 J	288 U	467	282 U	316 U	331 U	329	289 U
Chromium	14.5	3.8	5.6	0.29	**10.9**	**8.9**	**13.1**	**10.7**	4.3	**7.2**	3.6	**12.6**	**11.7**
Cobalt	0.822	--	30	2.3	0.51 J	0.46 J	0.5 J	0.91	0.84 U	0.95 U	0.99 U	0.52 J	0.55 J
Copper	2.56	700	4,100	310	0.57 U	1.1	1.8	0.6 U	0.56 U	0.38 J	0.66 U	0.36 J	0.4 J
Iron	5,439	150	72,000	5,500	7,030	2,970	6,560	7,170	2,040	4,490	1,940	3,560	10,200
Lead	8.49	270	800	400	6.4	4.1	4.7	6.2	3.3	5.4	3.6	6.5	6.1
Magnesium	363	--	--	--	400 J	218 J	338 J	448 J	113 J	219 J	97.8 J	425 J	438 J
Manganese	9.25	65.0	2,300	180	10.5	4.6	5.5	9.6	3.7	6.9	7.8	5.3	7.9
Mercury	0.071	1.0	31	2.4	0.017 J	0.04 U	0.041 U	0.036 U	0.033 U	0.036 U	0.04 U	0.017 J	0.039 U
Nickel	2.27	130	2,000	160	2.5	2.3	3	4.3	1.1	1.8	0.92	2.6	3.4
Potassium	361	--	--	--	182 J	216 J	208 J	168 J	87.8 J	131 J	69 J	275 J	209 J
Selenium	0.505	2.1	510	39	0.3	0.28 U	0.36	0.3 U	0.28 U	0.24 J	0.33 U	0.23 J	0.29 U
Sodium	68.3	--	--	--	65 J	278 U	288 U	302 U	282 U	316 U	331 U	298 U	289 U
Vanadium	17.2	--	520	39	16.3	10.1	15.7	16.9	5.1	9.4	4.3	11.4	18.9
Zinc	6.59	1,200	31,000	2,400	4.4	4	5.2	5.9	1.9	3.2	2.5	5.3	6

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Appendix B, Table B-8
Site 62 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR62-IS01	IR62-IS02		IR62-IS03	IR62-IS04	IR62-IS05	IR62-IS06	IR62-IS07	IR62-IS08
Sample ID					IR62-IS01-9-10-09C	IR62-IS02-11-12-09C	IR62-IS02D-11-12-09C	IR62-IS03-7-8-09C	IR62-IS04-14-15-09C	IR62-IS05-7-8-09C	IR62-IS06-11-12-09C	IR62-IS07-12-13-09C	IR62-IS08-3-4-09C
Sample Date					07/12/09	07/12/09	07/12/09	07/12/09	07/12/09	07/11/09	07/12/09	07/12/09	07/11/09
Chemical Name													
Volatile Organic Compounds (µg/kg)													
Chloroform	--	340	1,500	300	9.4 U	11 U	11 U	11 U	10 U	2.7 J	10 U	1.2 J	1 J
Ethylbenzene	--	8,100	27,000	5,400	0.73 J	11 U	0.89 J	11 U	10 U	12 U	10 U	11 U	13 U
Semivolatile Organic Compounds (µg/kg)													
Benzaldehyde	--	--	1,200,000	780,000	72 J	250 UJ	250 UJ	230 UJ	260 UJ	250 UJ	250 UJ	250 UJ	240 UJ
Benzo(a)anthracene	--	180	2,100	150	7.8 J	8.4 J	9.9 J	58 UJ	8.9 J	8.4 J	9.1 J	62 UJ	61 UJ
Benzo(a)pyrene	--	59	210	15	6 U	1.9 J	2 J	6.2 U	6.9 U	6.8 U	6.8 U	6.7 U	6.5 U
Benzo(b)fluoranthene	--	600	2,100	150	1.8 J	2.5 J	2.5 J	58 U	2.3 J	63 U	63 U	62 U	61 U
Caprolactam	--	18,000	31,000,000	3,100,000	120 J	250 U	250 U	230 U	91 J	250 U	250 U	250 U	240 U
Total Metals (mg/kg)													
Aluminum	10,369	--	99,000	7,700	6,360	16,500	16,300	462	14,400	13,200	13,300	13,200	18,100
Arsenic	2.12	5.8	1.6	0.39	0.65	**3.7**	**2.9**	0.25 J	**7.2**	**3.8**	**4.7**	**4.7**	**7.8**
Barium	16.6	580	19,000	1,500	11.5	15	15.1	2.8	17.6	14.2	15.5	17	19.7
Beryllium	0.165	--	200	16	0.06 J	0.4	0.39	0.29 U	0.59	0.28 J	0.41	0.33	0.32
Calcium	441	--	--	--	219 J	119 J	120 J	287 U	325 U	314 U	316 U	153 J	739 J
Chromium	14.5	3.8	5.6	0.39	**5.8 J**	**18.4 J**	**17.5 J**	1.8 J	**27.2 J**	**20.7 J**	**17.6 J**	**19.5 J**	**25.8 J**
Cobalt	0.822	--	30	2.3	0.86 U	0.46 J	0.5 J	0.86 U	0.85 J	0.85 J	0.54 J	1.1	0.88 J
Copper	2.56	700	4,100	310	3.3	3.3	3.3	0.57 U	7.2	3.9	3.8	3.6	4.4
Iron	5,439	150	72,000	5,500	868	14,400	14,700	231	21,400	12,900	12,200	10,300	20,300
Lead	8.49	270	800	400	5.8	6.4	6.5	2.2	8.6	5.7	6.6	5.7	5.4
Magnesium	363	--	--	--	186 J	530 J	524 J	287 U	569 J	726 J	496 J	745 J	780 J
Manganese	9.25	65.0	2,300	180	4	10.1	11.5	2.2	16.9	12.6	12.7	11.9	11.6
Mercury	0.071	1.0	31	2.4	0.034 U	0.036 U	0.04 U	0.039 U	0.046 U	0.036 U	0.036 U	0.042 U	0.021 J
Nickel	2.27	130	2,000	160	1.1	2.8	2.8	0.29 J	3.5	3	2.5	3.3	4.2
Potassium	361	--	--	--	201 J	789	777	287 U	878	735	760	740	831
Selenium	0.505	2.1	510	39	0.29 U	0.32 U	0.3 U	0.29 U	0.29 J	0.31 U	0.32 U	0.31 U	0.25 J
Silver	0.129	--	510	39	0.57 U	0.07 J	0.61 U	0.57 U	0.1 J	0.63 U	0.63 U	0.09 J	0.08 J
Vanadium	17.2	--	520	39	7	25.7	21	1.8	38.7	21.4	22	25.3	31.2
Zinc	6.59	1,200	31,000	2,400	2.7	7.6	7.8	0.68 J	16.7	9.4	9.4	13.2	9.6

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

R - Unreliable Result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-9
Site 66 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR66-IS01	IR66-IS02		IR66-IS03	IR66-IS04	IR66-IS05	IR66-IS06	IR66-TW01	IR66-TW02	IR66-TW03
Sample ID					IR66-IS01-09C	IR66-IS02-09C	IR66-IS02D-09C	IR66-IS03-09C	IR66-IS04-09C	IR66-IS05-09C	IR66-IS06-09C	IR66-TW-S01-09C	IR66-TW-S02-09C	IR66-TW-S03-09C
Sample Date					07/07/09	07/07/09	07/07/09	07/07/09	07/08/09	07/08/09	07/10/09	07/11/09	07/10/09	07/13/09
Chemical Name														
Volatile Organic Compounds (µg/kg)														
2-Butanone	--	16,000	20,000,000	2,800,000	12 UJ	10 J	10 UJ	12 UJ	7.6 UJ	12 UJ	12 UJ	12 U	32 J	10 U
2-Hexanone	--	--	140,000	21,000	12 U	10 U	10 U	12 UJ	7.6 U	12 U	12 U	12 U	13 U	10 U
4-Methyl-2-pentanone	--	--	3,400,000	530,000	12 U	10 U	10 U	12 U	7.6 U	12 U	12 U	12 U	13 U	10 U
Ethylbenzene	--	8,100	27,000	5,400	12 U	10 U	10 U	12 U	7.6 U	12 U	12 U	12 U	13 U	0.86 J
Methylene chloride	--	23	53,000	11,000	12 U	10 U	11	12 U	10	12 U	12 U	12 U	13 U	10 U
Semivolatile Organic Compounds (µg/kg)														
Benzo(a)anthracene	--	180	2,100	150	58 U	62 U	60 U	69 U	61 U	59 U	53 UJ	7.9 J	7.7 J	58 U
Benzo(a)pyrene	--	59	210	15	6.2 U	6.6 U	6.4 U	7.3 U	6.5 U	6.3 U	5.7 U	6.3 U	1.4 J	6.2 U
Benzo(b)fluoranthene	--	600	2,100	150	58 U	62 U	60 U	69 U	61 U	59 U	53 U	60 U	1.8 J	58 U
Caprolactam	--	18,000	31,000,000	3,100,000	230 U	160 J	140 J	170 J	160 J	180 J	89 J	240 UJ	220 U	80 J
Dibenz(a,h)anthracene	--	190	210	15	14 U	15 U	14 U	16 U	6.5 U	14 U	5.7 U	6.3 UJ	13	6.2 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	58 U	62 U	60 U	69 U	61 U	59 U	53 U	60 U	26 J	58 U
n-Nitroso-di-n-propylamine	--	--	250	69	9.1 J	32 U	30 U	35 U	31 U	30 U	27 UJ	30 UJ	28 UJ	30 UJ
Total Metals (mg/kg)														
Aluminum	10,369	--	99,000	7,700	1,680	4,620	4,800	10,900	7,510	4,580	3,100	392	2,390	11,500
Arsenic	2.12	5.8	1.6	0.39	0.32 J	**2.5**	**3**	**10**	**6.7**	**3.7**	0.46 J	0.6 U	1.2	1.2
Barium	16.6	580	19,000	1,500	6.5	5.8	6.5	25.6	16.7	9	5.2	0.84 J	3.2	19.8
Beryllium	0.165	--	200	16	0.077 J	0.12 J	0.12 J	1.2	0.34	0.11 J	0.27 U	0.3 U	0.071 J	0.16 J
Cadmium	0.023	3.0	80	7	0.28 U	0.31 U	0.3 U	0.11 J	0.3 U	0.3 U	0.27 U	0.3 U	0.28 U	0.29 U
Calcium	441	--	--	--	279 U	310 U	299 U	4,830 J	8,690 J	575 J	203 J	299 U	278 U	289 U
Chromium	14.5	3.8	5.6	0.29	2.1 J	**6.7 J**	**6.4 J**	**20.2 J**	**15.9 J**	**10.5 J**	3.9 J	1.5 J	3.1 J	**11.7**
Cobalt	0.822	--	30	2.3	0.84 U	0.93 U	0.9 U	5.6	1.7	0.3 J	0.8 U	0.9 U	0.29 J	0.55 J
Copper	2.56	700	4,100	310	0.41 J	1.4	1.1	5	3.2	1.4	0.53 U	0.6 U	0.56 U	0.4 J
Iron	5,439	150	72,000	5,500	709 J	3,410 J	2,300 J	16,200 J	12,900 J	6,040 J	1,060 J	278	3,310 J	10,200
Lead	8.49	270	800	400	2.9	3.9	3.9	13.4	7.8	4.2	1.7	0.86	2.2	6.1
Magnesium	363	--	--	--	68.6 J	132 J	136 J	1,250 J	826 J	322 J	125 J	299 U	104 J	438 J
Manganese	9.25	65.0	2,300	180	3.8 J	4.5 J	4 J	132 J	56.4 J	5.4 J	3.3	1.1	8.8	7.9
Nickel	2.27	130	2,000	160	1	0.94	0.86	11.9	3.8	1.1	1.1	0.24 J	0.79	3.4
Potassium	361	--	--	--	279 U	267 J	281 J	1,300 J	616 J	337 J	118 J	299 U	156 J	209 J
Selenium	0.505	2.1	510	39	0.28 U	0.31 U	0.3 U	0.34 U	0.42	0.21 J	0.27 U	0.3 U	0.28 U	0.29 U
Sodium	68.3	--	--	--	279 U	310 U	299 U	341 U	67.8 J	297 U	267 U	299 U	278 U	289 U
Vanadium	17.2	--	520	39	2.9	11.5	12.8	23	25.8	18.1	3.2	0.84 J	4.6	18.9
Zinc	6.59	1,200	31,000	2,400	2.1 U	3.8 J	3.5 U	43.3	13.6	4.3 U	2.3 U	0.55 J	1.9 U	6

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

R - Unreliable Result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix B, Table B-9
Site 66 Subsurface Soil Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSL (January, 2010)	Adjusted Industrial Soil RSL (May, 2010)	Adjusted Residential Soil RSL (May, 2010)	IR66-TW04	IR66-TW05	IR66-TW06	IR66-TW07		IR66-TW08	IR66-TW09	IR66-TW10	IR66-TW11	IR66-TW12
Sample ID					IR66-TW-S04-09C	IR66-TW-S05-09C	IR66-TW-S06-09C	IR66-TW-S07-09C	IR66-TW-S07D-09C	IR66-TW-S08-09C	IR66-TW-S09-09C	IR66-TW-S10-09C	IR66-TW-S11-09C	IR66-TW-S12-09C
Sample Date					07/07/09	07/09/09	07/09/09	07/11/09	07/11/09	07/09/09	07/11/09	07/08/09	07/11/09	07/09/09
Chemical Name														
Volatile Organic Compounds (µg/kg)														
2-Butanone	--	16,000	20,000,000	2,800,000	11 UJ	12 UJ	10 UJ	9.2 U	10 U	9.3 UJ	11 U	11 UJ	10 U	12 UJ
2-Hexanone	--	--	140,000	21,000	5.6 J	12 U	10 U	9.2 U	10 U	9.3 U	11 U	11 U	10 U	12 U
4-Methyl-2-pentanone	--	--	3,400,000	530,000	11 U	0.81 J	0.91 J	9.2 U	10 U	0.58 J	11 U	11 U	10 U	12 U
Ethylbenzene	--	8,100	27,000	5,400	11 U	0.89 J	10 U	0.94 J	0.8 J	0.72 J	11 U	11 U	0.83 J	12 U
Methylene chloride	--	23	53,000	11,000	11 U	12 U	53	9.2 U	6.9 J	9.3 U	5.2 J	11 U	10 U	12 U
Semivolatile Organic Compounds (µg/kg)														
Benzo(a)anthracene	--	180	2,100	150	62 U	7.8 J	7 J	61 UJ	61 UJ	7.7 J	59 UJ	53 U	56 UJ	53 UJ
Benzo(a)pyrene	--	59	210	15	6.6 U	6 U	5.8 U	6.5 U	6.5 U	6.4 U	1.4 J	5.7 U	6 U	5.6 U
Benzo(b)fluoranthene	--	600	2,100	150	62 U	2 J	54 U	61 U	61 U	60 U	1.9 J	53 U	56 U	53 U
Caprolactam	--	18,000	31,000,000	3,100,000	160 J	78 J	220 UJ	240 U	240 U	240 UJ	240 U	260	220 U	210 U
Dibenz(a,h)anthracene	--	190	210	15	16 U	14	5.8 U	6.5 U	6.5 U	6.4 U	14	5.7 U	6 U	5.6 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	62 U	26 J	54 U	61 U	61 U	60 U	28 J	53 U	56 U	53 U
n-Nitroso-di-n-propylamine	--	--	250	69	32 U	28 UJ	28 UJ	31 UJ	31 UJ	30 UJ	30 UJ	27 U	28 UJ	27 UJ
Total Metals (mg/kg)														
Aluminum	10,369	--	99,000	7,700	8,390	1,680	2,600	4,340	4,240	2,670	3,460	4,660	2,980	5,130
Arsenic	2.12	5.8	1.6	0.39	**8**	0.74	**2.2**	0.9	0.79	0.34 J	0.56 J	**2.7**	0.52 J	0.79
Barium	16.6	580	19,000	1,500	21.8	2.7	4.7	5.6	5.6	3.8	5	6.8	6.9	4.9
Beryllium	0.165	--	200	16	1.5	0.12 J	0.22 J	0.07 J	0.07 J	0.13 J	0.09 J	0.069 J	0.24 J	0.074 J
Cadmium	0.023	3.0	80	7	0.12 J	0.28 U	0.27 U	0.31 U	0.31 U	0.3 U	0.29 U	0.26 U	0.28 U	0.26 U
Calcium	441	--	--	--	4,550 J	279 U	202 J	191 J	211 J	546 J	247 J	418 J	278 J	245 J
Chromium	14.5	3.8	5.6	0.29	**16 J**	3.3 J	4.4 J	**6 J**	5.4 J	3.1 J	**6.5 J**	**8.7 J**	**7.5 J**	**7.6 J**
Cobalt	0.822	--	30	2.3	5.4	0.37 J	0.65 J	0.93 U	0.93 U	0.9 U	0.87 U	0.78 U	0.85 U	0.29 J
Copper	2.56	700	4,100	310	3.8	0.4 J	0.9	0.55 J	0.53 J	0.74	0.72	0.7	0.98	0.48 J
Iron	5,439	150	72,000	5,500	12,700 J	1,230 J	3,780 J	2,870	1,840	923 J	1,800	3,400 J	1,430	2,350 J
Lead	8.49	270	800	400	10.9	3.1	2.5	2.7	2.7	2.4	2.5	2.8	2.7	1.9
Magnesium	363	--	--	--	1,140 J	84.1 J	163 J	204 J	191 J	108 J	204 J	189 J	232 J	216 J
Manganese	9.25	65.0	2,300	180	212 J	4.4	5.8	4.1	3.7	12.5	4.3	3.6 J	6.9	4.6
Nickel	2.27	130	2,000	160	10.5	0.71	1.4	1.4	1.3	0.95	1.1	0.8	1.3	1.7
Potassium	361	--	--	--	775 J	117 J	183 J	171 J	160 J	185 J	231 J	208 J	225 J	187 J
Selenium	0.505	2.1	510	39	0.31 U	0.28 U	0.27 U	0.31 U	0.31 U	0.3 U	0.29 U	0.26 U	0.28 U	0.26 U
Sodium	68.3	--	--	--	306 U	279 U	270 U	309 U	309 U	299 U	291 U	261 U	283 U	265 U
Vanadium	17.2	--	520	39	16.6	3.7	5.9	7.9	7.1	3.8	9	11	7.8	6.9
Zinc	6.59	1,200	31,000	2,400	32.8	2.6 U	4.9 U	2.7 U	2.7 U	2.6 U	2.8 U	2.9 U	3.1 U	3.1 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

R - Unreliable Result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner

Raw Analytical Data is provided electronically on the CD ROM.

Appendix C
Groundwater Analytical Data

Appendix C, Table C-1
Site 4 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	**Camp Lejeune Background GW 2X Mean**	**NCGWQS (January 2010) ***	**Adjusted Tap Water RSL**	IR04-TW01	IR04-TW02	IR04-TW03	
Sample ID				IR04-TW01-09C	IR04-TW02-09C	IR04-TW03-09C	IR04-TW03D-09C
Sample Date				07/13/09	07/14/09	07/14/09	07/14/09
Chemical Name							
Volatile Organic Compounds (µg/l)							
Carbon disulfide	--	700	100	1 U	1 U	0.22 J	0.26 J
Semivolatile Organic Compounds (µg/l)							
4-Methylphenol	--	40	18	9.6 U	9.2 U	9.2 U	0.75 J
Total Metals (µg/l)							
Aluminum	1,886	--	3,700	200 U	497 J	463 J	605 J
Barium	86.2	700	730	32 J	27.3 J	79.9	83.6
Calcium	69,078	--	--	2,390 J	6,240 J	1,740 J	1,840 J
Iron	5,999	300	2,600	**2,950**	**4,350**	**3,910**	**4,150**
Magnesium	6,363	--	--	5,000 U	1,430 J	1,760 J	1,870 J
Manganese	214	50	88	44.2	25.7	28.2	29.4
Nickel	7.97	100	73	5.7 J	10 U	5.5 J	6.1 J
Potassium	3,277	--	--	5,000 U	5,000 U	1,480 J	1,550 J
Sodium	22,508	--	--	5,100	5,140	8,960	9,600
Zinc	42.1	1,000	1,100	7.5 J	25 U	5.7 J	6.2 J

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-2
Site 23 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010) *	Adjusted Tap Water RSL	IR78-GW16		IR78-GW17-2	IR78-GW17-4	USTHPFFC-MW09
Sample ID				IR78-GW16-09C	IR78-GW16D-09C	IR78-GW17-2-09C	IR78-GW17-4-09C	USTHPFFC-MW09-09C
Sample Date				07/15/09	07/15/09	07/15/09	07/15/09	07/15/09
Chemical Name								
Volatile Organic Compounds (µg/l)								
1,2-Dichloroethane	--	0.4	0.15	1 U	1 U	**9.5**	1 U	1 U
1,2-Dichloropropane	--	0.6	0.39	1 U	1 U	**0.78 J**	1 U	1 U
Benzene	--	1	0.41	1 U	1 U	**6.3**	1 U	1 U
cis-1,2-Dichloroethene	--	70	37	1 U	1 U	0.5 J	1 U	1 U
Cyclohexane	--	--	1,300	1 U	1 U	0.57 J	1 U	1 U
Tetrachloroethene	--	0.7	0.11	1 U	1 U	**0.74 J**	1 U	1 U
Trichloroethene	--	3	2	1 U	1 U	1.1	1 U	1 U
Semivolatile Organic Compounds (µg/l)								
bis(2-Ethylhexyl)phthalate	--	3	4.8	9.6 U	9.8 U	9.4 U	9.6 U	1.7 J
Pesticide/Polychlorinated Biphenyls (µg/l)								
alpha-Chlordane	--	0.1	0.19	0.01 U	0.0098 U	0.0096 U	0.0098 U	0.012
Herbicides (µg/l)								
No Detections								
Total Metals (µg/l)								
Aluminum	1,886	--	3,700	134 J	134 J	76.5 J	199 J	210
Barium	86.2	700	730	14.6 J	14.5 J	42.1	37.5 J	32.9 J
Calcium	69,078	--	--	55,800 J	54,700 J	168,000 J	48,900 J	24,100 J
Iron	5,999	300	2,600	100 U	100 U	1,400 J	140 J	37.4 J
Lead	2.8	15	15	3 U	3 U	3 U	3 U	1.7 J
Magnesium	6,363	--	--	5,770	5,710	1,790 J	3,800 J	1,790 J
Manganese	214	50	88	5.9 J	5.8 J	26.1	19.7	15 U
Nickel	7.97	100	73	10 U	10 U	3.1 J	10 U	10 U
Potassium	3,277	--	--	1,580 J	1,570 J	1,560 J	1,110 J	3,570 J
Selenium	3.14	20	18	3.7 J	5.5 J	5 UJ	5 UJ	5 UJ
Sodium	22,508	--	--	4,220 J	4,140 J	9,710	14,200	4,640 J

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-3
Site 38 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	**Camp Lejeune Background GW 2X Mean**	**NCGWQS (January, 2010) ***	**Adjusted Tap Water RSL (May 2010)**	IR38-GW01	IR38-GW02		IR38-GW03
Sample ID				IR38-GW01-10A	IR38-GW02-10A	IR38-GW02D-10A	IR38-GW03-10A
Sample Date				02/25/10	02/23/10	02/23/10	02/25/10
Chemical Name							
Volatile Organic Compounds (µg/l)							
No Detections							
Semivolatile Organic Compounds (µg/l)							
No Detections							
Total Metals (µg/l)							
Aluminum	1,886	--	3,700	592	291	292	132
Barium	86.2	700	730	27.1	38.1	40.2	25.8
Cadmium	0.358	2	1.8	0.669 J	0.863 J	0.876 J	0.806 J
Calcium	69,078	--	--	97,700	62,900	68,100	77,800
Chromium	3.13	10	0.043	**3.53**	**1.35**	**1.41**	1.25 U
Cobalt	3.4	--	1.1	**2.66 J**	**1.29 J**	**1.33 J**	**1.54 J**
Copper	2.76	1,000	150	1.57 J	2.5 U	2.5 U	2.5 U
Iron	5,999	300	2,600	867	234	237	33.1
Lead	2.8	15	15	0.926	0.75 U	0.75 U	0.75 U
Magnesium	6,363	--	--	6,800 J	3,370 J	3,800 J	4,540 J
Manganese	214	50	88	54	25	26.7	29.5
Nickel	7.97	100	73	2.5 J	1.34 J	1.37 J	2.5 U
Potassium	3,277	--	--	1,310 J	1,470 J	1,640 J	716 J
Selenium	3.14	20	18	1.5 UJ	1.99 J	2.09 J	2 J
Sodium	22,508	--	--	7,000	5,230	5,520	4,000
Vanadium	4.72	--	18	3.01 J	3.12 U	3.12 U	3.12 U
Zinc	42.1	1,000	1,100	11	17.1	17.1	8.15
Dissolved Metals (µg/l)							
Aluminum, Dissolved	1,886	--	3,700	50 U	85.5	81.8	62.9
Barium, Dissolved	86.2	700	730	19.4	34.3	32.8	23.9
Cadmium, Dissolved	0.358	2	1.8	0.548 J	0.801 J	0.805 J	0.693 J
Calcium, Dissolved	69,078	--	--	94,900	59,800	59,600	80,100
Cobalt, Dissolved	3.4	--	1.1	**1.28 J**	3.12 U	3.12 U	**1.54 J**
Iron, Dissolved	5,999	300	2,600	25 U	8.52 J	25 U	25 U
Magnesium, Dissolved	6,363	--	--	6,840 J	3,440 J	3,380 J	4,800 J
Manganese, Dissolved	214	50	88	49.5	23.1	22.5	31.8
Nickel, Dissolved	7.97	100	73	1.42 J	1.51 J	0.854 J	2.5 U
Potassium, Dissolved	3,277	--	--	1,390	1,660	1,580	802 J
Selenium, Dissolved	3.14	20	18	1.5 U	1.58	1.96	2.03
Sodium, Dissolved	22,508	--	--	7,560	5,720	5,320	4,430
Zinc, Dissolved	42.1	1,000	1,100	3.38 J	14.2	13.8	7.35

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NC2LGW or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-4
Site 42 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	**Camp Lejeune Background GW 2X Mean**	**NCGWQS (January 2010) ***	**Adjusted Tap Water RSL**	IR42-TW01	IR42-TW02		IR42-TW03
Sample ID				IR42-TW01-09C	IR42-TW02-09C	IR42-TW02D-09C	IR42-TW03-09C
Sample Date				07/10/09	07/11/09	07/11/09	07/10/09
Chemical Name							
Volatile Organic Compounds (µg/l)							
Acetone	--	6,000	2,200	2.5 U	2.5 U	2.5 U	12
Carbon disulfide	--	700	100	1 U	0.2 J	1 U	0.42 J
Semivolatile Organic Compounds (µg/l)							
bis(2-Ethylhexyl)phthalate	--	3	4.8	9.6 U	2.1 J	10 U	2.1 J
Total Metals (µg/l)							
Aluminum	1,886	--	3,700	200 U	200 U	200 U	**8,460 J**
Arsenic	5.77	10	0.045	10 U	10 U	10 U	**4.8 J**
Barium	86.2	700	730	84.6	19.8 J	18.4 J	75.2
Calcium	69,078	--	--	275,000 J	69,800 J	67,100 J	54,900 J
Chromium	3.13	10	11	10 U	10 U	10 U	10.9
Copper	2.76	1,000	150	10 U	10 U	10 U	5.2 J
Iron	5,999	300	2,600	**23,700**	477	391	**31,500**
Lead	2.8	15	--	3 U	3 U	3 U	3
Magnesium	6,363	--	--	7,530	27,200	24,400	9,460
Manganese	214	50	88	**1,280**	39.6	39.4	62.2
Nickel	7.97	100	73	3.8 J	4.2 J	3.2 J	11.2
Potassium	3,277	--	--	2,620 J	8,860	8,540	5,100
Sodium	22,508	--	--	226,000 J	212,000 J	197,000 J	194,000 J
Vanadium	4.72	--	18	15 U	15 U	15 U	12.6 J
Zinc	42.1	1,000	1,100	25 UJ	25 UJ	25 UJ	17.4 J

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-5
Site 53 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	NCGWQS (January, 2010) *	Adjusted Tap Water RSLs	IR53-TW01	IR53-TW02		IR53-TW03	IR53-MW03
Sample ID				IR53-TW01-09C	IR53-TW02-09C	IR53-TW02D-09C	IR53-TW03-09C	IR53-GW03-10A
Sample Date				07/12/09	07/11/09	07/11/09	07/13/09	02/24/10
Chemical Name								
Volatile Organic Compounds (µg/l)								
Carbon disulfide	--	700	100	1 U	1 U	1 U	1.1	NA
Semivolatile Organic Compounds (µg/l)								
Di-n-butylphthalate	--	700	370	9.3 U	1.3 J	9.8 U	9.2 U	NA
Pesticide/Polychlorinated Biphenyls (µg/l)								
No Detections								
Total Metals (µg/l)								
Aluminum	1,886	--	3,700	2,200 J	3,460 J	**6,910 J**	**50,300**	NA
Arsenic	5.77	10	0.045	**5 J**	10 U	**3.6 J**	**25.7**	1.5 U
Barium	86.2	700	730	23.8 J	39.5 J	44.3	121	NA
Cadmium	0.358	2	1.8	5 U	5 U	5 U	1.3 J	NA
Calcium	69,078	--	--	6,610 J	1,290 J	1,310 J	6,190	NA
Chromium	3.13	10	0.043	**2.6 J**	**5.7 J**	**11.6**	**71.2**	NA
Cobalt	3.4	--	1.1	15 U	15 U	15 U	**28.9**	NA
Copper	2.76	1,000	150	10 U	10 U	10 U	17.5	NA
Iron	5,999	300	2,600	**29,300**	**3,100**	**4,660**	**93,900**	NA
Lead	2.8	15	15	3 U	3 U	1.9 J	28.8	NA
Magnesium	6,363	--	--	1,750 J	1,290 J	1,440 J	3,280 J	NA
Manganese	214	50	88	24.1	20.5	23	**95.1**	NA
Mercury	0.1	1	1.1	0.2 UJ	0.2 UJ	0.2 UJ	0.13 J	NA
Nickel	7.97	100	73	7.9 J	4.4 J	5.4 J	55.1	NA
Potassium	3,277	--	--	5,000 U	5,000 U	1,180 J	3,070 J	NA
Selenium	3.14	20	18	5 U	5 U	5 U	4 J	NA
Sodium	22,508	--	--	9,930 U	5,830 J	5,840 J	3,240 J	NA
Vanadium	4.72	--	18	15 U	6.7 J	12.1 J	**80.2**	NA
Zinc	42.1	1,000	1,100	25 UJ	6.3 J	11.7 J	68.4	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

NA - Not analyzed

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-6
Site 55 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	NCGWQS (January, 2010) *	Adjusted Tap Water RSL	IR55-TW01	IR55-TW02	IR55-TW03	
Sample ID				IR55-TW01-09C	IR55-TW02-09C	IR55-TW03-09C	IR55-TW03D-09C
Sample Date				07/12/09	07/12/09	07/12/09	07/12/09
Chemical Name							
Volatile Organic Compounds (µg/l)							
Carbon disulfide	--	700	100	1 U	0.61 J	1 U	0.28 J
Semivolatile Organic Compounds (µg/l)							
Di-n-butylphthalate	--	700	370	10 U	1.5 J	10 U	9.6 U
Pesticide/Polychlorinated Biphenyls (µg/l)							
4,4'-DDD	--	0.1	0.28	0.019 U	0.019 U	0.008 J	0.0071 J
gamma-BHC (Lindane)	--	0.03	0.061	0.0094 U	0.004 J	0.0094 UJ	0.0098 UJ
Methoxychlor	--	40	18	0.0094 U	0.0096 U	0.0094 UJ	0.0037 J
Herbicides (µg/l)							
No Detections							
Total Metals (µg/l)							
Aluminum	1,886	--	3,700	200 U	**10,600 J**	**29,900**	**14,500**
Arsenic	5.77	10	0.045	10 U	**6.1 J**	**17.9**	**14.9**
Barium	86.2	700	730	35.4 J	39.7 J	117	85.4
Calcium	69,078	--	--	5,000 U	3,580 J	53,800 U	44,200 U
Chromium	3.13	10	0.043	10 U	**14.2**	**44.3**	**18**
Copper	2.76	1,000	150	10.7	10 U	7.9 J	10 U
Iron	5,999	300	2,600	**4,650**	**15,500**	**55,500**	**59,700**
Lead	2.8	15	15	3 U	2.2 J	**13.5**	6.1 U
Magnesium	6,363	--	--	2,260 J	4,920 J	15,200	15,800
Manganese	214	50	88	**88.1**	41.6	**339**	**353**
Nickel	7.97	100	73	16.3	10.4	56.3 J	9.1 J
Potassium	3,277	--	--	1,160 J	7,060	14,500	16,000
Sodium	22,508	--	--	8,560	37,400 J	47,300	37,800
Vanadium	4.72	--	18	15 U	15.8	**45.3**	**21**
Zinc	42.1	1,000	1,100	30.9 U	9.4 J	50.8 U	25 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-7
Site 61 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	**Camp Lejeune Background GW 2X Mean**	**NCGWQS (January, 2010) ***	**Adjusted Tap Water RSL**	IR61-TW01	IR61-TW02	IR61-TW03		IR61-TW01
Sample ID				IR61-TW01-09C	IR61-TW02-09C	IR61-TW03-09C	IR61-TW03D-09C	IR61-GW01-10A
Sample Date				07/15/09	07/15/09	07/14/09	07/14/09	02/24/10
Chemical Name								
Volatile Organic Compounds (µg/l)								
Chloroform	--	70	0.19	1 U	1 U	**2**	**1.7**	NA
Ethylbenzene	--	600	1.5	0.14 J	1 U	1 U	1 U	NA
Semivolatile Organic Compounds (µg/l)								
No Detections								
Total Metals (µg/l)								
Aluminum	1,886	--	3,700	**109,000**	274	**6,280**	**9,830**	NA
Arsenic	5.77	10	0.045	**53.6**	10 U	**13.4**	**14.4**	**1.67**
Barium	86.2	700	730	229	14.1 J	52.7	62.7	NA
Beryllium	0.308	--	7.3	3.5 J	5 U	5 U	5 U	NA
Cadmium	0.358	2	1.8	**2.2 J**	5 U	5 U	5 U	NA
Calcium	69,078	--	--	742,000 J	27,900 J	118,000 J	118,000 J	NA
Chromium	3.13	10	0.043	**150**	10 U	**23.7**	**30.2**	NA
Cobalt	3.4	--	1.1	**12.9 J**	**5.5 J**	15 U	15 U	NA
Copper	2.76	1,000	150	18.6	10 U	10 U	10 U	NA
Iron	5,999	300	2,600	**147,000 J**	1,100 J	17,400 U	**23,300 J**	NA
Lead	2.8	15	15	**93.4**	3 U	4.7	7	NA
Magnesium	6,363	--	--	13,500	1,310 J	4,570 J	4,560 J	NA
Manganese	214	50	88	**643**	**138**	**287**	**283**	NA
Mercury	0.1	1	1.1	0.14 J	0.2 U	0.2 U	0.2 U	NA
Nickel	7.97	100	73	59.7	7.4 J	12.4	14	NA
Potassium	3,277	--	--	4,990 J	5,000 U	1,710 J	1,700 J	NA
Sodium	22,508	--	--	11,900	8,320	10,300	9,990	NA
Vanadium	4.72	--	18	**167**	15 U	**28**	**33.1**	NA
Zinc	42.1	1,000	1,100	201	25 U	24 J	27.6	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

µg/l - Micrograms per liter

Generated By: Jeff Albano

Checked By: Jeremy Diner

Appendix C, Table C-8
Site 66 Groundwater Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	NCGWQS (January 2010) *	Adjusted Tap Water RSL	IR66-TW01	IR66-TW02		IR66-TW03	IR66-TW04	IR66-TW05	IR66-TW06	IR66-TW07	IR66-TW08	IR66-TW09	IR66-TW10		IR66-TW11	IR66-TW12
Sample ID				IR66-TW01-09C	IR66-TW02-09C	IR66-TW02D-09C	IR66-TW03-09C	IR66-TW04-09C	IR66-TW05-09C	IR66-TW06-09C	IR66-TW07-09C	IR66-TW08-09C	IR66-TW09-09C	IR66-TW10-09C	IR66-TW10D-09C	IR66-TW11-09C	IR66-TW12-09C
Sample Date				07/13/09	07/13/09	07/13/09	07/13/09	07/12/09	07/12/09	07/14/09	07/13/09	07/12/09	07/13/09	07/14/09	07/14/09	07/13/09	07/13/09
Chemical Name																	
Volatile Organic Compounds (µg/l)																	
Acetone	--	6,000	2,200	3 U	2.9 U	3 U	3.7 U	2.5 U	2.5 U	5.8	2.5 U	2.5 U	4.8 U	2.5 U	2.5 U	2.5 U	3.8 U
Carbon disulfide	--	700	100	1 U	1 U	1 U	1 U	1 U	1 U	0.64 J	1 U	1 U	1 U	1 U	1 U	1 U	0.18 J
Chloroform	--	70	0.19	**1.7**	1 U	1 U	0.11 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	--	600	230	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J
Semivolatile Organic Compounds (µg/l)																	
4-Methylphenol	--	40	18	9.2 U	9.4 U	9.2 U	9.2 U	9.3 U	9.2 U	1.4 J	9.2 U	9.3 U	9.8 U	9.2 U	9.2 U	9.6 U	9.4 U
Total Metals (µg/l)																	
Aluminum	1,886	--	3,700	828	214 U	200 U	**6,600**	233 U	1,320 J	**4,410 J**	1,020	667 J	1,570	592 J	1,650 J	198 J	2,910
Arsenic	5.77	10	0.045	10 U	10 U	10 U	**3.3 J**	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	86.2	700	730	43.6	25.4 J	27.2 J	36.3 J	9.3 J	23.7 J	47.5	37.3 J	38.7 J	87.9	53.4	64.9	15.7 J	26.3 J
Calcium	69,078	--	--	13,700	4,420 J	4,510 J	5,750	59,500 J	3,390 J	21,500 J	2,040 J	23,400 J	71,600	21,800 J	23,100 J	75,200	74,500
Chromium	3.13	10	0.043	**2 J**	10 U	10 U	**16.3**	10 U	**2.6 J**	**30.2**	**3.2 J**	**6.6 J**	**3.6 J**	**2.1 J**	**5.2 J**	10 U	**4.6 J**
Cobalt	3.4	--	1.1	15 U	**5.2 J**	**5.4 J**	15 U	15 U	15 U	15 U	15 U	**6.2 J**	15 U	**15 J**	**17.2**	15 U	15 U
Copper	2.76	1,000	150	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11.4	10 U
Iron	5,999	300	2,600	1,940	**3,650**	**3,630**	**10,800**	500	1,490	**9,070**	**7,160**	**11,600**	**26,600**	**6,080**	**10,900**	1,920	2,120
Lead	2.8	15	15	3 U	3 U	3 U	5.6 U	3 U	3 U	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Magnesium	6,363	--	--	3,990 J	1,650 J	1,700 J	5,000 U	5,000 U	2,050 J	2,700 J	1,160 J	2,660 J	9,110	3,350 J	3,580 J	1,850 J	2,190 J
Manganese	214	50	88	26.5	**217**	**220**	**220**	23.6	17.8	**420**	**96.9**	**297**	**374**	**2,430**	**2,710**	65.7	70.5
Nickel	7.97	100	73	7 J	9.7 J	9.8 J	15.6	10 U	4.7 J	15	9.7 J	16.7	4.7 J	24.2	28.5	10 U	4.8 J
Potassium	3,277	--	--	1,930 J	5,000 U	1,010 J	1,610 J	5,000 U	1,670 J	2,440 J	5,000 U	2,080 J	2,840 J	1,480 J	1,620 J	1,140 J	1,650 J
Sodium	22,508	--	--	51,100	9,870	10,100	11,600	6,870	12,800 J	10,200	17,200	13,800 J	18,300	9,670	10,200	7,590	10,900
Vanadium	4.72	--	18	15 U	15 U	15 U	7.7 J	15 U	15 U	8.8 J	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Zinc	42.1	1,000	1,100	6.3 J	7.9 J	8 J	14.8 J	25 U	25 UJ	13.6 J	6.3 J	25 UJ	25 U	15 J	19.5 J	6 J	9.4 J

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conservative.
J - Analyte present, value may or may not be accurate or precise
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
µg/l - Micrograms per liter
Generated By: Jeff Albano
Checked By: Jeremy Diner

Raw Analytical Data is provided electronically on the CD ROM.

Appendix D
Human Health Risk Screening

APPENDIX D

Human Health Risk Screening

Human health risk screenings (HHRSs) were performed for soil and groundwater at Camp Lejeune CTO-40 Sites 4, 23, 38, 42, 53, 55, 61, 62 (soil only), and 66, as well as surface water and sediment at Site 66 to evaluate potential risks associated with exposure to these media at each site. The HHRSs provide a preliminary indication of potential risks from chemicals of potential concern (COPCs) at each of the sites, and are used to help determine whether a site requires further evaluation (e.g., a baseline risk assessment or additional data collection), or future unrestricted use (residential use, the most conservative site use, or any other potential future site use, including construction activities) of the site is acceptable based on human health risks. The HHRS was performed in a phased approach, as described below.

D.1 Data Evaluation

Soil and groundwater analytical sample data collected from Sites 4, 23, 38, 42, 53, 55, 61, 62 (soil only), and 66, as well as surface water and sediment analytical sample data collected from Site 66 in July 2009 and February 2010 were evaluated in the HHRS. The samples evaluated in the risk assessment for each site are identified on **Table D-1**. The data is presented in **Appendix B and C**. The data included in the HHRS were validated. The validated data were evaluated to determine the reliability of the data for use in the HHRA. A review of the data identified the following criteria for data usability:

- Data qualified with an R (rejected) were not used in the HHRS.
- Estimated values flagged with a J qualifier were treated as detected concentrations.
- For duplicate samples, the maximum concentration between the two samples was used as the sample concentration.
- Unfiltered groundwater samples were analyzed in the risk evaluations following USEPA Region IV guidance (USEPA, 2000).

D.2 Human Health Conceptual Site Model

The human health conceptual site model (CSM) presents an overview of site conditions, potential contaminant migration pathways, and exposure pathways to potential receptors. The human health CSM for subsurface soil, groundwater, surface water, and sediment is presented in **Figure D-1**. Surface contamination was not expected at any of the sites based on past site activities and the amount of time since activities took place, and surface soil samples were not collected. Therefore, surface soil was not evaluated in this HHRS. Section 2 presents the site history and setting, which is summarized below.

Figure 1-1 shows the locations of the nine IR sites (Sites 4, 23, 38, 42, 53, 55, 61, 62 and 66). Sites 4 and 23 are located on the Mainside area of MCB Camp Lejeune, Site 38 is located north of Camp Geiger adjacent to NC Highway 17, Sites 42, 53 and 55 are located at MCAS New River, Sites 61 and 62 are located near Camp Devildog, and Site 66 is located in the Courthouse Bay area.

Site 4, the Sawmill Road Construction Debris Dump, consists of approximately 0.3 acres of land. The site is undeveloped with sparse undergrowth and trees. The topography slopes to the south towards Henderson Lake approximately 250 feet to the south. A small drainage ditch flows under Old Sawmill Road from the north to the south, discharging to Henderson Lake. This ditch is intermittent and not considered a significant pathway in this HHRS. Reportedly, the dump contains construction and demolition debris including wood, metal, asphalt, bricks, and concrete.

Site 23, Roads and Grounds, is fully developed and located within the Hadnot Point Industrial Area (HPIA). One building, Building 1105, is on the site. The site was used for pesticide and herbicide storage and handling, and measures approximately 0.1 acres.

Site 38, the Camp Geiger Construction Dump, consists of approximately 3 acres of land adjacent to NC Highway 17. Reportedly, the dump contained construction and landscape debris. Site 38 generally slopes to the north and east and is undeveloped with heavy undergrowth and trees. Access to Site 38 is controlled by the NC Department of Transportation (DOT) and is limited by a chain link fence which runs along the southern boundary of Site 38, paralleling NC Highway 17.

Site 42, the Building 705 Bachelor Officers Quarters (BOQ) Dump, consists of approximately 2.8 acres in the MCAS New River portion of the Base. The site is partially developed with buildings, parking spaces, and natural areas. Access to the Site can be obtained from the parking lots and roads. Reportedly, the Site contains landscape and construction debris.

Site 53, the MCAS Warehouse Building Area, is an area where used crankcase oil, waste oils, jet propulsion fuels, and paint thinners were reportedly sprayed. The site consists of approximately 3 miles of roadway adjoining the southwest portion of the air station and is completely developed.

Site 55, the Air Station East Perimeter Dump, consists of approximately 6 acres that encompasses a marina and recreation area used by MCAS. Of the approximate 6 acres, just over 3.5 acres consist of land with the remaining 2.5 acres extending into the New River. Surface water and sediment were not evaluated because contamination in the New River would not necessarily be associated with Site 55. The dump reportedly contains barrels of unknown contents or quantity, tires, trash of unknown content, metal planking, and telephone poles.

Site 61 is located near the Camp Devildog area and consists of the Rhodes Point Road Dump. According to the IAS report, the Site was reported to include bivouac waste, and encompasses an approximate 6-acre area. The northern boundary of Site 61 slopes sharply down to a wetland type feature located outside the Site 61 boundary. Access to the wetland was difficult, and surface water and sediment samples were not collected. In addition, surface water and sediment would not be collected if results of the human health risk-based screening and additional considerations for Site 61 indicate that exposure to soil and

groundwater would not result in any potentially unacceptable risks to human health. Within the Site 61 boundary, the topography generally slopes to the southwest and is relatively steep with elevations ranging from 22 ft amsl in the southwestern portion of the site to 2 ft amsl in the northern portion of the site. Based on the topography at the site, drainage would be expected to flow east, towards a tributary to the New River.

Site 62, the Race Course Area Dump, is located 2 miles south of the MCAS New River and is approximately 1 to 2 acres in size. According to the IAS report, the site was reported to include bivouac waste. The site is currently used for war games and site access/use is restricted. There are dirt roads present, however, significant brush clearing was required to reach sampling locations.

Site 66, the Amphibious Tractor (AMTRAC) Landing Site and Storage, is located in the Courthouse Bay area and is approximately 40 acres of heavily vegetated woodlands. The topography at Site 66 generally slopes towards the estuary located in the western portion of the site and south and west towards the New River (**Figure 3-9**). The topography along the southern portion of the site is very steep with surface elevations ranging from 30-feet above sea level to seal level. Based on the topography of Site 66, drainage would be expected to be funneled towards the estuary, located in the western portion of the site. Significant erosion appears to have occurred (between IR66-TW03 and IR66-IS02), likely due to an extinct tributary to the New River, now inundated by a tidally influenced estuary. The site was reported to have been utilized for vehicle maintenance during training activities beginning in the 1950s; however, the exact operations are unknown.

The primary land use within the sites consist of industrial,administrative, and undeveloped areas. Potential current receptors at each of the sites include visitors, trespassers, and industrial workers. The current trespassers/visitors and industrial workers may come in contact with subsurface soil. Exposure routes may include incidental ingestion of and dermal contact with the subsurface soil, and inhalation of volatile and particulate emissions from the subsurface soil. At Site 66, the current trespassers/visitors and industrial workers may also come in contact with surface water and sediment. Exposure routes for surface water and sediment may include incidental ingestion and dermal contact. Minimal volatile organic compounds (VOCs) were detected in the surface water and sediment; therefore, the inhalation pathway for these two media is not considered a significant contribution to potential risks and was not further evaluated.

Potential future receptors include the current receptors, and future residents and construction workers. Future receptors could be exposed to subsurface soil if future residential houses or additional industrial buildings or piping/utilities are constructed at the site and the soil is re-worked, mixing the subsurface soil with the surface soil. Exposure routes for future exposure to the subsurface soil are the same as those for current subsurface soil, incidental ingestion of and dermal contact with the soil, and inhalation of volatile and particulate emissions from the soil. Additionally, the future construction worker at Site 66 could be exposed to the surface water and sediment.

Potable water supplies for MCB Camp Lejeune and the surrounding residential area are provided by water supply wells that pump groundwater from the Castle Hayne aquifer, and therefore, there is no current exposure to shallow groundwater at the site. The groundwater use patterns are already established for the Base and area around the site,

thus, use of shallow groundwater from the site for industrial or residential purposes is unlikely. Additionally, the surficial aquifer at Camp Lejeune is not suitable for potable water use due to high dissolved solids, hardness and fluctuating water levels that negatively affect water yields. However, state and federal governing policies assume that underground fresh water resources are potable, and should be maintained as such, and therefore, a potable use scenario was evaluated in this risk assessment. It was conservatively assumed if future residential development of the site occurs; the residents could use the groundwater as a potable water supply. The residents would be exposed through ingestion, and dermal contact and inhalation while bathing. Additionally, due to the depth to groundwater at these nine LSA Sites (from 1 to 28 feet bgs), construction workers could be exposed to the groundwater through dermal contact and inhalation of vapors in an excavation during construction activities.

VOCs were detected in groundwater at all of the sites except Site 38; therefore, vapor intrusion into current or future buildings was considered a potentially complete exposure pathway and was evaluated in the risk assessment.

D.3 Risk Screening Approach

The HHRS was conducted in three steps using a risk ratio technique (U.S. Navy, 2000). If chemicals of potential concern (COPCs) were identified after Step 1, the COPCs were evaluated in Step 2. If COPCs were identified after Step 2, the COPCs were evaluated in Step 3. In addition, vapor intrusion into indoor air was evaluated in the HHRS. Results of the risk-based screening and risk ratio evaluation for each site are presented in the **Table D-2** series in **Appendix D**. A detailed description of the three-step screening process is provided below:

Step 1

The maximum detected constituent concentrations for each medium were compared to USEPA Regional Screening Levels (RSLs; USEPA, 2010), or other human health risk screening levels (if appropriate). The soil and groundwater data were also compared to the MCB Camp Lejeune background data from the Final Base Background Soil Study Report and Draft Base Background Groundwater Study Report, respectively (Baker, 2001 and Baker, 2002). Background values used were two times the mean background concentration. RSLs based on noncarcinogenic effects were divided by 10 to account for exposure to multiple chemicals [i.e., were adjusted to a Hazard Quotient (HQ) of 0.1, from the HQ of 1.0 used on the USEPA RSL table]. RSLs based on carcinogenic endpoints were used as presented in the RSL table, and are based on a carcinogenic risk of 1×10^{-6}.

The soil and sediment data were compared to residential soil RSLs. Residential soil RSLs are more conservative (i.e., lower) than industrial soil RSLs and are therefore protective of all potential receptors (e.g., residents, industrial workers, construction workers, trespassers/visitors). North Carolina Soil Screening Levels (NCSSL) are also shown on the Step 1 screening tables for comparison, however they were not used to identify COPCs. The groundwater data were compared to tap water RSLs. Groundwater data were also compared to MCLs (USEPA, 2010) and the North Carolina Groundwater Quality Standards (NCGWQS), however, these comparisons were not used to identify the groundwater COPCs

to carry forward to Step 2. The surface water data were compared to the lower of the North Carolina Water Quality Standards (WQS) for human health and water supply (if available), and the Federal Ambient Water Quality Criteria (consumption of water and organisms). If neither of these were available for a detected constituent, the adjusted tap water RSL was used for comparison and identification of COPCs.

If the maximum detected concentration in soil, groundwater, surface water, or sediment exceeded the appropriate screening value and background concentration, the screening level risk evaluation proceeded to Step 2. In addition, if a carcinogenic polycyclic aromatic hydrocarbon (cPAH) {benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene} was selected as a COPC, all detected cPAHs were carried over to Step 2 based on the selection criteria of a chemical from the same class, cPAH.

In addition to comparing the detected concentrations to the screening levels, the detection limits for non-detected analytes were compared to the screening levels. Non-detected analytes with detection limits exceeding the screening level were not identified as COPCs to carry forward to Step 2, but were discussed to evaluate the potential for underestimating the total risks.

Step 2

For chemicals identified as COPCs in Step 1, a corresponding risk level was calculated using the following equation:

$$\text{corresponding risk level} = \frac{\text{concentration x acceptable risk level}}{\text{RSL}}$$

The concentration is the maximum detected concentration (the same concentration that was used in Step 1). The acceptable risk level is 1 for noncarcinogens and 10^{-6} for carcinogens. RSLs for noncarcinogenic effects were not adjusted by 10 as was done in Step 1. Instead, they are used as presented in the RSL table.

All of the corresponding risk levels for each analyte within a media were summed to calculate the cumulative corresponding HI (for noncarcinogens) and cumulative corresponding carcinogenic risk (for carcinogens). A cumulative corresponding HI was also calculated for each target organ/effect. If the cumulative corresponding HI for a target organ/effect is greater than 0.5, or the cumulative corresponding carcinogenic risk is greater than 5×10^{-5}, the anayltes contributing to these values are retained as COPCs and carried forward to Step 3.

Step 3

A corresponding risk level was calculated as discussed above for Step 2. However, the 95 percent upper confidence limit (UCL) was used in place of the maximum detected concentration, if more than five samples were available for that media, to obtain a more site-specific risk ratio. If the cumulative corresponding HI by target organ/effect is greater than 0.5, or the cumulative corresponding carcinogenic risk is greater than 5×10^{-5}, then constituents contributing to these values are considered COPCs.

ProUCL Version 4.00.04 (USEPA, 2009) was used to test the data distribution and calculate 95 percent UCL used for the Step 3 risk ratio calculations. In cases where there was less than five samples in the data set, or the recommended UCL exceeded the maximum detected concentration, the maximum concentration was used as the exposure point concentration (EPC).

Vapor Intrusion from Groundwater to Indoor Air

Groundwater risk-based screening levels protective of the vapor intrusion exposure pathway were calculated using the methodology described in Appendix D of the *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* (USEPA, 2002). The target groundwater concentration was calculated by dividing the target indoor air concentration by an attenuation factor (AF) that accounts for the diffusion resistance across the capillary fringe, and then converting the vapor concentration to an equivalent groundwater concentration, assuming the equilibrium partitioning obeys Henry's Law. The equation is as follows (USEPA, 2002):

$$C_{gw}\ [\mu g/L] = C_{target,ia}\ (\mu g/m^3) * 10^{-3}\ m^3/L * 1/H'_{TS} * 1/\alpha$$

where,

Cgw = target groundwater concentration (i.e., GWSL),
$C_{target,ia}$ = target indoor air concentration (RSLs for residential air),
MW = molecular weight (g/mole)
α = AF (default ratio of indoor air concentration to source vapor concentration; 1E-03), and
H'_{TS} = Henry's Law Constant at system (groundwater) temperature (dimensionless)

The dimensionless form of the Henry's law constant at the system temperature (i.e., at the average groundwater temperature) was estimated using the following equation:

$$H'_{TS} = \frac{\exp\left[-\frac{\Delta H_{v,TS}}{RT_s}\left(\frac{1}{T_S} - \frac{1}{T_R}\right)\right] H_R}{RT_S}$$

where,

H'_{TS} = Henry's law constant at the system temperature (dimensionless)
$\Delta H_{v,TS}$ = Enthalpy of vaporization at the system temperature (cal/mol)
T_S = System temperature (°K)
T_R = Henry's law constant reference temperature (°K)
H_R = Henry's law constant at the reference temperature (atm-m3/mol)
R_C = Gas constant (= 1.9872 cal/mol - °K)

R = Gas constant (= 8.205 E-05 atm-m^3/mol-°K)

The enthalpy of vaporization at the system temperature is calculated using the following equation:

$$\Delta H_{v,TS} = \Delta H_{v,b}\left[\frac{(1-T_S/T_C)}{(1-T_B/T_C)}\right]^n$$

where,

$\Delta H_{v,TS}$ = Enthalpy of vaporization at the system temperature (cal/mol)
$\Delta H_{v,b}$ = Enthalpy of vaporization at the normal boiling point (cal/mol)
T_S = System temperature (°K)
T_C = Critical temperature (°K)
T_B = Normal boiling point (°K)
n = Constant (unitless) (The value of n is a function of the ratio of T_B /T_C.)

The groundwater risk-based screening levels were calculated for noncarcinogenic and carcinogenic endpoints. If the calculated indoor air screening level was below the MCL, the MCL was used as the screening level. Only volatile chemicals that were detected in groundwater were screened for the vapor intrusion exposure pathway.

D.4 Site 4 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 4.

Subsurface Soil

Tables D-2.1 and 2.1a, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 4. As shown on Table D-2.1, **Appendix D**, one metal (aluminum) exceeded the first step of the screening and was identified as a COPC for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.1a, **Appendix D**), aluminum was eliminated as a COPC for subsurface soil. Therefore, exposure to subsurface soil at Site 4 is not expected to result in any unacceptable human health risks.

Groundwater

Table D-2.2, **Appendix D** presents the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.2, **Appendix D**, no chemicals exceeded the first step of the screening. Exposure to groundwater at Site 4 is not expected to result in any unacceptable human health risks.

Tables D-2.3 and D-2.3a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Carbon disulfide was the only volatile chemical detected in groundwater. Carbon disulfide was below the vapor intrusion screening level. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC and two SVOCs with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, and metals with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of the constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.5 Site 23 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 23.

Subsurface Soil

Tables D-2.4 and D-2.4a, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 23. As shown on Table D-2.4, **Appendix D**, two SVOCs (benzo(a)pyrene and benzo(b)fluoranthene) and one metal (arsenic) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Three SVOCs (benzo(a)anthracene, benzo(k)fluoranthene, and chrysene) were selected as COPCs, based on the selection criteria of a chemical from the same class, cPAH. Based on Step 2 of the screening process (Table D-2.4a, **Appendix D**), all Step 1 COPCs were eliminated as COPCs for subsurface soil. Therefore, exposure to subsurface soil at Site 23 is not expected to result in any unacceptable human health risks.

Groundwater

Tables D-2.5 and D-2.5a, **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.5, **Appendix D**, four VOCs (1,2-dichloroethane, 1,2-dichloropropane, benzene, and tetrachloroethene) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.5a, **Appendix D**), the cumulative carcinogenic risk was above the screening criteria and all four COPCs were retained for Step 3. Step 3 was not performed because there were only four samples at each

location and the 95% UCL could not be calculated. Therefore, all four VOCs were retained as COPCs from Site 23 groundwater based on the human health screening evaluation.

It is important to note that the VOCs retained as COPCs were only detected in one out of four samples, and all detections were from the same sample, IR78-GW17-2-09C. As shown in **Figure 2-4**, this sample location is located upgradient of the site, and is therefore most likely attributed to Site 78 contamination.

Tables D-2.6 and D-2.6a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Two constituents (1,2-dichloroethane and benzene) exceeded screening levels at only one location, IR78-GW17-2. As shown in **Figure 2-4**, this location is approximately 150 feet northwest from Building 1105. For this reason, the vapor intrusion pathway is currently incomplete and potential risks from groundwater to indoor air were not carried forward in this assessment. However, if buildings are constructed at the site over the underlying VOC contamination in groundwater, an evaluation of potential exposures to building inhabitants should be considered. It is important to note that the vapor intrusion screening levels used in this assessment are very conservative, including the assumption that the site will be developed for residential use and residents would be living on-site. Additionally, it is likely the contamination is attributed to Site 78.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC, one SVOC, and one herbicide with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, metals, pesticides, herbicides, and PCBs with detection limits that exceeded the screening level, however, most of the detection limits were generally within an order of magnitude of the screening value or MCL. There were a few VOCs, SVOCs, and pesticide/PCBs in groundwater with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs, SVOCs, and pesticide/PCBs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.6 Site 38 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 38.

Subsurface Soil

Tables D-2.7 and D-2.7a, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 38. As shown on Table D-2.7, **Appendix D**, one metal (arsenic) exceeded the first step of the screening and was identified as a COPC for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.7a, **Appendix D**),

arsenic was eliminated as a COPC for subsurface soil. Therefore, exposure to subsurface soil at Site 38 is not expected to result in any unacceptable human health risks.

Groundwater

Table D-2.8 and D-2.8a, **Appendix D** presents the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.8, **Appendix D**, one metal (chromium) exceeded the first step of the screening and was identified as a COPC for evaluation in Step 2. Based on Step 2 (risk ratio using maximum detected concentration, Table D-2.8a, **Appendix D**), chromium was retained as a COPC. Step 3 was not performed because there were only three samples and the 95% UCL could not be calculated. Therefore, one metal (chromium) was retained as a COPC from Site 38 groundwater based on the human health screening evaluation.

Although chromium was selected as a COPC, the maximum detected concentration (3.53 ug/L) is below the chromium USEPA MCL of 100 ug/L. In the absence of chromium speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003). The maximum detected concentration of total chromium in the groundwater is below the tap water RSL for trivalent chromium of 5,500 ug/L. Additionally, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Based on these considerations, chromium does not need to be retained as a COPC for Site 38 groundwater. Therefore, exposure to groundwater at Site 38 is not expected to result in any unacceptable human health risks.

Because there were no volatile chemicals detected in groundwater, the vapor intrusion pathway was not evaluated.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, and metals with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits over an order of magnitude greater than the screening

level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.7 Site 42 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 42.

Subsurface Soil

Tables D-2.9 through D-2.9b, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 42. As shown on Table D-2.9, **Appendix D**, one SVOC (benzo(a)pyrene) and five metals (aluminum, arsenic, chromium, iron, and vanadium) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Two SVOCs (benzo(a)anthracene and benzo(b)fluoranthene) were selected as COPCs, based on the selection criteria of a chemical from the same class, cPAH. Based on Step 2 of the screening process (Table D-2.9a, **Appendix D**), the three SVOCs and two of the metals (arsenic and chromium) were carried forward to Step 3, where the 95% UCL concentration resulted in a cumulative carcinogenic risk above the screening criteria , Table D-2.9b, **Appendix D**.

Chromium is the main contributor to the carcinogenic risk associated with the subsurface soil. The analytical data for chromium is for total chromium, however, the RSL used for the screening is for hexavalent chromium, the more toxic (and carcinogenic) valence state of chromium. In the past, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, EPA's RSL table presented a residential soil RSL for total chromium assuming a one to six ratio of hexavalent chromium to trivalent chromium. Assuming this ratio applies for subsurface soil at Site 42, the maximum concentration of hexavalent chromium (the total measured chromium concentration multiplied by 1/6) would not result in an unacceptable risk associated with exposure to the chromium. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's IRIS database. Elimination of chromium as a COPC in subsurface soil would also result in elimination of all other COPCs in Step 3 as they do not contribute significantly (above $5x10^{-5}$) to the cumulative calculated risk.

Therefore, based on these considerations, exposure to Site 42 subsurface soil would not result in an unacceptable risk to human receptors and further evaluation of subsurface soil at Site 42 based on human health is not necessary.

Groundwater

Tables D-2.10 and D-2.10a, **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.10, **Appendix D**, four metals

(aluminum, chromium, iron, and manganese) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.10a, **Appendix D**), all four metals were retained as COPCs. Step 3 was not performed as only three groundwater samples were available and a 95% UCL could not be calculated. Therefore, all four metals (aluminum, chromium, iron, and manganese) are retained as COPCs from groundwater based on the human health screening evaluation. However, these four metals were further evaluated.

Iron was detected in 3 out of 3 samples, with values ranging from 477 to 31,500 ug/L. The basewide background concentration, two times the arithmetic mean background shallow groundwater concentration, for iron is 5,999 ug/L and the range of detections in the background data set is from 140 J to 32,700 J ug/L (J = estimated value) (Baker, 2002). The maximum detected iron concentration at Site 42 (31,500 ug/L) falls within the range of background values. Therefore, detected concentrations of iron at Site 42 could be attributed to background levels. Even though iron is considered an essential human nutrient, the maximum iron concentration is greater than the range of iron typically associated with nutritive requirements and greater than the upper limits likely to pose a risk of adverse effects.

Manganese does not fall within background levels; however, manganese is considered an essential human nutrient and an evaluation indicates it does not pose an unacceptable risk to human health. To estimate the chemical intake of manganese for a future residential child via ingestion of groundwater, the maximum concentration (1,280 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for a child of 1 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 1.3 mg/day which is within the recommended daily allowance (RDA) range for children ages 7 months to 8 years (0.6 – 1.5 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (1.3 mg/day) is also below the upper limit of manganese for a child (2 - 3 mg/day). Intake of manganese via groundwater ingestion by residential children using groundwater at Site 42 as a potable source likely falls within the range of manganese typically associated with nutritive requirements and is less than upper limit likely to pose a risk of adverse effects.

To estimate the chemical intake of manganese for a future residential adult via ingestion of groundwater, the maximum concentration (1,280 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for an adult of 2 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 2.6 mg/day which is above the RDA range for ages 8 years and older (1.6- 2.3 mg/day) (National Institute of Health, 2010). However, the estimated intake of manganese via ingestion of groundwater (2.6 mg/day) is below the upper limit of manganese for an adult (6 - 11 mg/day). Intake of manganese via groundwater ingestion by residential adults using groundwater at Site 42 as a potable source is greater than the range of manganese typically associated with nutritive requirements but less than upper limits likely to pose a risk of adverse effects.

Although chromium was selected as a COPC, the maximum detected concentration (10.9 ug/L) is below the chromium USEPA MCL (100 ug/L). In the absence of chromium speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative

since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003)." The maximum detected concentration of total chromium in the groundwater is below the tap water RSL for trivalent chromium (5,500 ug/L). Additionally, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Elevated concentrations of aluminum at IR42-TW03 may be attributable to high turbidity (210 NTU during sampling) which can cause elevated metal concentrations due to metal adsorption onto suspended particles. According to field documents the well was screened in clayey soil, and could not be adequately developed because of a slow recharge rate. Additionally, IR42-TW03 was the farthest upgradient well based on limited potentiometric data, topography, and the location of surface water bodies at Site 42, indicating that the elevated aluminum concentrations in groundwater may not be site-related.

Based on all of these considerations, iron and manganese do not need to be retained as COPCs for Site 42 groundwater because they are within the levels required and/or not associated with adverse effects for human receptors. Chromium does not need to be retained as a COPC based on concentrations compared to trivalent chromium screening levels. Aluminum does not need to be retained as a COPC because the exceedances are attributed to high levels of turbidity in the well, and may not be site-related. Based on this information, exposure to groundwater at Site 42 is not expected to result in any unacceptable human health risks.

Tables D-2.11 and D-2.11a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Acetone and carbon disulfide, the only volatile chemicals detected in groundwater, were both below the vapor intrusion screening levels. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC and three SVOCs with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, and metals with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are,

it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.8 Site 53 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 53.

Subsurface Soil

Tables D-2.12 through D-2.12b, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 53. As shown on Table D-2.12, **Appendix D**, four metals (aluminum, arsenic, chromium, and iron) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.12a, **Appendix D**), two of the metals (arsenic and chromium) were carried forward to Step 3, where the 95% UCL concentration resulted in a cumulative carcinogenic risk above the screening criteria , Table D-2.12b, **Appendix D**.

Chromium is the main contributor to the carcinogenic risk associated with the subsurface soil. The analytical data for chromium is for total chromium, however, the RSL used for the screening is for hexavalent chromium, the more toxic (and carcinogenic) valence state of chromium. In the past, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, EPA's RSL table presented a residential soil RSL for total chromium assuming a one to six ratio of hexavalent chromium to trivalent chromium. Assuming this ratio applies for subsurface soil at Site 53, the maximum concentration of hexavalent chromium (the total measured chromium concentration multiplied by 1/6) would not result in an unacceptable risk associated with exposure to the chromium. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's IRIS database. Elimination of chromium as a COPC in subsurface soil would also result in elimination of arsenic as a COPC in Step 3 as it does not contribute significantly (above $5x10^{-5}$) to the cumulative calculated risk.

Therefore, exposure to Site 53 subsurface soil would not result in an unacceptable risk to human receptors and further evaluation of subsurface soil at Site 53 based on human health is not necessary.

Groundwater

Tables D-2.13 and D-2.13a, **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.13, **Appendix 2**, six metals (aluminum, chromium, cobalt, iron, lead, and vanadium) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Lead was evaluated separately as discussed below. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.13a, **Appendix D**), four of the metals were retained as COPCs. Step 3 was not

performed as only three groundwater samples were available and a 95% UCL could not be calculated. Therefore, all four metals (aluminum, chromium, cobalt, and iron) are retained as COPCs from groundwater based on the human health screening evaluation. However, these four metals were further evaluated as discussed below.

Lead, which was retained as a COPC for groundwater in Step 1, does not have available published toxicity factors. Lead is regulated by EPA based on blood-lead uptake using a physiologically based pharmakokinetic model called the Integrated Exposure Uptake Biokinetic (IEUBK) Model. The maximum detected concentration of lead in the groundwater of 28.8 µg/L, exceeded the groundwater screening level. Lead was detected at a concentration above the screening level in two of the three groundwater samples. Risks associated with lead in the groundwater were evaluated for the resident using USEPA's IEUBK Model. The principle assumption associated with the use of IEUBK is that a child from age 0 to 7 is the receptor for potential exposure to lead. The average lead concentration is used as the EPC in the IEUBK model.

The results of the IEUBK model for the groundwater are shown in Table D-2.27, **Appendix D**. The IEUBK evaluation resulted in a geometric mean blood concentration of 3.5 micrograms per deciliter of blood (µg/dl) for children 0 to 7 years old. Approximately 1.4 percent of this population had a blood lead level above USEPA's recommended level of 10 µg/dl. USEPA considers lead not to be a health concern if 95 percent of the population has a blood lead level less than 10 µg/dl. Therefore, lead in groundwater does not pose a health risk under residential use of the site. Since residential exposures are the most conservative, risks for any other potential receptor (i.e., construction worker) would be less than residential risks. With the exception of the lead groundwater concentration, the default parameters associated with the IEUBK model were used in this evaluation (as shown in Table D-2.27, **Appendix D**).

Although chromium was selected as a COPC, the maximum detected concentration (71.2 ug/L) is below the chromium USEPA MCL (100 ug/L). In the absence of chromium speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003)." The maximum detected concentration of total chromium in the groundwater is below the tap water RSL for trivalent chromium (5,500 ug/L). Additionally, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Aluminum, cobalt, and iron were detected above background and screening criteria in all Site 53 groundwater samples. Concentrations of these metals in the groundwater sample collected at IR53-TW01 were within the range of base background detections. While groundwater samples at both of the remaining temporary well locations had detections above the background range, the highest concentrations of these metals were found in samples collected at one temporary well, IR53-TW03. Concentrations in this sample were significantly higher (5 to 10 times) than the concentrations in other samples and aluminum and iron exceeded adjusted tap water RSLs by at least 10 times.

According to field documents, IR53-TW03 was screened in clayey soil and could not be developed adequately due to very slow recharge. Turbidity readings were high during development (400 NTU). Water quality measurements were not collected during sampling due to insufficient volume. High levels of aluminum, cobalt, and iron could all be associated with high turbidity levels in the well and not from site contamination.

Based on all of these considerations, chromium does not need to be retained as a COPC for Site 53 groundwater based on concentrations compared to trivalent chromium screening levels. Aluminum, cobalt, and iron do not need to be retained as COPCs because the exceedances are attributed to high levels of turbidity in the wells. Lead does not need to be retained as a COPC based on the IEUBK model. Therefore, exposure to groundwater at Site 53 is not expected to result in any unacceptable human health risks.

Tables D-2.14 and D-2.14a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Carbon disulfide was the only volatile chemical detected in groundwater. The detected concentration of carbon disulfide in groundwater was below the vapor intrusion screening level. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC and two SVOCs with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, PCBs, and one metal with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.9 Site 55 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 55.

Subsurface Soil

Tables D-2.15 through D-2.15b, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 55. As shown on Table D-2.15, **Appendix D**, four metals (aluminum, arsenic, chromium, and iron) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.15a, **Appendix D**), two of the metals (arsenic and chromium) were carried forward to Step 3, where the 95% UCL concentration resulted in a cumulative carcinogenic risk above the screening criteria , Table D-2.15b, **Appendix D**.

Chromium is the main contributor to the carcinogenic risk associated with the subsurface soil. The analytical data for chromium is for total chromium, however, the RSL used for the screening is for hexavalent chromium, the more toxic (and carcinogenic) valence state of chromium. In the past, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, EPA's RSL table presented a residential soil RSL for total chromium assuming a one to six ratio of hexavalent chromium to trivalent chromium. Assuming this ratio applies for subsurface soil at Site 55, the maximum concentration of hexavalent chromium (the total measured chromium concentration multiplied by 1/6) would not result in an unacceptable risk associated with exposure to the chromium. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's IRIS database. Elimination of chromium as a COPC in subsurface soil would also result in elimination of arsenic as a COPC in Step 3 as it does not contribute significantly (above $5x10^{-5}$) to the cumulative calculated risk.

Therefore, exposure to Site 55 subsurface soil would not result in an unacceptable risk to human receptors and further evaluation of subsurface soil at Site 55 based on human health is not necessary.

Groundwater

Tables D-2.16 and D-2.16a, **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.16, **Appendix D**, six metals (aluminum, arsenic, chromium, iron, manganese, and vanadium) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.16a, **Appendix D**), five of the metals (aluminum, arsenic, chromium, iron, and manganese) were retained as COPCs. Step 3 was not performed as only three groundwater samples were available and a 95% UCL could not be calculated. Therefore, all five metals are retained as COPCs from groundwater based on the human health screening evaluation. However, these metals were further evaluated, as discussed below.

Although chromium was selected as a COPC, the maximum detected concentration (44.3 ug/L) is below the chromium USEPA MCL (100 ug/L). In the absence of chromium

speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003)." The maximum detected concentration of total chromium in the groundwater is below the tap water RSL for trivalent chromium (5,500 ug/L). Additionally, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Arsenic was detected in 2 out of 3 samples, with concentrations of 6.1 J and 17.9 ug/L. The basewide background concentration, two times the arithmetic mean background shallow groundwater concentration, for arsenic is 5.77 ug/L and the range of detections in the background data set is from 6.6 J to 19 ug/L (Baker, 2002). The detected arsenic concentrations at Site 55 are within the range of background values. Therefore, arsenic concentrations at Site 55 may be attributed to background levels.

Manganese was detected in 3 out of 3 samples, with values ranging from 41.6 to 353 ug/L. The basewide background concentration, two times the arithmetic mean background shallow groundwater concentration, for manganese is 214 ug/L and the range of detected concentrations in the background data set is from 4.7 J to 359 ug/L (Baker, 2002). The manganese concentrations at Site 55 are within the range of background values. Based on these considerations, the manganese at Site 55 may be attributed to background levels.

Manganese is also considered an essential human nutrient. To estimate the chemical intake of manganese for a future residential child via ingestion of groundwater, the maximum concentration (353 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for a child of 1 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 0.35 mg/day which is below the RDA range for children ages 7 months to 8 years (0.6 – 1.5 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (0.35 mg/day) is also below the upper limits of manganese for a child (2 - 3 mg/day). Based on these considerations, intake of manganese via groundwater ingestion by residential children using groundwater at Site 55 as a potable source likely falls within the range of manganese typically associated with nutritive requirements and less than upper limits likely to pose a risk of adverse effects.

To estimate the chemical intake of manganese for a future residential adult via ingestion of groundwater, the maximum concentration (353 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for an adult of 2 L/day (USEPA, 1997). Therefore, the estimated intake of manganese via ingestion of groundwater is 0.71 mg/day

which is below the RDA range for ages 8 years and older (1.6- 2.3 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (0.71 mg/day) is also below the upper limits of manganese for an adult (6 - 11 mg/day). Based on these considerations, intake of manganese via groundwater ingestion by residential adults using groundwater at Site 55 as a potable source is below than the range of manganese typically associated with nutritive requirements and less than the upper limits likely to pose a risk of adverse effects.

Aluminum and iron could not be eliminated as COPCs based on background values or human nutrient considerations. Well IR55-TW03 had the highest concentrations of these metals, followed by IR55-TW02. High turbidity readings were recorded in purge water during development of both IR55-TW02 (300 NTU) and IR55-TW03 (120 NTU). Both wells were set in clayey soils, and could not be adequately developed due to slow recharge rates. Both wells were located close to the New River and shallow groundwater is likely influenced by surface water and tidal changes. For these reasons, it is likely that the elevated levels of aluminum and iron are not site-related.

Based on all of these considerations, chromium does not need to be retained as a COPC for Site 55 groundwater based on detected total chromium concentrations compared to trivalent chromium screening levels. Arsenic and manganese do not need to be retained as COPCs because they are within background levels and essential nutrient levels, respectively. Aluminum and iron do not need to be retained as a COPC because the exceedances are attributed to high levels of turbidity in the wells. Based on this information, there are no COPCs for the groundwater, and exposure to groundwater at Site 55 is not expected to result in any unacceptable human health risks.

Tables D-2.17and D-2.17a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Carbon disulfide was the only volatile chemical detected in groundwater. The concentration of carbon disulfide in the groundwater was below the vapor intrusion screening level. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC, two SVOCs, and two herbicides with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs, SVOCs, pesticides, herbicides, PCBs, and metals with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits that were an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.10 Site 61 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil and groundwater at Site 61.

Subsurface Soil

Tables D-2.18 and D-2.18a, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 61. As shown on Table D-2.18, **Appendix D**, two metals (aluminum and iron) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.18a, **Appendix D**), both Step 1 COPCs were eliminated as COPCs for subsurface soil. Therefore, exposure to subsurface soil at Site 61 is not expected to result in any unacceptable human health risks.

Groundwater

Tables D-2.19 and D-2.19a, **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater. As shown on Table D-2.19, **Appendix D**, one VOC (chloroform) and nine metals (aluminum, arsenic, cadmium, chromium, cobalt, iron, lead, manganese, and vanadium) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Lead was evaluated separately using the IEUBK model. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.19a, **Appendix D**), the one VOC as well as seven of the metals (aluminum, arsenic, chromium, cobalt, iron, manganese, and vanadium) were retained as COPCs. Step 3 was not performed as only three groundwater samples were available and a 95% UCL could not be calculated. Therefore, the one VOC (chloroform) and the seven metals are retained as COPCs from groundwater based on the human health screening evaluation. However, these constituents were further evaluated, as discussed below.

Chloroform was only detected in one of the three wells (IR61-TW03), exceeding the adjusted tap water RSL but not the MCL or NCGWQS. Since chloroform was detected at low levels in only one well, and since chloform is a solvent commonly used in the laboratory, it is likely that the laboratory is the source of chloroform.

In the absence of chromium speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003)." The maximum detected concentration of total chromium in the groundwater (150 ug/L) is below the tap water RSL for trivalent chromium (5,500 ug/L). Additionally, prior to including the New Jersey EPA

oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Arsenic was detected in 3 out of 3 samples, with values ranging from 1.67 to 14.4 ug/L. The basewide background concentration, two times the arithmetic mean background shallow groundwater concentration, for arsenic is 5.77 ug/L and the range of detections in the background data set is from 6.6 J to 19 ug/L (Baker, 2002). The maximum detected arsenic concentration at Site 61 (14.4 ug/L) is within than the range of background values. The detected concentrations of arsenic could be attributed to background levels, and arsenic may not need to be considered a COPC for Site 61.

Manganese does not fall within background levels; however, manganese is considered an essential human nutrient and an evaluation indicates it does not pose an unacceptable risk to human health. To estimate the chemical intake of manganese for a future residential child via ingestion of groundwater, the maximum concentration (643 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for a child of 1 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 0.643 mg/day which is within the RDA range for children ages 7 months to 8 years (0.6 – 1.5 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (0.643 mg/day) is below the upper limits of manganese for a child (2 - 3 mg/day). Based on these considerations, intake of manganese via groundwater ingestion by residential children using groundwater at Site 61 as a potable source likely falls within the range of manganese typically associated with nutritive requirements and less than upper limits likely to pose a risk of adverse effects.

To estimate the chemical intake of manganese for a future residential adult via ingestion of groundwater, the maximum concentration (643 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for an adult of 2 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 1.3 mg/day which is below the RDA range for ages 8 years and older (1.6- 2.3 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (1.3 mg/day) is also below the upper limits of manganese for an adult (6 - 11 mg/day). Based on these considerations, intake of manganese via groundwater ingestion by residential adults using groundwater at Site 61 as a potable source is below than the range of manganese typically associated with nutritive requirements and less than the upper limits likely to pose a risk of adverse effects.

Vanadium does not fall within background levels; however, vanadium is considered an essential human nutrient and an evaluation was evaluated. RDA values have not been established for vanadium, however, upper limit values for adults ages 19 years and older are available. To estimate the chemical intake of vanadium for a future residential adult via ingestion of groundwater, the maximum concentration (167 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for an adult of 2 L/day (USEPA, 1997). The estimated intake of vanadium via ingestion of groundwater is 0.33 mg/day which is below the upper limit of vanadium for adults 19 years and older (1.8

mg/day) (National Institute of Health, 2010). Based on these considerations, intake of vanadium via groundwater ingestion by residential adults 19 years and older using groundwater at Site 61 as a potable source is less than the upper limits likely to pose a risk of adverse effects. However, vanadium likely cannot be removed as a COPC based only on adult upper limits.

Lead, which was retained as a COPC for groundwater, does not have available published toxicity factors. Lead is regulated by EPA based on blood-lead uptake using a physiologically based pharmakokinetic model called the IEUBK Model. The maximum detected concentration of lead in the groundwater of 93.4 µg/L, exceeded the groundwater screening level. Lead was detected at a concentration above the screening level in two of the three groundwater samples. Risks associated with lead in the groundwater were evaluated for the resident using USEPA's IEUBK Model. The principle assumption associated with the use of IEUBK is that a child from age 0 to 7 is the receptor for potential exposure to lead. The average lead concentration is used as the EPC in the IEUBK model.

The results of the IEUBK model for the groundwater are shown in Table D-2.28, **Appendix D**. The IEUBK evaluation resulted in a geometric mean blood concentration of 5.9 micrograms per deciliter of blood (µg/dl) for children 0 to 7 years old. Approximately 13.7 percent of this population had a blood lead level above USEPA's recommended level of 10 µg/dl. USEPA considers lead not to be a health concern if 95 percent of the population has a blood lead level less than 10 µg/dl. Therefore, lead in groundwater may pose an unacceptable health risk under residential use of the site. Lead was retained as a COPC along with the other COPCs from the risk screening tables, as shown in Table D-2.19a, **Appendix D**. With the exception of the lead groundwater concentration, the default parameters associated with the IEUBK model were used in this evaluation (as shown in Table D-2.28, **Appendix D**).

The maximum detections of aluminum, arsenic, cobalt, iron, lead and vanadium exceeded background ranges and/or the upper limit likely to pose an adverse effect for nutrients at both IR61-TW01 and IR61-TW03. High turbidity and inadequate well development are the likely cause of these elevated metals concentrations. Turbidity measurements collected during sampling at IR61-TW01 and IR61-TW03 were both greater than 500 NTU and the wells were screened in clayey soil. IR61-TW03 was purged dry during development and had a slow recharge rate. High levels of these metals could all be associated with high turbidity levels in the wells and not from site contamination.

Based on all of these considerations, chloroform can be eliminated from consideration as a Site 61 groundwater COPC based on the assumption that the laboratory is the source of the chloroform detected in the groundwater samples. Chromium does not need to be retained as a COPC based on detected concentrations compared to trivalent chromium screening levels. Arsenic and manganese do not need to be retained as COPCs because levels are within background range or essential nutrient level, respectively. The remaining metals (aluminum, cobalt, iron, lead, and vanadium) do not need to be retained as COPCs because the exceedances are attributed to high levels of turbidity in the wells. Based on this rational, exposure to groundwater at Site 61 is not expected to result in unacceptable human health risks.

Tables D-2.20 and D-2.20a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Chloroform and ethylbenzene were the only volatile chemicals detected in groundwater. Both chemicals were detected at concentrations below the vapor intrusion screening level. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC and two SVOCs with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater, there were a number of VOCs and SVOCs with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater it is not expected that they are present in the groundwater, and if they are, it is likely they would be below levels of potential concern for human health. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.11 Site 62 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil at Site 62.

Subsurface Soil

Tables D-2.21 through D-2.21b, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 62. As shown on Table D-2.21, **Appendix D**, four metals (aluminum, arsenic, chromium, and iron) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.21a, **Appendix D**), two of the metals (arsenic and chromium) were carried forward to Step 3, where the 95% UCL concentration resulted in a cumulative carcinogenic risk above the screening criteria , Table D-2.21b, **Appendix D**.

Chromium is the main contributor to the carcinogenic risk associated with the subsurface soil. The analytical data for chromium is for total chromium, however, the RSL used for the screening is for hexavalent chromium, the more toxic (and carcinogenic) valence state of chromium. In the past, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, EPA's RSL table presented a residential soil RSL for total chromium assuming a one to six ratio of hexavalent chromium to trivalent chromium. Assuming this ratio applies for subsurface soil at Site 62, the maximum concentration of hexavalent chromium (the total measured chromium concentration multiplied by 1/6) would not result in an unacceptable risk associated with exposure to the chromium. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium

oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's IRIS database. Elimination of chromium as a COPC in subsurface soil would also result in elimination of arsenic as a COPC in Step 3 as it does not contribute significantly (above $5x10^{-5}$) to the cumulative calculated risk.

Therefore, exposure to Site 62 subsurface soil would not result in an unacceptable risk to human receptors and further evaluation of subsurface soil at Site 62 based on human health is not necessary.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, one VOC and two SVOCs had detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.12 Site 66 Human Health Risk Screening Results

The human health risk-based screening (comparison to risk-based criteria and background levels, Step 1) and risk ratio evaluation (Steps 2 and 3) were performed for subsurface soil, groundwater, surface water, and sediment at Site 66.

Subsurface Soil Risk Screening

Tables D-2.22 through D-2.22b, **Appendix D**, present the risk-based screening and risk ratio evaluation for subsurface soil at Site 66. As shown on Table D-2.22, **Appendix D**, six metals (aluminum, arsenic, chromium, cobalt, iron, and manganese) exceeded the first step of the screening and were identified as COPCs for evaluation in Step 2. Based on Step 2 of the screening process (Table D-2.22a, **Appendix D**), two of the metals (arsenic and chromium) were carried forward to Step 3, where the 95% UCL concentration resulted in a cumulative carcinogenic risk below the screening criteria, Table D-2.22b, **Appendix D**. Therefore, exposure to subsurface soil at Site 66 is not expected to result in any unacceptable human health risks.

Groundwater Risk Screening

Tables D-2.23 through D-2.23b in **Appendix D** present the risk-based screening and risk ratio evaluation for groundwater at Site 66. As shown on Table D-2.23, **Appendix D**, one VOC (chloroform) and five metals (aluminum, chromium, cobalt, iron, and manganese) exceeded the first step of the screening and were selected as COPC for evaluation in Step 2. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.23a, **Appendix D**), the one VOC and all five metals were all carried forward to Step 3. Based on Step 3 (risk ratio using 95% UCL concentrations, Table D-2.23b, **Appendix D**), the one VOC and four of the metals (aluminum, chromium, cobalt, and manganese) were retained as COPCs from groundwater based on the human health screening evaluation. However, these constituents were further evaluated, as discussed below.

Chloroform was only detected in two out of twelve wells. Of those two detections, only one concentration exceeded the adjusted tap water RSL. The detected concentrations did not exceed the MCL or NCGWQS. Since chloroform was detected at low levels in only two wells, and since chloroform is a solvent commonly used in the laboratory, it is likely that the laboratory is the source of the chloroform detected in the groundwater.

Although chromium was selected as a COPC, the maximum detected concentration (30.2 ug/L) is below the chromium USEPA MCL (100 ug/L). In the absence of chromium speciation information, the tap water RSL for hexavalent chromium, the more toxic (and carcinogenic) form of chromium, was used as the screening value for total chromium. The use of hexavalent chromium for comparison to total chromium is extremely conservative since the presence of trivalent chromium is strongly favored in natural waters because the concentrations of constituents known to reduce hexavalent chromium to trivalent chromium generally far outweigh the concentrations of the few constituents known to oxidize trivalent chromium to hexavalent chromium. Furthermore, once reduced, trivalent chromium is very stable in aquatic environments and highly unlikely to oxidize to hexavalent chromium. Thus, chromium in groundwater is more likely to be in its trivalent form than its hexavalent form (Fendorf and Zasoski, 1992; Milacic and Stupar, 1995; Weaver and Hochella, 2003)." The maximum detected concentration of total chromium in the groundwater is below the tap water RSL for trivalent chromium (5,500 ug/L). Additionally, prior to including the New Jersey EPA oral cancer slope factor for hexavalent chromium in the table, the groundwater RSL for hexavalent chromium was over three-orders of magnitude higher than the value on the current RSL table. It also needs to be noted that there is some uncertainty associated with the hexavalent chromium oral cancer slope factor, and RSL, as the value is from New Jersey EPA, and has not been included in EPA's Integrated Risk Information System (IRIS) database.

Manganese does not fall within background levels; however, manganese is considered an essential human nutrient and an evaluation indicates it does not pose an unacceptable risk to human health. To estimate the chemical intake of manganese for a future residential child via ingestion of groundwater, the maximum concentration (2,710 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for a child of 1 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 2.7 mg/day which is above the RDA range for children ages 7 months to 8 years (0.6 – 1.5 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (2.7 mg/day) is within the upper limit range of manganese for a child (2 - 3 mg/day). Based on these considerations, intake of manganese via groundwater ingestion by residential children using groundwater at Site 66 as a potable source likely falls above the range of manganese typically associated with nutritive requirements but within the range of upper limits likely to pose a risk of adverse effects.

To estimate the chemical intake of manganese for a future residential adult via ingestion of groundwater, the maximum concentration (2,710 ug/L) is converted to milligrams per liter and multiplied by the ingestion rate of water for an adult of 2 L/day (USEPA, 1997). The estimated intake of manganese via ingestion of groundwater is 5.4 mg/day which is above the RDA range for ages 8 years and older (1.6- 2.3 mg/day) (National Institute of Health, 2010). The estimated intake of manganese via ingestion of groundwater (5.4 mg/day) is below the upper limit range of manganese for an adult (6 - 11 mg/day). Based on these

considerations, intake of manganese via groundwater ingestion by residential adults using groundwater at Site 66 as a potable source is above the range of manganese typically associated with nutritive requirements but less than the upper limits likely to pose a risk of adverse effects.

Elevated aluminum concentrations detected in samples from IR66-TW03 and IR66-TW06 may be attributable to high turbidity, as shown with field measurements of 73 NTU and 207 NTU in IR66-TW03 and IR66-TW06, respectively. Therefore, high levels of aluminum could be associated with high turbidity levels in the well and not from site contamination. Cobalt was detected in samples collected from IR66-TW08 and IR66-TW10 which both had very low turbidity readings during purging (below 10 NTU). Cobalt was eliminated based on site geology.

Based on these considerations, chloroform can be eliminated from consideration as a Site 66 groundwater COPC based on the assumption that the laboratory is the source of contamination. Chromium does not need to be retained as a COPC based on concentrations compared to trivalent chromium screening levels. Manganese does not need to be retained as a COPC because levels are within essential nutrient levels. Aluminum and cobalt do not need to be retained as COPCs because the exceedances are attributed to high levels of turbidity in wells or because of site conditions, respectively. Based on this information, exposure to groundwater at Site 66 is not expected to result in any unacceptable human health risks.

Table D-2.24 and D-2.24a, **Appendix D**, present the vapor intrusion from groundwater into indoor air evaluation. Acetone, carbon disulfide, chloroform, and toluene were the only volatile chemicals detected in groundwater. The concentrations of these chemicals were below the vapor intrusion screening levels. Exposure to indoor air associated with vapor intrusion from groundwater into a future on-site building is not expected to result in any unacceptable human health risks.

Surface Water Risk Screening

Tables D-2.25 and D-2.25a**, Appendix D**, present the risk-based screening and risk ratio evaluation for surface water. As shown on Table 2.25, four metals (aluminum, arsenic, iron, and manganese) exceeded the first step of the screening and were selected as COPCs for evaluation in Step 2. Table D-2.25 Supplement A, **Appendix D** used the RSLs (USEPA, 2010) even if surface water screening values (North Carolina WQS and Federal Ambient Water Quality Criteria) were available, as these surface water screening values are not necessarily risk-based. The RSLs use risk-based values with set risks for Step 2. Based on Step 2 (risk ratio using maximum detected concentrations, Table D-2.25a, **Appendix D**), two of the metals (arsenic and iron) were retained as COPCs. Step 3 was not performed as only two surface water samples were available and a 95% UCL could not be calculated.

High levels of arsenic and iron in surface water are most likely not associated with Site 66 contamination. If these metals were from the site, then they would also be COPCs in Site 66 groundwater. However, the maximum arsenic concentration in Site 66 groundwater was below its screening level. In addition, iron groundwater samples did not indicate risks to human health. Therefore, because Site 66 surface water is a tidal creek and because groundwater does not indicate arsenic and iron contamination, it is likely the arsenic and

iron contamination in surface water is from offsite contributions from the New River. It is also important to note that the screening levels used for surface water are the tap water RSLs for groundwater, which are very conservative numbers for surface water. Contact with surface water would be much less than contact with a potable water supply, and risks associated with exposure to the surface water would not result in potentially unacceptable risks to human health.

Sediment Risk Screening

Tables D-2.26 and D-2.26a, **Appendix D**, present the risk-based screening and risk ratio evaluation for sediment. As shown on Table D-2.26, **Appendix D**, one SVOC (dibenz(a,h)anthracene) and four metals (aluminum, arsenic, chromium, and iron) exceeded the first step of the screening and were selected as COPCs for evaluation in Step 2. Two SVOCs (benzo(a)pyrene and indeno(1,2,3-cd)pyrene) were selected as COPCs, based on the selection criteria of a chemical from the same class, cPAH. Based on Step 2 of the screening process (Table D-2.26a, **Appendix D**), all Step 1 COPCs were eliminated as COPCs for sediment. Therefore, exposure to sediment at Site 66 is not expected to result in any unacceptable human health risks.

Comparison of Detection Limits for Non-Detected Analytes to Screening Levels

For soil, there was one VOC and two SVOCs with detection limits that exceeded the screening level, however, the detection limits were within an order of magnitude of the screening value. For groundwater and surface water, there were a number of VOCs, SVOCs, and a few metals with detection limits that exceeded the screening level, however, most of the detection limits were within an order of magnitude of the screening value or MCL. There were a few VOCs and SVOCs in groundwater and surface water with detection limits over an order of magnitude greater than the screening level. However, due to the limited amount of VOCs and SVOCs detected in the groundwater and surface water it is not expected that they are present, and if they are, it is likely they would be below levels of potential concern for human health. For sediment, there was one VOC, five SVOCs, and one metal with detection limits that exceeded the screening levels, however the detection limits were generally within an order of magnitude of the screening value. Therefore, there is some uncertainty associated with constituents that were not detected with detection limits above the screening levels, however based on past site use, and results of those constituents detected in the site media, this is not expected to effect the results of this risk evaluation.

D.13 Human Health Risk Screening Summary

Based on the evaluation of available data, results of the human health risk-based screening and additional considerations indicate that exposure to soil and groundwater at Sites 4, 23, 38, 42, 53, 55, 61, 62 (soil only), and 66, and exposure to surface water and sediment at Site 66, would not result in any potentially unacceptable risks to human health.

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Table D-1
Summary of Samples Evaluated in the Human Health Risk Evaluation
Limited Site Assessment
MCB Camp Lejeune, North Carolina

Site	Medium	Sample Date	Sample	Analytes
Site 4	**Subsurface Soil**			
		7/11/2009	IR4-IS01-5-6-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS01D-5-6-09C*	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS02-10-11-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS03-4-5-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS04-4-5-09C	VOCs, SVOCs, Metals
		7/11/2009	IR4-IS05-4-5-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS06-5-6-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS07-5-6-09C	VOCs, SVOCs, Metals
		7/10/2009	IR4-IS08-5-6-09C	VOCs, SVOCs, Metals
	Groundwater			
		7/13/2009	IR04-TW01-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR04-TW03C-09C*	VOCs, SVOCs, Metals
Site 23	**Subsurface Soil**			
		7/11/2009	IR23-IS01-6-7-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/11/2009	IR23-IS01D-6-7-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/11/2009	IR23-IS02-6-7-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS03-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS04-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS05-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS06-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS07-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/13/2009	IR23-IS08-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
	Groundwater			
		7/15/2009	IR78-GW16-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW16D-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW17-2-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	IR78-GW17-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/15/2009	USTHPFFC-MW9-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
Site 38	**Subsurface Soil**			
		2/19/2010	IR38-IS01-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS02-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS03-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS03D-6-7-10A*	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS04-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS05-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS06-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS07-6-7-10A	VOCs, SVOCs, Metals
		2/19/2010	IR38-IS08-6-7-10A	VOCs, SVOCs, Metals
	Groundwater			
		2/25/2010	IR38-GW01-10A	VOCs, SVOCs, Metals
		2/23/2010	IR38-GW02-10A	VOCs, SVOCs, Metals
		2/23/2010	IR38-GW02D-10A*	VOCs, SVOCs, Metals
		2/25/2010	IR38-GW03-10A	VOCs, SVOCs, Metals
Site 42	**Subsurface Soil**			
		7/7/2009	IR42-IS01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS01D-09C*	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS04-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-IS05-09C	VOCs, SVOCs, Metals
		7/8/2009	IR42-IS06-09C	VOCs, SVOCs, Metals
		7/8/2009	IR42-IS08-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-TW-S01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR42-TW-S03-09C	VOCs, SVOCs, Metals
	Groundwater			
		7/10/2009	IR42-TW01-09C	VOCs, SVOCs, Metals
		7/11/2009	IR42-TW02-09C	VOCs, SVOCs, Metals
		7/11/2009	IR42-TW02D-09C*	VOCs, SVOCs, Metals
		7/10/2009	IR42-TW03-09C	VOCs, SVOCs, Metals

Table D-1
Summary of Samples Evaluated in the Human Health Risk Evaluation
Limited Site Assessment
MCB Camp Lejeune, North Carolina

Site	Medium	Sample Date	Sample	Analytes
Site 49	**Subsurface Soil**			
		7/8/2009	IR49-IS01-7-8-09C	VOCs, SVOCs, Metals
		7/8/2009	IR49-IS01-7-8D-09C*	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS02-6-7-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS04-6.5-7.5-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS05-4-5-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS06-7-8-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS07-9-10-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-IS08-8-9-09C	VOCs, SVOCs, Metals
		7/9/2009	IR49-TW-S02-8-9-09C	VOCs, SVOCs, Metals
	Groundwater			
		7/12/2009	IR49-TW01-09C	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW01D-09C*	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW02-09C	VOCs, SVOCs, Metals
		7/12/2009	IR49-TW03-09C	VOCs, SVOCs, Metals
		2/18/2010	IR49-TW01R-10A	VOCs
		2/19/2010	IR49-TW04-10A	VOCs
		2/18/2010	IR49-TW05-10A	VOCs
		2/18/2010	IR49-TW06-10A	VOCs
		2/18/2010	IR49-TW07-10A	VOCs
		2/18/2010	IR49-TW08-10A	VOCs
Site 53	**Subsurface Soil**			
		7/7/2009	IR53-IS01-4-5-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS01D-4-5-09C*	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS02-3.5-4.5-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS03-6-7-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS04-4-5-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS05-2-3-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS06-5-6-09C	VOCs, SVOCs, Metals, PCBs
		7/7/2009	IR53-IS07-1-2-09C	VOCs, SVOCs, Metals, PCBs
		7/8/2009	IR53-IS08-7-8-09C	VOCs, SVOCs, Metals, PCBs
	Groundwater			
		7/12/2009	IR53-TW01-09C	VOCs, SVOCs, Metals, PCBs
		7/11/2009	IR53-TW02-09C	VOCs, SVOCs, Metals, PCBs
		7/11/2009	IR53-TW02D-09C*	VOCs, SVOCs, Metals, PCBs
		7/13/2009	IR53-TW03-09C	VOCs, SVOCs, Metals, PCBs
		2/24/2010	IR53-GW03-10A **	Arsenic
Site 55	**Subsurface Soil**			
		7/9/2009	IR55-IS01-7-8-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS01D-7-8-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS02-4-5-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/10/2009	IR55-IS03-1-2-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS04-4-5-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/10/2009	IR55-IS05-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-IS06-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/9/2009	IR55-IS07-3-4-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
	Groundwater			
		7/12/2009	IR55-TW01-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW02-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW03-09C	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
		7/12/2009	IR55-TW03D-09C*	VOCs, SVOCs, Metals, Pesticides, Herbicides, PCBs
Site 61	**Subsurface Soil**			
		7/13/2009	IR61-IS01-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS02-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS04-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS05-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS06-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS07-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS07D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR61-IS08-09C	VOCs, SVOCs, Metals
		7/13/2009	IR61-TW-S03-09C	VOCs, SVOCs, Metals
	Groundwater			
		7/15/2009	IR61-TW01-09C	VOCs, SVOCs, Metals
		7/15/2009	IR61-TW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR61-TW03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR61-TW03D-09C*	VOCs, SVOCs, Metals
		2/24/2010	IR61-GW01-10A**	Arsenic

Table D-1
Summary of Samples Evaluated in the Human Health Risk Evaluation
Limited Site Assessment
MCB Camp Lejeune, North Carolina

Site	Medium	Sample Date	Sample	Analytes
Site 62	**Subsurface Soil**			
		7/12/2009	IR62-IS01-9-10-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS02-11-12-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS02D-11-12-09C*	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS03-7-8-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS04-14-15-09C	VOCs, SVOCs, Metals
		7/11/2009	IR62-IS05-7-8-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS06-11-12-09C	VOCs, SVOCs, Metals
		7/12/2009	IR62-IS07-12-13-09C	VOCs, SVOCs, Metals
		7/11/2009	IR62-IS08-3-4-09C	VOCs, SVOCs, Metals
Site 66	**Subsurface Soil**			
		7/7/2009	IR66-IS01-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS02-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS02D-09C*	VOCs, SVOCs, Metals
		7/7/2009	IR66-IS03-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-IS04-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-IS05-09C	VOCs, SVOCs, Metals
		7/10/2009	IR66-IS06-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S01-09C	VOCs, SVOCs, Metals
		7/10/2009	IR66-IW-S02-09C	VOCs, SVOCs, Metals
		7/7/2009	IR66-TW-S04-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S05-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S06-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S07-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S07D-09C*	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S08-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S09-09C	VOCs, SVOCs, Metals
		7/8/2009	IR66-TW-S10-09C	VOCs, SVOCs, Metals
		7/11/2009	IR66-TW-S11-09C	VOCs, SVOCs, Metals
		7/9/2009	IR66-TW-S12-09C	VOCs, SVOCs, Metals
	Groundwater			
		7/13/2009	IR66-TW01-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW02-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW02D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW03-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW04-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW05-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW06-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW07-09C	VOCs, SVOCs, Metals
		7/12/2009	IR66-TW08-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW09-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW10-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-TW10D-09C*	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW11-09C	VOCs, SVOCs, Metals
		7/13/2009	IR66-TW12-09C	VOCs, SVOCs, Metals
	Surface Water			
		7/14/2009	IR66-SW02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SW02D-09C*	VOCs, SVOCs, Metals
		7/14/2009	IR66-SW03-09C	VOCs, SVOCs, Metals
		2/25/2010	IR66-SW02-10A **	Metals
	Sediment			
		7/14/2009	IR66-SD01-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD01D-09C*	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD02-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD03-09C	VOCs, SVOCs, Metals
		7/14/2009	IR66-SD04-09C	VOCs, SVOCs, Metals

Notes:
* - Duplicate sample of sample listed above
** - IR53-GW03-10A arsenic sample replaced IR53-TW03-09A arsenic result.
IR61-GW01-10A arsenic sample replaced IR61-TW01-09C arsenic result.
IR66-SW02-10A metals sample replaced IR66-SW02-09C metals results.
SVOCs - Semivolatile Organic Compounds
VOCs - Volatile Organic Compounds
PCBs - Polychlorinated Biphenyls

APPENDIX D

TABLE D-2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 4	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.4E+02 NS	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	9.1E+02 NS	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.2E+00 C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/8	0.0042 - 0.006	6.0E-03	NA	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.9E+02 NS	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.8E+03 N	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.1E+01 NS	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	MG/KG		0/2	0.01 - 0.011	1.1E-02	NA	6.1E+03 N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.1E+00 C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	8.2E+01 NS	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.5E+03 NS	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	2.3E-03 J	2.3E-03 J	MG/KG	IR04-IS08-5-6-09C	1/8	0.0083 - 0.012	2.3E-03	NA	2.9E-01 C	3.4E-01	NCSSL	NO	BSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	1.1E-03 J	1.1E-03 J	MG/KG	IR04-IS02-10-11-09C : IR04-IS05-4-5-09C	2/8	0.0083 - 0.012	1.1E-03	NA	5.4E+00 C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.1E+02 NS	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	7.8E+03 NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	5.7E+01 NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	4.0E-03 J	5.5E-02 J	MG/KG	IR04-IS02-10-11-09C	2/8	0.0083 - 0.012	5.5E-02	NA	1.1E+01 C	2.3E-02	NCSSL	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.3E+02 NS	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	5.0E+02 NS	5.5E+00	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.5E+01	N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	2.8E+00	C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	7.9E+01	N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.0E-02	C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.0083 - 0.012	1.2E-02	NA	6.3E+01	NS	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.1E+02	NS	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	4.6E+00	C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+00	C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.2E+02	N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	1.2E+01	N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.6E+00	C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+00	N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.8E+02	NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.9E+01	N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.1E+01	N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.1E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.9E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.1E+00	C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	4.9E-01	N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	N/A		N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.4E+00	C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.1E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.1E+01	N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	2.4E+01	C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.41 - 0.51	5.1E-01	NA	4.8E+00	C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.4E+02	N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.4E+02	N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	7.8E+02	NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.7E+03	N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.1E+00	C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	7.8E+02	NS	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	7.8E-03 J	1.0E-02 J	MG/KG	IR04-IS05-4-5-09C	7/8	0.052 - 0.064	1.0E-02	NA	1.5E-01	C	1.8E-01	NCSSL	NO	BSL
	50-32-8	Benzo(a)pyrene	1.3E-03 J	1.5E-03 J	MG/KG	IR04-IS07-5-6-09C	2/8	0.0055 - 0.0068	1.5E-03	NA	1.5E-02	C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	1.9E-03 J	2.1E-03 J	MG/KG	IR04-IS07-5-6-09C	3/8	0.052 - 0.064	2.1E-03	NA	1.5E-01	C	6.0E-01	NCSSL	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.7E+02	N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.5E+00	C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.1E-01 C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	7.6E-02 J	7.6E-02 J	MG/KG	IR04-IS01D-5-6-09C	1/8	0.21 - 0.25	7.6E-02	NA	3.1E+03 N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	1.4E-02	1.4E-02	MG/KG	IR04-IS04-4-5-09C	1/8	0.0055 - 0.0068	1.4E-02	NA	1.5E-02 C	1.9E-01	NCSSL	NO	BSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	7.8E+00 N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	2.6E-02 J	3.0E-02 J	MG/KG	IR04-IS07-5-6-09C	3/8	0.052 - 0.064	3.0E-02	NA	1.5E-01 C	2.0E+00	NCSSL	NO	BSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/8	0.052 - 0.064	6.4E-02	NA	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/8	0.026 - 0.032	3.2E-02	NA	6.9E-02 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/8	0.017 - 0.021	2.1E-02	NA	8.9E-01 C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/8	0.21 - 0.25	2.5E-01	NA	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	**Aluminum**	**2.7E+03**	**1.6E+04**	**MG/KG**	**IR04-IS04-4-5-09C**	**8/8**	**10.4 - 12.9**	**1.6E+04**	**1.0E+04**	**7.7E+03 N**	N/A	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/8	0.78 - 0.96	9.6E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	Arsenic	4.0E-01 J	1.8E+00	MG/KG	IR04-IS05-4-5-09C	8/8	0.52 - 0.64	1.8E+00	2.1E+00	3.9E-01 C*	5.8E+00	NCSSL	NO	BBK
	7440-39-3	Barium	3.9E+00	1.5E+01	MG/KG	IR04-IS04-4-5-09C	8/8	2.1 - 2.6	1.5E+01	1.7E+01	1.5E+03 N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	6.0E-02 J	1.0E-01 J	MG/KG	IR04-IS04-4-5-09C : IR04-IS05-4-5-09C : IR04-IS08-5-6-09C	5/8	0.26 - 0.32	1.0E-01	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	ND	ND	MG/KG		0/8	0.26 - 0.32	3.2E-01	2.3E-02	7.0E+00 N	3.0E+00	NCSSL	NO	DLBSL
	7440-70-2	Calcium	6.4E+01 J	2.7E+02 J	MG/KG	IR04-IS01D-5-6-09C	2/8	260 - 321	2.7E+02	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	2.8E+00 J	1.4E+01 J	MG/KG	IR04-IS04-4-5-09C	8/8	0.52 - 0.64	1.4E+01	1.5E+01	2.9E-01 C	3.8E+00	NCSSL	NO	BBK
	7440-48-4	Cobalt	2.8E-01 J	4.9E-01 J	MG/KG	IR04-IS06-5-6-09C	4/8	0.78 - 0.96	4.9E-01	8.2E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	3.5E-01 J	1.4E+00	MG/KG	IR04-IS05-4-5-09C	8/8	0.52 - 0.64	1.4E+00	2.6E+00	3.1E+02 N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	Iron	9.2E+02	2.9E+03	MG/KG	IR04-IS04-4-5-09C	8/8	5.2 - 6.4	2.9E+03	5.4E+03	5.5E+03 N	1.5E+02	NCSSL	NO	BSL
	7439-92-1	Lead	2.1E+00	6.3E+00	MG/KG	IR04-IS04-4-5-09C	8/8	0.16 - 0.19	6.3E+00	8.5E+00	4.0E+02	2.7E+02	NCSSL	NO	BSL
	7439-95-4	Magnesium	6.3E+01 J	3.7E+02	MG/KG	IR04-IS08-5-6-09C	8/8	260 - 321	3.7E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.7E+00	5.0E+00	MG/KG	IR04-IS04-4-5-09C	8/8	0.78 - 0.96	5.0E+00	9.3E+00	1.8E+02 N	6.5E+01	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7439-97-6	Mercury	1.9E-02 J	3.1E-02 J	MG/KG	IR04-IS06-5-6-09C	2/8	0.033 - 0.043	3.1E-02	7.1E-02	2.3E+00 N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	1.0E+00	2.4E+00	MG/KG	IR04-IS06-5-6-09C	8/8	0.52 - 0.64	2.4E+00	2.3E+00	1.5E+02 N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	8.9E+01 J	3.9E+02	MG/KG	IR04-IS04-4-5-09C	8/8	260 - 321	3.9E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.9E-01 J	3.3E-01	MG/KG	IR04-IS04-4-5-09C	3/8	0.26 - 0.32	3.3E-01	5.1E-01	3.9E+01 N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/8	0.52 - 0.64	6.4E-01	1.3E-01	3.9E+01 N	3.4E+00	NCSSL	NO	DLBSL
	7440-23-5	Sodium	ND	ND	MG/KG		0/8	260 - 321	3.2E+02	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/8	0.42 - 0.51	5.1E-01	3.8E-01	N/A	N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	3.5E+00	1.7E+01	MG/KG	IR04-IS04-4-5-09C	8/8	0.78 - 0.96	1.7E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	2.7E+00	3.8E+00	MG/KG	IR04-IS04-4-5-09C	5/8	1.3 - 1.6	3.8E+00	6.6E+00	2.3E+03 N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for bis(2-ethylhexyl)phthalate used as a surrogate for di-n-octylphthalate.
RSL value for Cadmium (diet) used as surrogate for cadmium.
RSL value for hexavalent chromium (chromium VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Below Background (BBK)
- Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
C = Carcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = saturation concentration higher than noncarcinogenic based RSL, therefore Csat used as screening level
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
N/A = Not available
ND = Not Detected
mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.1a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample Location of Maximum Detected Concentration	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	8 / 8	1.6E+04	IR04-IS04-4-5-09C	7.7E+04	1	0.2		Nervous System
Cumulative Corresponding Hazard Index[d]						**0.2**		
Cumulative Corresponding Cancer Risk[e]							**NA**	
							Total Nervous System HI =	0.2

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

mg/kg = milligrams per kilogram

NA = Not available/not applicable

HI = Hazard Index

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D
TABLE D-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater Site 4	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	9.1E+02 N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	5.9E+03 N	2.1E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.1E-01 C**	7.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/3	3 - 3	3.0E+00	NA	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.7E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/3	2.5 - 2.5	2.5E+00	NA	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.1E-01 C	1.0E+00	15A NCAC 2L	YES	DLASL
												5.0E+00	MCL		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.2E-01 C	6.0E-01	15A NCAC 2L	YES	DLASL
												8.0E+01	MCL		
	75-25-2	Bromoform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.5E+00 C*	4.0E+00	15A NCAC 2L	NO	DLBSL
												8.0E+01	MCL		
	74-83-9	Bromomethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	2.6E-01 J	2.6E-01 J	UG/L	IR04-TW03D-09C	1/3	1 - 1	2.6E-01	NA	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		

APPENDIX D
TABLE D-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	9.1E+00	N	1.0E+02	MCL	NO	DLBSL
													5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.1E+03	N	3.0E+03	15A NCAC 2L	NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.9E-01	C	8.0E+01	MCL	YES	DLASL
													7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.9E+01	N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.3E+03	N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E-01	C	8.0E+01	MCL	YES	DLASL
													4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.9E+01	N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E+00	C	7.0E+02	MCL	NO	DLBSL
													6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.8E+01	N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+03	N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.2E+01	C	2.0E+01	15A NCAC 2L	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.8E+01	N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.8E+00	C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.6E+02	N	1.0E+02	MCL	NO	DLBSL
													7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.1E-01	C	5.0E+00	MCL	YES	DLASL
													7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.3E+02	N	1.0E+03	MCL	NO	DLBSL
													6.0E+02	15A NCAC 2L		
	79-01-6	Trichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+00	C	5.0E+00	MCL	NO	DLBSL
													3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.3E+02	N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.6E-02	C	2.0E+00	MCL	YES	DLASL
													3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+01	N	1.0E+04	MCL	NO	DLBSL
													5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+01	N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.1E+01	N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+02	N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.2E-01	C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL

APPENDIX D
TABLE D-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+01 N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.5E+01 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	7.5E-01 J	7.5E-01 J	UG/L	IR04-TW03D-09C	1/3	9.2 - 9.6	7.5E-01	NA	1.8E+01 N	4.0E+01	15A NCAC 2L	NO	BSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.2E+02 N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.2E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL

APPENDIX D
TABLE D-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.5E+01 C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	4.8E+00 C	1.0E+02	15A NCAC 2L	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+00 NC	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	NA	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	9.2 - 9.6	9.6E+00	NA	1.4E+01 C	N/A	N/A	NO	DLBSL

APPENDIX D
TABLE D-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7429-90-5	Aluminum	5.0E+02	J	6.1E+02	J	UG/L	IR04-TW03D-09C	2/3	200 - 200	6.1E+02	1.9E+03	3.7E+03	N	50 - 200	SMCL	NO	BSL
	7440-36-0	Antimony	ND		ND		UG/L		0/3	15 - 15	1.5E+01	3.3E+00	1.5E+00	N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	ND		ND		UG/L		0/3	10 - 10	1.0E+01	5.8E+00	4.5E-02	C	1.0E+01	MCL	YES	DLASL
															1.0E+01	15A NCAC 2L		
	7440-39-3	Barium	2.7E+01	J	8.4E+01		UG/L	IR04-TW03D-09C	3/3	40 - 40	8.4E+01	8.6E+01	7.3E+02	N	2.0E+03	MCL, 15A	NO	BSL
															7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.1E-01	7.3E+00	N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.6E-01	1.8E+00	N	5.0E+00	MCL	YES	DLASL
															2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	1.8E+03	J	6.2E+03	J	UG/L	IR04-TW02-09C	3/3	5000 - 5000	6.2E+03	6.9E+04	N/A		N/A	N/A	NO	NUT
	7440-47-3	Chromium	ND		ND		UG/L		0/3	10 - 10	1.0E+01	3.1E+00	4.3E-02	C	1.0E+02	MCL	YES	DLASL
															1.0E+01	15A NCAC 2L		
	7440-48-4	Cobalt	ND		ND		UG/L		0/3	15 - 15	1.5E+01	3.4E+00	1.1E+00	N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	ND		ND		UG/L		0/3	10 - 10	1.0E+01	2.8E+00	1.5E+02	N	1.3E+03	MCL	NO	DLBSL
															1.0E+03	15A NCAC 2L		
	7439-89-6	Iron	3.0E+03		4.4E+03		UG/L	IR04-TW02-09C	3/3	100 - 100	4.4E+03	6.0E+03	2.6E+03	N	3.0E+02	15A NCAC 2L	NO	BBK
	7439-92-1	Lead	ND		ND		UG/L		0/3	3 - 3	3.0E+00	2.8E+00	1.5E+01		1.5E+01	MCL, 15A NCAC 2L	NO	DLBSL
	7439-95-4	Magnesium	1.4E+03	J	1.9E+03	J	UG/L	IR04-TW03D-09C	2/3	5000 - 5000	1.9E+03	6.4E+03	N/A		N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.6E+01		4.4E+01		UG/L	IR04-TW01-09C	3/3	15 - 15	4.4E+01	2.1E+02	8.8E+01	N	5.0E+01	15A NCAC 2L	NO	BSL
	7439-97-6	Mercury	ND		ND		UG/L		0/3	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00	N	2.0E+00	MCL	NO	DLBSL
															1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	5.7E+00	J	6.1E+00	J	UG/L	IR04-TW03D-09C	2/3	10 - 10	6.1E+00	8.0E+00	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.6E+03	J	1.6E+03	J	UG/L	IR04-TW03D-09C	1/3	5000 - 5000	1.6E+03	3.3E+03	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.1E+00	1.8E+01	N	5.0E+01	MCL, 15A	NO	DLBSL
															2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND		ND		UG/L		0/3	10 - 10	1.0E+01	7.7E-01	1.8E+01	N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	5.1E+03		9.6E+03		UG/L	IR04-TW03D-09C	3/3	5000 - 5000	9.6E+03	2.3E+04	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		UG/L		0/3	2 - 2	2.0E+00	3.8E+00	N/A		2.0E+00	MCL	NO	BBK
	7440-62-2	Vanadium	ND		ND		UG/L		0/3	15 - 15	1.5E+01	4.7E+00	1.8E+01	N	N/A	N/A	NO	DLBSL
	7440-66-6	Zinc	6.2E+00	J	7.5E+00	J	UG/L	IR04-TW01-09C	2/3	25 - 25	7.5E+00	4.2E+01	1.1E+03	N	1.0E+03	15A NCAC 2L	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.
[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.
[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for tapwater (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background (BBK)
Detection Limit Below Screening Level (DLBSL)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
C* = Carcinogenic (where nc PRG<100 x ca PRG)
C**= Carcinogenic (where nc PRG < 10 X ca PRG, therefore, nc PRG used)
N = Noncarcinogenic
N/A = Not available
ND = Not Detected
ug/L = microgram per liter

APPENDIX D

TABLE D-2.3

Occurrence, Distribution, and Selection of Chemicals of Potential Concern

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater (Vapor Intrusion Into Indoor Air) Site 4	75-15-0	Carbon disulfide	2.6E-01	J	2.6E-01	J	UG/L	IR04-TW03D-09C	1/3	1 - 1	2.6E-01	NA	1.5E+02	N	NA	NA	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.3a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C = Carcinogenic
N = Noncarcinogenic
µg/L = microgram per liter
NA = Not available

APPENDIX D
TABLE D-2.3a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 4

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non-Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
75-15-0	Carbon disulfide	N/A	7.3E+01	7.3E+01	5.0E-01	N/A	1.5E+02

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. Average groundwater temperature of 19.27°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non-cancer}$)
Equation 2: Cgw = $C_{target,ia} \times 10^{-3}$ m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 23	71-55-6	1,1,1-Trichloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.4E+02	NS	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	5.6E-01	C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	9.1E+02	NS	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.1E+00	C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	3.3E+00	C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.4E+01	N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.2E+00	C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		MG/KG		0/8	0.0051 - 0.0079	7.9E-03	NA	5.4E-03	C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	3.4E-02	C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.9E+02	NS	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	4.3E-01	C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	8.9E-01	C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.4E+00	C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.4E+00	C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.8E+03	NS	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.1E+01	NS	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	7.1E-04	J	7.1E-04	J	MG/KG	IR23-IS02-6-7-09C	1/8	0.01 - 0.016	7.1E-04	NA	5.3E+02	NS	N/A	N/A	NO	BSL
	67-64-1	Acetone	ND		ND		MG/KG		0/6	0.01 - 0.016	1.6E-02	NA	6.1E+03	N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.1E+00	C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.7E-01	C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.1E+01	C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	7.3E-01	N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	8.2E+01	NS	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.1E-01	C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.9E+01	N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.5E+03	NS	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.9E-01	C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.2E+01	N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.6E+01	N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.2E+02	NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.8E-01	C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.8E+01	N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	5.4E+00	C	8.1E+00	NCSSL	NO	DLBSL
	98-82-8	Isopropylbenzene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.1E+02	NS	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	7.8E+03	NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	5.7E+01	NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.1E+01	C	2.3E-02	NCSSL	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	4.3E+01	C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.3E+02	NS	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	5.5E-01	C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	5.0E+02	NS	5.5E+00	NCSSL	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.5E+01	N	5.1E-01	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	10061-02-6	trans-1,3-Dichloropropene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	2.8E+00	C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	7.9E+01	N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.0E-02	C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND		ND		MG/KG		0/8	0.01 - 0.016	1.6E-02	NA	6.3E+01	NS	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.1E+02	NS	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	4.6E+00	C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+00	C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.2E+02	N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	1.2E+01	N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.6E+00	C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+00	N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.8E+02	NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.9E+01	N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.1E+01	N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.1E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.9E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.1E+00	C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	4.9E-01	N	N/A	N/A	NO	DLBSL
	101-55-3	4-Bromophenyl-phenylether	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	N/A		N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.4E+00	C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.1E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.1E+01	N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	2.4E+01	C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND		ND		MG/KG		0/8	0.42 - 0.46	4.6E-01	NA	4.8E+00	C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.4E+02	N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.4E+02	N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	7.8E+02	NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.7E+03	N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.1E+00	C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	7.8E+02	NS	N/A	N/A	NO	DLBSL
	56-55-3	**Benzo(a)anthracene**	**1.4E-01**	**J**	**1.4E-01**	**J**	**MG/KG**	**IR23-IS02-6-7-09C**	**1/8**	**0.053 - 0.058**	**1.4E-01**	**NA**	**1.5E-01**	**C**	**1.8E-01**	**NCSSL**	**YES**	**CPAH**
	50-32-8	**Benzo(a)pyrene**	**1.2E-03**	**J**	**1.0E-01**		**MG/KG**	**IR23-IS02-6-7-09C**	**3/8**	**0.0056 - 0.0062**	**1.0E-01**	**NA**	**1.5E-02**	**C**	**5.9E-02**	**NCSSL**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**1.7E-01**	**J**	**1.7E-01**	**J**	**MG/KG**	**IR23-IS02-6-7-09C**	**1/8**	**0.053 - 0.058**	**1.7E-01**	**NA**	**1.5E-01**	**C**	**6.0E-01**	**NCSSL**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	1.2E-01	J	1.2E-01	J	MG/KG	IR23-IS02-6-7-09C	1/8	0.21 - 0.23	1.2E-01	NA	1.7E+02	N	3.6E+02	NCSSL	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**1.1E-01**	**J**	**1.1E-01**	**J**	**MG/KG**	**IR23-IS02-6-7-09C**	**1/8**	**0.21 - 0.23**	**1.1E-01**	**NA**	**1.5E+00**	**C**	**5.9E+00**	**NCSSL**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.1E-01	C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.5E+01	C*	7.2E+00	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.4

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Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value	[4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-68-7	Butylbenzylphthalate	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.6E+02	C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	9.9E-02	J	1.1E-01	J	MG/KG	IR23-IS07-09C	2/8	0.21 - 0.23	1.1E-01	NA	3.1E+03	N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	N/A		N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**2.3E-01**	**J**	**2.3E-01**	**J**	**MG/KG**	**IR23-IS02-6-7-09C**	**1/8**	**0.21 - 0.23**	**2.3E-01**	**NA**	**1.5E+01**	**C**	**1.8E+01**	**NCSSL**	**YES**	**CPAH**
	53-70-3	Dibenz(a,h)anthracene	ND		ND		MG/KG		0/8	0.0056 - 0.0062	6.2E-03	NA	1.5E-02	C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	7.8E+00	NC	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	4.9E+03	N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	N/A		N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+02	N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND		ND		MG/KG		0/8	0.22 - 0.39	3.9E-01	NA	3.5E+01	C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	3.9E-01		3.9E-01		MG/KG	IR23-IS02-6-7-09C	1/8	0.21 - 0.23	3.9E-01	NA	2.3E+02	N	3.3E+02	NCSSL	NO	BSL
	86-73-7	Fluorene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	2.3E+02	N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.0E-01	C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+00	C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	6.1E+00	C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND		ND		MG/KG		0/8	0.053 - 0.058	5.8E-02	NA	1.5E-01	C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND		ND		MG/KG		0/8	0.053 - 0.058	5.8E-02	NA	5.1E+02	C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	3.6E+00	C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND		ND		MG/KG		0/8	0.027 - 0.029	2.9E-02	NA	6.9E-02	C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	9.9E+01	C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	4.8E+00	C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND		ND		MG/KG		0/8	0.018 - 0.019	1.9E-02	NA	8.9E-01	C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	1.2E-01	J	1.2E-01	J	MG/KG	IR23-IS02-6-7-09C	1/8	0.21 - 0.23	1.2E-01	NA	1.7E+03	N	5.7E+01	NCSSL	NO	BSL
	108-95-2	Phenol	ND		ND		MG/KG		0/8	0.21 - 0.23	2.3E-01	NA	1.8E+03	N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	3.5E-01		3.5E-01		MG/KG	IR23-IS02-6-7-09C	1/8	0.21 - 0.23	3.5E-01	NA	1.7E+02	N	2.2E+02	NCSSL	NO	BSL
	72-54-8	4,4'-DDD	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	2.0E+00	C	2.4E-01	NCSSL	NO	DLBSL
	72-55-9	4,4'-DDE	4.5E-04	J	4.5E-04	J	MG/KG	IR23-IS02-6-7-09C	1/2	0.00036 - 0.00073	4.5E-04	NA	1.4E+00	C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	5.1E-04	J	5.1E-04	J	MG/KG	IR23-IS02-6-7-09C	1/2	0.00036 - 0.00073	5.1E-04	NA	1.7E+00	C*	3.4E-01	NCSSL	NO	BSL
	309-00-2	Aldrin	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	2.9E-02	C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	7.7E-02	C	1.2E-03	NCSSL	NO	DLBSL
	5103-71-9	alpha-Chlordane	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	1.6E+00	C*	6.8E-02	NCSSL	NO	DLBSL
	12674-11-2	Aroclor-1016	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	3.9E-01	N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	1.4E-01	C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	1.4E-01	C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	2.2E-01	C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	2.2E-01	C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	1.1E-01	C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND		ND		MG/KG		0/2	0.018 - 0.018	1.8E-02	NA	2.2E-01	C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	2.7E-01	C	1.2E-03	NCSSL	NO	DLBSL
	319-86-8	delta-BHC	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	2.7E-01	C	1.2E-03	NCSSL	NO	DLBSL
	60-57-1	Dieldrin	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	3.0E-02	C	8.1E-04	NCSSL	NO	DLBSL
	959-98-8	Endosulfan I	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	3.7E+01	N	5.6E+00	NCSSL	NO	DLBSL
	33213-65-9	Endosulfan II	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	3.7E+01	N	5.6E+00	NCSSL	NO	DLBSL

APPENDIX D

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Site 23

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1031-07-8	Endosulfan sulfate	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	3.7E+01	N	5.6E+00	NCSSL	NO	DLBSL
	72-20-8	Endrin	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	1.8E+00	N	8.1E-01	NCSSL	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	1.8E+00	N	8.1E-01	NCSSL	NO	DLBSL
	53494-70-5	Endrin ketone	ND		ND		MG/KG		0/2	0.00036 - 0.00073	7.3E-04	NA	1.8E+00	N	8.1E-01	NCSSL	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	5.2E-01	C*	1.8E-03	NCSSL	NO	DLBSL
	5103-74-2	gamma-Chlordane	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	1.6E+00	C*	6.8E-02	NCSSL	NO	DLBSL
	76-44-8	Heptachlor	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	1.1E-01	C	6.6E-03	NCSSL	NO	DLBSL
	1024-57-3	Heptachlor epoxide	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	5.3E-02	C*	8.2E-04	NCSSL	NO	DLBSL
	72-43-5	Methoxychlor	ND		ND		MG/KG		0/2	0.00036 - 0.00037	3.7E-04	NA	3.1E+01	N	2.2E+01	NCSSL	NO	DLBSL
	8001-35-2	Toxaphene	ND		ND		MG/KG		0/2	0.037 - 0.072	7.2E-02	NA	4.4E-01	C	4.6E-02	NCSSL	NO	DLBSL
	93-76-5	2,4,5-T	ND		ND		MG/KG		0/2	0.0054 - 0.0055	5.5E-03	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	93-72-1	2,4,5-TP (Silvex)	ND		ND		MG/KG		0/2	0.0054 - 0.0055	5.5E-03	NA	4.9E+01	N	3.8E-01	NCSSL	NO	DLBSL
	94-75-7	2,4-D	ND		ND		MG/KG		0/2	0.054 - 0.055	5.5E-02	NA	6.9E+01	N	3.2E-01	NCSSL	NO	DLBSL
	94-82-6	2,4-DB	ND		ND		MG/KG		0/2	0.054 - 0.055	5.5E-02	NA	4.9E+01	N	N/A	N/A	NO	DLBSL
	120-36-5	2,4-DP (Dichloroprop)	ND		ND		MG/KG		0/2	0.054 - 0.055	5.5E-02	NA	N/A		N/A	N/A	NO	NTX
	75-99-0	Dalapon	ND		ND		MG/KG		0/2	0.13 - 0.14	1.4E-01	NA	1.8E+02	N	N/A	N/A	NO	DLBSL
	1918-00-9	Dicamba	ND		ND		MG/KG		0/2	0.0054 - 0.0055	5.5E-03	NA	1.8E+02	N	N/A	N/A	NO	DLBSL
	88-85-7	Dinoseb	ND		ND		MG/KG		0/2	0.027 - 0.027	2.7E-02	NA	6.1E+00	N	N/A	N/A	NO	DLBSL
	94-74-6	MCPA	ND		ND		MG/KG		0/2	5.4 - 5.5	5.5E+00	NA	3.1E+00	N	N/A	N/A	YES	DLASL
	93-65-2	MCPP	ND		ND		MG/KG		0/2	5.4 - 5.5	5.5E+00	NA	6.1E+00	N	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	1.5E+03		5.2E+03		MG/KG	IR23-IS03-09C	8/8	10.6 - 11.7	5.2E+03	1.0E+04	7.7E+03	N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	ND		ND		MG/KG		0/8	0.8 - 0.88	8.8E-01	3.6E-01	3.1E+00	N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**2.4E-01**	**J**	**2.4E+00**		**MG/KG**	**IR23-IS06-09C**	**7/8**	**0.53 - 0.58**	**2.4E+00**	**2.1E+00**	**3.9E-01**	**C***	**5.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-39-3	Barium	2.0E+00	J	5.7E+00		MG/KG	IR23-IS03-09C	8/8	2.1 - 2.3	5.7E+00	1.7E+01	1.5E+03	N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	ND		ND		MG/KG		0/8	0.26 - 0.29	2.9E-01	1.7E-01	1.6E+01	N	N/A	N/A	NO	DLBSL
	7440-43-9	Cadmium	ND		ND		MG/KG		0/8	0.26 - 0.29	2.9E-01	2.3E-02	7.0E+00	N	3.0E+00	NCSSL	NO	DLBSL
	7440-70-2	Calcium	4.3E+02	J	2.4E+03	J	MG/KG	IR23-IS02-6-7-09C	2/8	265 - 292	2.4E+03	4.4E+02	N/A		N/A	N/A	NO	NUT
	7440-47-3	Chromium	2.9E+00		8.2E+00		MG/KG	IR23-IS03-09C	8/8	0.53 - 0.58	8.2E+00	1.5E+01	2.9E-01	C	3.8E+00	NCSSL	NO	BBK
	7440-48-4	Cobalt	ND		ND		MG/KG		0/8	0.8 - 0.88	8.8E-01	8.2E-01	2.3E+00	N	N/A	N/A	NO	DLBSL
	7440-50-8	Copper	3.2E-01	J	8.1E-01		MG/KG	IR23-IS02-6-7-09C	6/8	0.53 - 0.58	8.1E-01	2.6E+00	3.1E+02	N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	Iron	9.8E+02		4.1E+03		MG/KG	IR23-IS04-09C	8/8	5.3 - 5.8	4.1E+03	5.4E+03	5.5E+03	N	1.5E+02	NCSSL	NO	BSL
	7439-92-1	Lead	1.5E+00		4.3E+00		MG/KG	IR23-IS02-6-7-09C	8/8	0.16 - 0.18	4.3E+00	8.5E+00	4.0E+02		2.7E+02	NCSSL	NO	BSL
	7439-95-4	Magnesium	5.6E+01	J	2.2E+02	J	MG/KG	IR23-IS08-09C	8/8	265 - 292	2.2E+02	3.6E+02	N/A		N/A	N/A	NO	NUT
	7439-96-5	Manganese	9.1E-01		3.9E+00		MG/KG	IR23-IS02-6-7-09C	8/8	0.8 - 0.88	3.9E+00	9.3E+00	1.8E+02	N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	ND		ND		MG/KG		0/8	0.032 - 0.039	3.9E-02	7.1E-02	2.3E+00	N	1.0E+00	NCSSL	NO	DLBSL
	7440-02-0	Nickel	4.7E-01	J	1.1E+00		MG/KG	IR23-IS01-6-7-09C:IR23-IS01D-6-7-09C: IR23-IS03-09C	8/8	0.53 - 0.58	1.1E+00	2.3E+00	1.5E+02	N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	8.3E+01	J	2.4E+02	J	MG/KG	IR23-IS03-09C	8/8	265 - 292	2.4E+02	3.6E+02	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND		ND		MG/KG		0/8	0.27 - 0.29	2.9E-01	5.1E-01	3.9E+01	N	2.1E+00	NCSSL	NO	DLBSL
	7440-22-4	Silver	ND		ND		MG/KG		0/8	0.53 - 0.58	5.8E-01	1.3E-01	3.9E+01	N	3.4E+00	NCSSL	NO	DLBSL
	7440-23-5	Sodium	ND		ND		MG/KG		0/8	265 - 292	2.9E+02	6.8E+01	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		MG/KG		0/8	0.42 - 0.47	4.7E-01	3.8E-01	N/A		N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	4.7E+00		1.1E+01		MG/KG	IR23-IS01-6-7-09C	8/8	0.8 - 0.88	1.1E+01	1.7E+01	3.9E+01	N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	2.2E+00		4.2E+00		MG/KG	IR23-IS02-6-7-09C	2/8	1.3 - 1.5	4.2E+00	6.6E+00	2.3E+03	N	1.2E+03	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for phenanthrene.
RSL value for bis(2-ethylhexyl)phthalate used as a surrogate for di-n-octylphthalate.
RSL value for Cadmium (diet) used as surrogate for cadmium.
RSL value for Endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for Endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for hexavalent chromium (chromium VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for alpha-chlordane and gamma-chlordane.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Below Background (BBK)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
C = Carcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = saturation concentration higher than noncarcinogenic based RSL, therefore Csat used as screening level
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
N/A = Not available
ND = Not Detected
mg/kg = milligram per kilogram

APPENDIX D

TABLED- 2.4a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
PAHs (mg/kg)								
Benzo(a)anthracene	1 / 8	1.4E-01 J	IR23-IS02-6-7-09C	1.5E-01	1E-06		9E-07	
Benzo(a)pyrene	3 / 8	1.0E-01	IR23-IS02-6-7-09C	1.5E-02	1E-06		7E-06	
Benzo(b)fluoranthene	1 / 8	1.7E-01 J	IR23-IS02-6-7-09C	1.5E-01	1E-06		1E-06	
Benzo(k)fluoranthene	1 / 8	1.1E-01 J	IR23-IS02-6-7-09C	1.5E+00	1E-06		7E-08	
Chrysene	1 / 8	2.3E-01 J	IR23-IS02-6-7-09C	1.5E+01	1E-06		2E-08	
Metals (mg/kg)								
Arsenic	7 / 8	2.4E+00	IR23-IS06-09C	3.9E-01	1E-06		6E-06	
Cumulative Corresponding Hazard Index[d]						**NA**		
Cumulative Corresponding Cancer Risk[e]							**1E-05**	

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

J = Estimated Value

mg/kg = milligram per kilogram

NA = Not available/not applicable

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater	71-55-6	1,1,1-Trichloroethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	9.1E+02	N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
Site 23	79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	6.7E-02	C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	5.9E+03	N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.4E-01	C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.4E+00	C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	3.4E+01	N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.1E-01	C**	7.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	3.2E-04	C	2.0E-01	MCL	YES	DLASL
															4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	6.5E-03	C	5.0E-02	MCL	YES	DLASL
															2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	3.7E+01	N	6.0E+02	MCL	NO	DLBSL
															2.0E+01	15A NCAC 2L		
	107-06-2	**1,2-Dichloroethane**	**9.5E+00**		**9.5E+00**		**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**9.5E+00**	**NA**	**1.5E-01**	**C**	**5.0E+00**	**MCL**	**YES**	**ASL**
															4.0E-01	15A NCAC 2L		
	78-87-5	**1,2-Dichloropropane**	**7.8E-01**	**J**	**7.8E-01**	**J**	**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**7.8E-01**	**NA**	**3.9E-01**	**C***	**5.0E+00**	**MCL**	**YES**	**ASL**
															6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.3E-01	C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.3E-01	C	7.5E+01	MCL	YES	DLASL
															6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND		ND		UG/L		0/4	3 - 3	3.0E+00	NA	7.1E+02	N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.7E+00	N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.0E+02	N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND		ND		UG/L		0/4	2.5 - 2.5	2.5E+00	NA	2.2E+03	N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	**Benzene**	**6.3E+00**		**6.3E+00**		**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**6.3E+00**	**NA**	**4.1E-01**	**C**	**1.0E+00**	**15A NCAC 2L**	**YES**	**ASL**
															5.0E+00	**MCL**		
	75-27-4	Bromodichloromethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.2E-01	C	6.0E-01	15A NCAC 2L	YES	DLASL
															8.0E+01	MCL		
	75-25-2	Bromoform	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	8.5E+00	C*	4.0E+00	15A NCAC 2L	NO	DLBSL
															8.0E+01	MCL		
	74-83-9	Bromomethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	8.7E-01	N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.0E+02	N	7.0E+02	15A NCAC 2L	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.4E-01	C	5.0E+00	MCL	YES	DLASL
															3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	9.1E+00	N	1.0E+02	MCL	NO	DLBSL
															5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.1E+03	N	3.0E+03	15A NCAC 2L	NO	DLBSL

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	Chloroform	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.9E-01	C	8.0E+01	MCL	YES	DLASL
															7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.9E+01	N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	5.7E-01	J	5.7E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	5.7E-01	NA	1.3E+03	N	N/A	N/A	NO	BSL
	124-48-1	Dibromochloromethane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.5E-01	C	8.0E+01	MCL	YES	DLASL
															4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	3.9E+01	N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.5E+00	C	7.0E+02	MCL	NO	DLBSL
															6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	6.8E+01	N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	3.7E+03	N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.2E+01	C	2.0E+01	15A NCAC 2L	NO	DLBSL
	108-87-2	Methylcyclohexane	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	8.8E+01	N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.8E+00	C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.6E+02	N	1.0E+02	MCL	NO	DLBSL
															7.0E+01	15A NCAC 2L		
	127-18-4	**Tetrachloroethene**	**7.4E-01**	**J**	**7.4E-01**	**J**	**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**7.4E-01**	**NA**	**1.1E-01**	**C**	**5.0E+00**	**MCL**	**YES**	**ASL**
															7.0E-01	**15A NCAC 2L**		
	108-88-3	Toluene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.3E+02	N	1.0E+03	MCL	NO	DLBSL
															6.0E+02	15A NCAC 2L		
	79-01-6	Trichloroethene	1.1E+00		1.1E+00		UG/L	IR78-GW17-2-09C	1/4	1 - 1	1.1E+00	NA	2.0E+00	C	5.0E+00	MCL	NO	BSL
															3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.3E+02	N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.6E-02	C	2.0E+00	MCL	YES	DLASL
															3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	2.0E+01	N	1.0E+04	MCL	NO	DLBSL
															5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	5.0E-01	J	5.0E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	5.0E-01	NA	3.7E+01	N	7.0E+01	MCL, 15A NCAC 2L	NO	BSL
	10061-01-5	cis-1,3-Dichloropropene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	1.1E+01	N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND		ND		UG/L		0/4	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+02	N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.2E-01	C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND		ND		UG/L		0/4	24 - 24	2.4E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+00	C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND		ND		UG/L		0/4	24 - 24	2.4E+01	NA	7.3E+00	N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.2E-01	C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND		ND		UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+00	N	N/A	N/A	YES	DLASL

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E+02	N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+01	N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.5E+01	N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.5E-01	C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	2.9E-01	N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	N/A		N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.4E-01	C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+01	N	4.0E+01	15A NCAC 2L	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	3.4E+00	C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	1.2E-01	C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.2E+02	N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.2E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+03	N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-01	C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-02	C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-03	C	2.0E-01	MCL	YES	DLASL
													5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-02	C	2.0E-01	MCL	YES	DLASL
													5.0E-02	15A NCAC 2L		
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-01	C	5.0E-01	15A NCAC 2L	YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.5E+01	C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.8E+03	N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	N/A		N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E+00	C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+02	N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	N/A		1.0E+02	15A NCAC 2L	NO	NTX

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+00 NC	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/4	24 - 24	2.4E+01	NA	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.7E+00 J	1.7E+00 J	UG/L	USTHPFFC-MW09-09C	1/4	9.4 - 9.8	1.7E+00	NA	4.8E+00 C	6.0E+00	MCL	NO	BSL
												3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/4	9.4 - 9.8	9.8E+00	NA	1.4E+01 C	N/A	N/A	NO	DLBSL
	72-54-8	4,4'-DDD	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	2.8E-01 C	1.0E-01	15A NCAC 2L	NO	DLBSL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	2.0E-01 C	N/A	N/A	NO	DLBSL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	2.0E-01 C*	1.0E-01	15A NCAC 2L	NO	DLBSL
	309-00-2	Aldrin	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	4.0E-03 C	N/A	N/A	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	1.1E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	5103-71-9	alpha-Chlordane	1.2E-02	1.2E-02	UG/L	USTHPFFC-MW09-09C	1/4	0.0096 - 0.01	1.2E-02	NA	1.9E-01 C*	1.0E-01	15A NCAC 2L	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	2.6E-01 C**	5.0E-01	MCL	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	3.4E-02 C	5.0E-01	MCL	YES	DLASL

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/4	0.48 - 0.53	5.3E-01	NA	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	3.7E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	3.7E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	4.2E-03 C	2.0E-03	15A NCAC 2L	YES	DLASL
	959-98-8	Endosulfan I	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/4	0.019 - 0.021	2.1E-02	NA	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	6.1E-02 C	2.0E-01	MCL	NO	DLBSL
												3.0E-02	15A NCAC 2L		
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	1.9E-01 C*	1.0E-01	15A NCAC 2L	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	1.5E-02 C	8.0E-03	15A NCAC 2L	NO	DLBSL
												4.0E-01	MCL		
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	7.4E-03 C*	4.0E-03	15A NCAC 2L	YES	DLASL
												2.0E-01	MCL		
	72-43-5	Methoxychlor	ND	ND	UG/L		0/4	0.0096 - 0.01	1.0E-02	NA	1.8E+01 N	4.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/4	0.96 - 1	1.0E+00	NA	6.1E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
												3.0E+00	MCL		
	93-76-5	2,4,5-T	ND	ND	UG/L		0/4	0.048 - 0.049	4.9E-02	NA	3.7E+01 N	N/A	N/A	NO	DLBSL
	93-72-1	2,4,5-TP (Silvex)	ND	ND	UG/L		0/4	0.048 - 0.049	4.9E-02	NA	2.9E+01 N	5.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	94-75-7	2,4-D	ND	ND	UG/L		0/4	0.48 - 0.49	4.9E-01	NA	3.7E+01 N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	94-82-6	2,4-DB	ND	ND	UG/L		0/4	0.48 - 0.49	4.9E-01	NA	2.9E+01 N	N/A	N/A	NO	DLBSL
	120-36-5	2,4-DP (Dichloroprop)	ND	ND	UG/L		0/4	0.48 - 0.49	4.9E-01	NA	N/A	N/A	N/A	NO	DLBSL
	75-99-0	Dalapon	ND	ND	UG/L		0/4	1.2 - 1.2	1.2E+00	NA	1.1E+02 N	2.0E+02	MCL	NO	DLBSL
	1918-00-9	Dicamba	ND	ND	UG/L		0/4	0.048 - 0.049	4.9E-02	NA	1.1E+02 N	N/A	N/A	NO	DLBSL
	88-85-7	Dinoseb	ND	ND	UG/L		0/4	0.24 - 0.24	2.4E-01	NA	3.7E+00 N	7.0E+00	MCL	NO	DLBSL
	94-74-6	MCPA	ND	ND	UG/L		0/4	48 - 49	4.9E+01	NA	1.8E+00 N	N/A	N/A	YES	DLASL
	93-65-2	MCPP	ND	ND	UG/L		0/4	48 - 49	4.9E+01	NA	3.7E+00 N	N/A	N/A	YES	DLASL
	7429-90-5	Aluminum	7.7E+01 J	2.1E+02	UG/L	USTHPFFC-MW09-09C	4/4	200 - 200	2.1E+02	1.9E+03	3.7E+03 N	50 - 200	SMCL	NO	BSL
	7440-36-0	Antimony	ND	ND	UG/L		0/4	15 - 15	1.5E+01	3.3E+00	1.5E+00 N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	ND	ND	UG/L		0/4	10 - 10	1.0E+01	5.8E+00	4.5E-02 C	1.0E+01	MCL	YES	DLASL
												1.0E+01	15A NCAC 2L		
	7440-39-3	Barium	1.5E+01 J	4.2E+01	UG/L	IR78-GW17-2-09C	4/4	40 - 40	4.2E+01	8.6E+01	7.3E+02 N	2.0E+03	MCL, 15A NCAC 2L	NO	BSL
	7440-41-7	Beryllium	ND	ND	UG/L		0/4	5 - 5	5.0E+00	3.1E-01	7.3E+00 N	4.0E+00	MCL	NO	DLBSL

APPENDIX D

TABLE D-2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-43-9	Cadmium	ND		ND		UG/L		0/4	5 - 5	5.0E+00	3.6E-01	1.8E+00	N	5.0E+00	MCL	YES	DLASL
															2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	2.4E+04	J	1.7E+05	J	UG/L	IR78-GW17-2-09C	4/4	5000 - 5000	1.7E+05	6.9E+04	N/A		N/A	N/A	NO	NUT
	7440-47-3	Chromium	ND		ND		UG/L		0/4	10 - 10	1.0E+01	3.1E+00	4.3E-02	C	1.0E+02	MCL	YES	DLASL
															1.0E+01	15A NCAC 2L		
	7440-48-4	Cobalt	ND		ND		UG/L		0/4	15 - 15	1.5E+01	3.4E+00	1.1E+00	N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	ND		ND		UG/L		0/4	10 - 10	1.0E+01	2.8E+00	1.5E+02	N	1.3E+03	MCL	NO	DLBSL
															1.0E+03	15A NCAC 2L		
	7439-89-6	Iron	3.7E+01	J	1.4E+03	J	UG/L	IR78-GW17-2-09C	3/4	100 - 100	1.4E+03	6.0E+03	2.6E+03	N	3.0E+02	15A NCAC 2L	NO	BSL
	7439-92-1	Lead	1.7E+00	J	1.7E+00	J	UG/L	USTHPFFC-MW09-09C	1/4	3 - 3	1.7E+00	2.8E+00	1.5E+01		1.5E+01	MCL, 15A NCAC 2L	NO	BSL
	7439-95-4	Magnesium	1.8E+03	J	5.8E+03		UG/L	IR78-GW16-09C	4/4	5000 - 5000	5.8E+03	6.4E+03	N/A		N/A	N/A	NO	NUT
	7439-96-5	Manganese	5.9E+00	J	2.6E+01		UG/L	IR78-GW17-2-09C	3/4	15 - 15	2.6E+01	2.1E+02	8.8E+01	N	5.0E+01	15A NCAC 2L	NO	BSL
	7439-97-6	Mercury	ND		ND		UG/L		0/4	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00	N	2.0E+00	MCL	NO	DLBSL
															1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	3.1E+00	J	3.1E+00	J	UG/L	IR78-GW17-2-09C	1/4	10 - 10	3.1E+00	8.0E+00	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.1E+03	J	3.6E+03	J	UG/L	USTHPFFC-MW09-09C	4/4	5000 - 5000	3.6E+03	3.3E+03	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	5.5E+00	J	5.5E+00	J	UG/L	IR78-GW16D-09C	1/4	5 - 5	5.5E+00	3.1E+00	1.8E+01	N	5.0E+01	MCL	NO	BSL
															2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND		ND		UG/L		0/4	10 - 10	1.0E+01	7.7E-01	1.8E+01	N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	4.2E+03	J	1.4E+04		UG/L	IR78-GW17-4-09C	4/4	5000 - 5000	1.4E+04	2.3E+04	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		UG/L		0/4	2 - 2	2.0E+00	3.8E+00	N/A		2.0E+00	MCL	NO	BBK
	7440-62-2	Vanadium	ND		ND		UG/L		0/4	15 - 15	1.5E+01	4.7E+00	1.8E+01	N	N/A	N/A	NO	DLBSL
	7440-66-6	Zinc	ND		ND		UG/L		0/4	25 - 25	2.5E+01	4.2E+01	1.1E+03	N	1.0E+03	15A NCAC 2L	NO	DLBSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for tapwater (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.

RSL value for 2-chlorophenol used as surrogate for 2-nitrophenol.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for Anthracene used as surrogate for Phenanthrene.

RSL value for Endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for Endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for chlordane used as surrogate for alpha-chlordane and gamma-chlordane.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Below Background (BBK)
	Detection Limit Below Screening Level (DLBSL)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

C = Carcinogenic

C* = Carcinogenic (where nc PRG<100 x ca PRG)

C**= Carcinogenic (where nc PRG < 10 X ca PRG, therefore, nc PRG used)

N = Noncarcinogenic

N/A = Not available

ND = Not Detected

ug/L = microgram per liter

APPENDIX D

TABLE D-2.5a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Volatile Organic Compounds (ug/L)								
1,2-Dichloroethane	1 / 4	9.5E+00	IR78-GW17-2-09C	1.5E-01	1E-06		6E-05	
1,2-Dichloropropane	1 / 4	7.8E-01 J	IR78-GW17-2-09C	3.9E-01	1E-06		2E-06	
Benzene	1 / 4	6.3E+00	IR78-GW17-2-09C	4.1E-01	1E-06		2E-05	
Tetrachloroethene	1 / 4	7.4E-01 J	IR78-GW17-2-09C	1.1E-01	1E-06		7E-06	
Cumulative Corresponding Hazard Index[d]						**NA**		
Cumulative Corresponding Cancer Risk[e]							**9E-05**	

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air	**107-06-2**	**1,2-Dichloroethane**	**9.5E+00**		**9.5E+00**		**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**9.5E+00**	**NA**	**5.0E+00**	**M**	**NA**	**NA**	**YES**	**ASL**
Site 23	78-87-5	1,2-Dichloropropane	7.8E-01	J	7.8E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	7.8E-01	NA	5.0E+00	M	NA	NA	NO	BSL
	71-43-2	**Benzene**	**6.3E+00**		**6.3E+00**		**UG/L**	**IR78-GW17-2-09C**	**1/4**	**1 - 1**	**6.3E+00**	**NA**	**5.0E+00**	**M**	**NA**	**NA**	**YES**	**ASL**
	156-59-2	cis-1,2-Dichloroethene	5.0E-01	J	5.0E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	5.0E-01	NA	7.0E+01	M	NA	NA	NO	BSL
	110-82-7	Cyclohexane	5.7E-01	J	5.7E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	5.7E-01	NA	4.2E+03	N	NA	NA	NO	BSL
	127-18-4	Tetrachloroethene	7.4E-01	J	7.4E-01	J	UG/L	IR78-GW17-2-09C	1/4	1 - 1	7.4E-01	NA	5.0E+00	M	NA	NA	NO	BSL
	79-01-6	Trichloroethene	1.1E+00		1.1E+00		UG/L	IR78-GW17-2-09C	1/4	1 - 1	1.1E+00	NA	5.0E+00	M	NA	NA	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.6a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.6a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 23

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non-Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
107-06-2	1,2-Dichloroethane	9.4E-02	2.5E+02	9.4E-02	4.4E-02	5.0E+00	5.0E+00
78-87-5	1,2-Dichloropropane	2.4E-01	4.2E-01	2.4E-01	1.0E-01	5.0E+00	5.0E+00
71-43-2	Benzene	3.1E-01	3.1E+00	3.1E-01	2.1E-01	5.0E+00	5.0E+00
110-82-7	Cyclohexane	N/A	6.3E+02	6.3E+02	1.5E-01	N/A	4.2E+03
156-59-2	cis-1,2-Dichloroethene	N/A	6.3E+00	6.3E+00	1.6E-01	7.0E+01	7.0E+01
127-18-4	Tetrachloroethene	4.1E-01	2.8E+01	4.1E-01	6.8E-01	5.0E+00	5.0E+00
79-01-6	Trichloroethene	1.2E+00	N/A	1.2E+00	3.7E-01	5.0E+00	5.0E+00

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. The H'TS for cyclohexane is the Henry's Law Constant (dimensionless) (H') at reference temperature due to the lack of chemical specific data available to calculate the H'TS.
Average groundwater temperature of 22.82°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

RSL values for trans-1,2-Dichloroethene used as surrogate for cis-1,2-Dichloroethene.

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non-cancer}$)
Equation 2: Cgw = $C_{target,ia}$ x 10^{-3} m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.4E+02 S	1.2E+00	NCSSL	NO	DLBSL
Site 38	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	9.1E+02 S	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.2E+00 C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/8	0.00434 - 0.00635	6.4E-03	N/A	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.9E+02 N	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.8E+03 N	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.1E+01 N	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.3E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.1E+03 N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.1E+00 C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	8.2E+01 N	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.5E+03 N	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.9E-01 C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.2E+02 S	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.4E+00 C	8.1E+00	NCSSL	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.1E+02 N	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	7.8E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.7E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.1E+01 C	2.3E-02	NCSSL	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.3E+02 N	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	5.0E+02 N	5.5E+00	NCSSL	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.5E+01 N	5.1E-01	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	2.8E+00 C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	7.9E+01 N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.0E-02 C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.00867 - 0.0127	1.3E-02	N/A	6.3E+01 N	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.1E+02 S	4.3E+01	NCSSL	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.2E+02 N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.8E+02 S	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.9E+01 N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.1E+01 N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	4.9E-01 N	N/A	N/A	NO	DLBSL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.1E+01 N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.263 - 0.325	3.3E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.4E+02 N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.4E+02 N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.7E+03 N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.1E+00 C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	1.5E-01 C	1.8E-01	NCSSL	NO	DLBSL
	50-32-8	Benzo(a)pyrene	1.1E-03 J	1.1E-03 J	MG/KG	IR38-IS03-6-7-10A	1/8	0.00351 - 0.00434	1.1E-03	N/A	1.5E-02 C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	1.5E-01 C	6.0E-01	NCSSL	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.7E+02 N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.5E+00 C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.1E-01 C	1.4E-04	NCSSL	NO	DLBSL
	39638-32-9	bis(2-Chloroisopropyl)ether	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.1E+03 N	1.8E+01	NCSSL	NO	DLBSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	N/A	N/A	N/A	NO	DLBSL
	218-01-9	Chrysene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	1.5E-02 C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	7.8E+00 N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	1.5E-01 C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/8	0.00351 - 0.00434	4.3E-03	N/A	6.9E-02 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/8	0.0179 - 0.0221	2.2E-02	N/A	8.9E-01 C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/8	0.132 - 0.163	1.6E-01	N/A	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	Aluminum	1.6E+03	8.9E+03	MG/KG	IR38-IS04-6-7-10A	8/8	10 - 13	8.9E+03	1.0E+04	7.7E+03 N	N/A	N/A	NO	BBK
	7440-36-0	Antimony	ND	ND	MG/KG		0/8	0.753 - 0.976	9.8E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**7.9E-01**	**8.8E+00**	**MG/KG**	**IR38-IS05-6-7-10A**	**8/8**	**0.251 - 0.325**	**8.8E+00**	**2.1E+00**	**3.9E-01 C***	**5.8E-03**	**NCSSL**	**YES**	**ASL**
	7440-39-3	Barium	7.7E+00 J	8.5E+01 J	MG/KG	IR38-IS03-6-7-10A	8/8	2.01 - 2.6	8.5E+01	1.7E+01	1.5E+03 N	5.8E-01	NCSSL	NO	BSL
	7440-41-7	Beryllium	6.2E-02 J	1.9E-01 J	MG/KG	IR38-IS04-6-7-10A	4/8	0.251 - 0.325	1.9E-01	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	ND	ND	MG/KG		0/8	0.251 - 0.325	3.3E-01	2.3E-02	7.0E+00 N	3.0E-03	NCSSL	NO	DLBSL
	7440-70-2	Calcium	5.3E+01 J	6.6E+02 J	MG/KG	IR38-IS06-6-7-10A	8/8	251 - 325	6.6E+02	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	5.7E+00 J	1.4E+01 J	MG/KG	IR38-IS04-6-7-10A	8/8	0.251 - 0.325	1.4E+01	1.5E+01	2.9E-01 C	3.8E-03	NCSSL	NO	BBK
	7440-48-4	Cobalt	3.5E-01 J	8.7E-01	MG/KG	IR38-IS04-6-7-10A	4/8	0.627 - 0.813	8.7E-01	8.2E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	3.0E-01 J	1.4E+00	MG/KG	IR38-IS04-6-7-10A	8/8	0.502 - 0.651	1.4E+00	2.6E+00	3.1E+02 N	7.0E-01	NCSSL	NO	BSL
	7439-89-6	Iron	1.0E+03	4.4E+03	MG/KG	IR38-IS04-6-7-10A	8/8	5.02 - 6.51	4.4E+03	5.4E+03	5.5E+03 N	1.5E-01	NCSSL	NO	BSL
	7439-92-1	Lead	1.3E+00	5.7E+00	MG/KG	IR38-IS07-6-7-10A	8/8	0.151 - 0.195	5.7E+00	8.5E+00	4.0E+02 NL	2.7E-01	NCSSL	NO	BSL
	7439-95-4	Magnesium	1.4E+02 J	4.2E+02 J	MG/KG	IR38-IS04-6-7-10A	8/8	251 - 325	4.2E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.3E+00	9.4E+00	MG/KG	IR38-IS04-6-7-10A	8/8	0.753 - 0.976	9.4E+00	9.3E+00	1.8E+02 N	6.5E-02	NCSSL	NO	BSL
	7439-97-6	Mercury	ND	ND	MG/KG		0/8	0.033 - 0.0403	4.0E-02	7.1E-02	2.3E+00 N	1.0E-03	NCSSL	NO	DLBSL
	7440-02-0	Nickel	3.7E-01 J	2.8E+00	MG/KG	IR38-IS04-6-7-10A	8/8	0.502 - 0.651	2.8E+00	2.3E+00	1.5E+02 N	1.3E-01	NCSSL	NO	BSL
	7440-09-7	Potassium	1.5E+02 J	3.5E+02 J	MG/KG	IR38-IS04-6-7-10A	8/8	251 - 325	3.5E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.7E-01 J	2.7E-01 J	MG/KG	IR38-IS06-6-7-10A	4/8	0.301 - 0.39	2.7E-01	5.1E-01	3.9E+01 N	2.1E-03	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-22-4	Silver	ND	ND	MG/KG		0/8	0.251 - 0.325	3.3E-01	1.3E-01	3.9E+01 N	3.4E-03	NCSSL	NO	BSL
	7440-23-5	Sodium	ND	ND	MG/KG		0/8	251 - 325	3.3E+02	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/8	0.401 - 0.52	5.2E-01	3.8E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	4.5E+00	1.3E+01	MG/KG	IR38-IS04-6-7-10A	8/8	0.627 - 0.813	1.3E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	1.6E+00	5.2E+00	MG/KG	IR38-IS04-6-7-10A	8/8	1 - 1.3	5.2E+00	6.6E+00	2.3E+03 N	1.2E+00	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values are two times the arithmetic mean basewide background surface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for Chromium(VI) used as surrogate for chromium.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

RSL value for vanadium based on vanadium and compounds.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background (BBK)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
S = concentration exceeds Csat, used Csat as screening value
mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.7a

Step 2 Subsurface Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration	Sample Location of Maximum Detected Concentration	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Arsenic	8 / 8	8.8E+00	IR38-IS05-6-7-10A	3.9E-01	1E-06		2E-05	N/A
Cumulative Corresponding Hazard Index[d]						**N/A**		
Cumulative Corresponding Cancer Risk[e]							**2E-05**	

Notes:

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

J = Estimated Value

mg/kg = milligrams per kilogram

N/A = Not applicable.

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, NC2CLGW	NO	DLBSL
Site 38	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.1E-01 C**	7.0E+01	MCL, NC2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/3	1.5 - 1.5	1.5E+00	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/3	5 - 5	5.0E+00	N/A	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/3	5 - 5	5.0E+00	N/A	4.7E+00 N	N/A	N/A	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/3	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/3	5.5 - 5.5	5.5E+00	N/A	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	15A NCAC 2L		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	75-25-2	Bromoform	ND	ND	UG/L		0/3	1.5 - 1.5	1.5E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	15A NCAC 2L		
	74-83-9	Bromomethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.9E-01 C	8.0E+01	MCL	YES	DLASL
												7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00		1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/3	1.5 - 1.5	1.5E+00	N/A	3.7E+01 N	7.0E+01	MCL, NC2CLGW	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL

APPENDIX D

TABLE D-2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
												4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.8E+01 N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/3	2 - 2	2.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.2E+01 C	2.0E+01	15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.1E-01 C	5.0E+00	MCL	YES	DLASL
												7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/3	1.5 - 1.5	1.5E+00	N/A	1.1E+01 N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	79-01-6	Trichloroethene	ND	ND	UG/L		0/3	1.5 - 1.5	1.5E+00	N/A	2.0E+00 C	5.0E+00	MCL	NO	DLBSL
												3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.3E+02 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.6E-02 C	2.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.0E+01 N	1.0E+04	MCL	NO	DLBSL
												5.0E+02	15A NCAC 2L		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+02 N	4.0E+02	15A NCAC 2L	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+01 N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.5E+01 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.8E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.2E+02 N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.2E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+02 N	N/A	NA	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	39638-32-9	bis(2-Chloroisopropyl)ether	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	N/A	N/A		NO	NTX
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	15A NCAC 2L		
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.5E+01 C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/2	9.62 - 10	1.0E+01	N/A	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	N/A	N/A		NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	N/A	N/A		NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	4.8E+00 C	1.0E+02	15A NCAC 2L	YES	DLASL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	N/A	1.4E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		

APPENDIX D

TABLE D-2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	2.4E-01	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	9.0E+00	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/3	9.62 - 10	1.0E+01	2.4E-01	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	7429-90-5	Aluminum	1.3E+02	5.9E+02	UG/L	IR38-GW01-10A	3/3	50 - 50	5.9E+02	1.9E+03	3.7E+03 N	50 - 200	SMCL	NO	BSL
	7440-36-0	Antimony	ND	ND	UG/L		0/3	3.75 - 3.75	3.8E+00	3.3E+00	1.5E+00 N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	ND	ND	UG/L		0/3	1.25 - 1.25	1.3E+00	5.8E+00	4.5E-02 C	1.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	7440-39-3	Barium	2.6E+01	4.0E+01	UG/L	IR38-GW02D-10A	3/3	10 - 10	4.0E+01	8.6E+01	7.3E+02 N	2.0E+03	MCL, 15A NCAC 2L	NO	BSL
												7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND	ND	UG/L		0/3	1.25 - 1.25	1.3E+00	3.1E-01	7.3E+00 N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	6.7E-01 J	8.8E-01 J	UG/L	IR38-GW02D-10A	3/3	1.25 - 1.25	8.8E-01	3.6E-01	1.8E+00 N	5.0E+00	MCL	NO	BSL
												2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	6.8E+04	9.8E+04	UG/L	IR38-GW01-10A	3/3	1250 - 1250	9.8E+04	6.9E+04	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.4E+00**	**3.5E+00**	**UG/L**	**IR38-GW01-10A**	**2/3**	**1.25 - 1.25**	**3.5E+00**	**3.1E+00**	**4.3E-02 C**	**1.0E+02**	**MCL**	**YES**	**ASL**
												1.0E+01	**15A NCAC 2L**		
	7440-48-4	Cobalt	1.3E+00 J	2.7E+00 J	UG/L	IR38-GW01-10A	3/3	3.12 - 3.12	2.7E+00	3.4E+00	1.1E+00 N	N/A	N/A	NO	BBK
	7440-50-8	Copper	1.6E+00 J	1.6E+00 J	UG/L	IR38-GW01-10A	1/3	2.5 - 2.5	1.6E+00	2.8E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	15A NCAC 2L		
	7439-89-6	Iron	3.3E+01	8.7E+02	UG/L	IR38-GW01-10A	3/3	25 - 25	8.7E+02	6.0E+03	2.6E+03 N	3.0E+02	MCL, 15A NCAC 2L	NO	BSL
	7439-92-1	Lead	9.3E-01	9.3E-01	UG/L	IR38-GW01-10A	1/3	0.75 - 0.75	9.3E-01	2.8E+00	1.5E+01	1.5E+01	MCL, 15A NCAC 2L	NO	BSL
	7439-95-4	Magnesium	3.8E+03 J	6.8E+03 J	UG/L	IR38-GW01-10A	3/3	1250 - 1250	6.8E+03	6.4E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.7E+01	5.4E+01	UG/L	IR38-GW01-10A	3/3	3.75 - 3.75	5.4E+01	2.1E+02	8.8E+01 N	5.0E+01	15A NCAC 2L	NO	BSL
	7439-97-6	Mercury	ND	ND	UG/L		0/3	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	DLBSL
												1.1E+00	15A NCAC 2L		
	7440-02-0	Nickel	1.4E+00 J	2.5E+00 J	UG/L	IR38-GW01-10A	2/3	2.5 - 2.5	2.5E+00	8.0E+00	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	7.2E+02 J	1.6E+03 J	UG/L	IR38-GW02D-10A	3/3	1250 - 1250	1.6E+03	3.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.0E+00 J	2.1E+00 J	UG/L	IR38-GW02D-10A	2/3	1.5 - 1.5	2.1E+00	3.1E+00	1.8E+01 N	5.0E+01	MCL, 15A NCAC 2L	NO	BSL
												2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND	ND	UG/L		0/3	1.25 - 1.25	1.3E+00	7.7E-01	1.8E+01 N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	4.0E+03	7.0E+03	UG/L	IR38-GW01-10A	3/3	1250 - 1250	7.0E+03	2.3E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/3	2 - 2	2.0E+00	3.8E+00	N/A	2.0E+00	15A NCAC 2L	NO	NTX
	7440-62-2	Vanadium	3.0E+00 J	3.0E+00 J	UG/L	IR38-GW01-10A	1/3	3.12 - 3.12	3.0E+00	4.7E+00	1.8E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	8.2E+00	1.7E+01	UG/L	IR38-GW02-10A : IR38-GW02D-10A	3/3	5 - 5	1.7E+01	4.2E+01	1.1E+03 N	1.0E+03	15A NCAC 2L	NO	BSL

APPENDIX D

TABLE D-2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 38

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for tapwater (based on 10^{-6} for carcinogens

RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for Chromium(VI) used as surrogate for chromium.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively, but discussed in uncertainty assessment

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Level (BBK)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

SMCL = Secondary MCL

15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

C = Carcinogenic

N = Noncarcinogenic

ND = Not detected

ug/L = micrograms per liter

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N/A = Not available

APPENDIX D
TABLE D-2.8a
Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 38 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Index[b]	Target Organ[c]
METAL (ug/L)								
Chromium	2 / 3	3.5E+00	IR38-GW01-10A	4.3E-02	1E-06		8E-05	
Cumulative Corresponding Hazard Index[d]						**N/A**		
Cumulative Corresponding Cancer Risk[e]							8E-05	

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.
[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.
[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS
[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent
[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.
Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern
ug/L = microgram per liter
NA = Not available/not applicable
HI = Hazard Index
RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 42	71-55-6	1,1,1-Trichloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.4E+02	NS	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	5.6E-01	C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	9.1E+02	NS	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.1E+00	C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	3.3E+00	C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.4E+01	N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.2E+00	C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		MG/KG		0/7	0.0039 - 0.015	1.5E-02	NA	5.4E-03	C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	3.4E-02	C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.9E+02	NS	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	4.3E-01	C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	8.9E-01	C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.4E+00	C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.4E+00	C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	2.0E-02	J	2.0E-02	J	MG/KG	IR42-IS08-09C	1/7	0.0077 - 0.03	2.0E-02	NA	2.8E+03	N	1.6E+01	NCSSL	NO	BSL
	591-78-6	2-Hexanone	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.1E+01	NS	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	9.2E-04	J	1.4E-03	J	MG/KG	IR42-IS01-09C	2/7	0.0077 - 0.03	1.4E-03	NA	5.3E+02	NS	N/A	N/A	NO	BSL
	67-64-1	Acetone	2.8E-02	J	4.0E-01	J	MG/KG	IR42-IS01-09C	5/7	0.0077 - 0.03	4.0E-01	NA	6.1E+03	N	2.4E+01	NCSSL	NO	BSL
	71-43-2	Benzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.1E+00	C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.7E-01	C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.1E+01	C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	7.3E-01	N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	1.6E-03	J	3.6E-03	J	MG/KG	IR42-IS06-09C	2/7	0.0077 - 0.03	3.6E-03	NA	8.2E+01	NS	3.8E+00	NCSSL	NO	BSL
	56-23-5	Carbon tetrachloride	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.1E-01	C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.9E+01	N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.5E+03	NS	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.9E-01	C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	3.3E-03	J	3.3E-03	J	MG/KG	IR42-IS01-09C	1/7	0.0077 - 0.03	3.3E-03	NA	1.2E+01	N	1.5E-02	NCSSL	NO	BSL
	156-59-2	cis-1,2-Dichloroethene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.6E+01	N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.2E+02	NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.8E-01	C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.8E+01	N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	8.1E-04	J	2.6E-03	J	MG/KG	IR42-IS01-09C	5/7	0.0077 - 0.03	2.6E-03	NA	5.4E+00	C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.1E+02	NS	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	7.8E+03	NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	5.7E+01	NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	1.4E-02	J	1.4E-02	J	MG/KG	IR42-IS01-09C	1/7	0.0077 - 0.03	1.4E-02	NA	1.1E+01	C	2.3E-02	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value	[4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	4.3E+01	C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.3E+02	NS	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	5.5E-01	C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	2.5E-03	J	9.7E-03	J	MG/KG	IR42-IS01-09C	2/7	0.0077 - 0.03	9.7E-03	NA	5.0E+02	NS	5.5E+00	NCSSL	NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.5E+01	N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	2.8E+00	C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	7.9E+01	N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND		ND		MG/KG		0/7	0.0077 - 0.03	3.0E-02	NA	6.0E-02	C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	1.6E-03	J	6.1E-03	J	MG/KG	IR42-IS01-09C	5/7	0.0077 - 0.03	6.1E-03	NA	6.3E+01	NS	6.0E+00	NCSSL	NO	BSL
	92-52-4	1,1-Biphenyl	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.1E+02	NS	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	4.6E+00	C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	6.1E+00	C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.2E+02	N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	1.2E+01	N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.6E+00	C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	6.1E+00	N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.8E+02	NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.9E+01	N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.1E+01	N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.1E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.9E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.1E+00	C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	6.1E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	4.9E-01	N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	N/A		N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	6.1E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.4E+00	C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.1E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.1E+01	N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	2.4E+01	C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND		ND		MG/KG		0/7	0.46 - 1	1.0E+00	NA	4.8E+00	C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.4E+02	N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.4E+02	N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	7.8E+02	NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.7E+03	N	6.6E+02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value	[4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1912-24-9	Atrazine	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.1E+00	C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	1.4E-01	J	6.1E-01		MG/KG	IR42-IS01-09C	2/7	0.23 - 0.5	6.1E-01	NA	7.8E+02	NS	N/A	N/A	NO	BSL
	56-55-3	**Benzo(a)anthracene**	**3.7E-02**	**J**	**5.4E-02**	**J**	**MG/KG**	**IR42-IS01-09C**	**2/7**	**0.058 - 0.12**	**5.4E-02**	**NA**	**1.5E-01**	**C**	**1.8E-01**	**NCSSL**	**YES**	**cPAH**
	50-32-8	**Benzo(a)pyrene**	**1.6E-02**		**2.4E-02**		**MG/KG**	**IR42-IS08-09C**	**2/7**	**0.0062 - 0.013**	**2.4E-02**	**NA**	**1.5E-02**	**C**	**5.9E-02**	**NCSSL**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**1.0E-02**	**J**	**2.5E-02**	**J**	**MG/KG**	**IR42-IS01-09C**	**3/7**	**0.058 - 0.12**	**2.5E-02**	**NA**	**1.5E-01**	**C**	**6.0E-01**	**NCSSL**	**YES**	**cPAH**
	191-24-2	Benzo(g,h,i)perylene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.7E+02	N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.5E+00	C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.1E-01	C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.5E+01	C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.6E+02	C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	1.5E-01	J	2.7E-01	J	MG/KG	IR42-IS01D-09C	7/7	0.23 - 0.5	2.7E-01	NA	3.1E+03	N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	N/A		N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.5E+01	C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND		ND		MG/KG		0/7	0.0062 - 0.013	1.3E-02	NA	1.5E-02	C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	7.8E+00	N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	4.9E+03	N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	N/A		N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	5.4E-02	J	5.4E-02	J	MG/KG	IR42-IS08-09C	1/7	0.23 - 0.5	5.4E-02	NA	6.1E+02	N	1.9E+01	NCSSL	NO	BSL
	117-84-0	Di-n-octylphthalate	ND		ND		MG/KG		0/7	0.39 - 0.83	8.3E-01	NA	3.5E+01	C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.3E+02	N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	2.3E+02	N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.0E-01	C	2.6E-03	NCSSL	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	6.1E+00	C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	6.1E+00	C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND		ND		MG/KG		0/7	0.058 - 0.12	1.2E-01	NA	1.5E-01	C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND		ND		MG/KG		0/7	0.058 - 0.12	1.2E-01	NA	5.1E+02	C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	3.6E+00	C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	1.3E-02	J	3.3E-02	J	MG/KG	IR42-TW-S03-09C	2/7	0.029 - 0.063	3.3E-02	NA	6.9E-02	C	N/A	N/A	NO	BSL
	86-30-6	n-Nitrosodiphenylamine	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	9.9E+01	C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	4.8E+00	C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND		ND		MG/KG		0/7	0.019 - 0.042	4.2E-02	NA	8.9E-01	C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.7E+03	N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.8E+03	N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND		ND		MG/KG		0/7	0.23 - 0.5	5.0E-01	NA	1.7E+02	N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	**Aluminum**	**3.5E+03**		**1.2E+04**		**MG/KG**	**IR42-IS01-09C**	**7/7**	**11.4 - 24.4**	**1.2E+04**	**1.0E+04**	**7.7E+03**	**N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND		ND		MG/KG		0/	-		3.6E-01	3.1E+00	N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**1.0E+00**		**4.6E+00**		**MG/KG**	**IR42-IS01-09C**	**7/7**	**0.57 - 1.2**	**4.6E+00**	**2.1E+00**	**3.9E-01**	**C***	**5.8E+00**	**NCSSL**	**YES**	**ASL**

APPENDIX D

TABLE D-2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-39-3	Barium	1.1E+01		5.3E+01		MG/KG	IR42-TW-S03-09C	7/7	2.3 - 4.9	5.3E+01	1.7E+01	1.5E+03	N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	8.5E-02	J	2.2E-01	J	MG/KG	IR42-IS01-09C	6/7	0.29 - 0.61	2.2E-01	1.7E-01	1.6E+01	N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	7.8E-02	J	5.0E-01	J	MG/KG	IR42-IS01-09C	7/7	0.29 - 0.61	5.0E-01	2.3E-02	7.0E+00	N	3.0E+00	NCSSL	NO	BSL
	7440-70-2	Calcium	8.2E+02	J	1.0E+04	J	MG/KG	IR42-IS01-09C	7/7	286 - 610	1.0E+04	4.4E+02	N/A		N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**3.6E+00**	**J**	**1.7E+01**	**J**	**MG/KG**	**IR42-IS01-09C**	**7/7**	**0.57 - 1.2**	**1.7E+01**	**1.5E+01**	**2.9E-01**	**C**	**3.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-48-4	Cobalt	3.2E-01	J	7.4E-01	J	MG/KG	IR42-IS01-09C	5/7	0.86 - 1.8	7.4E-01	8.2E-01	2.3E+00	N	N/A	N/A	NO	BSL
	7440-50-8	Copper	1.2E+00		6.6E+00		MG/KG	IR42-IS01-09C	7/7	0.57 - 1.2	6.6E+00	2.6E+00	3.1E+02	N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	**Iron**	**2.3E+03**	**J**	**1.3E+04**	**J**	**MG/KG**	**IR42-IS01-09C**	**7/7**	**5.7 - 12.2**	**1.3E+04**	**5.4E+03**	**5.5E+03**	**N**	**1.5E+02**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	5.6E+00		1.9E+01		MG/KG	IR42-IS01-09C	7/7	0.17 - 0.37	1.9E+01	8.5E+00	4.0E+02		2.7E+02	NCSSL	NO	BSL
	7439-95-4	Magnesium	2.4E+02	J	2.1E+03	J	MG/KG	IR42-IS01-09C	7/7	286 - 610	2.1E+03	3.6E+02	N/A		N/A	N/A	NO	NUT
	7439-96-5	Manganese	4.7E+00	J	1.8E+01	J	MG/KG	IR42-IS01-09C	7/7	0.86 - 1.8	1.8E+01	9.3E+00	1.8E+02	N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	2.5E-02	J	7.0E-02	J	MG/KG	IR42-IS01-09C	6/7	0.033 - 0.073	7.0E-02	7.1E-02	2.3E+00	N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	9.5E-01		8.7E+00		MG/KG	IR42-IS01-09C	7/7	0.57 - 1.2	8.7E+00	2.3E+00	1.5E+02	N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	1.1E+02	J	9.4E+02	J	MG/KG	IR42-IS01-09C	7/7	286 - 610	9.4E+02	3.6E+02	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	4.8E-01		9.3E-01		MG/KG	IR42-IS01-09C	7/7	0.29 - 0.61	9.3E-01	5.1E-01	3.9E+01	N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	ND		ND		MG/KG		0/7	0.57 - 1.2	1.2E+00	1.3E-01	3.9E+01	N	3.4E+00	NCSSL	NO	DLBSL
	7440-23-5	Sodium	9.8E+01	J	5.0E+03		MG/KG	IR42-IS01-09C	5/7	286 - 610	5.0E+03	6.8E+01	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		MG/KG		0/7	0.46 - 0.98	9.8E-01	3.8E-01	N/A		N/A	N/A	NO	DLBSL
	7440-62-2	**Vanadium**	**6.1E+00**		**6.7E+01**		**MG/KG**	**IR42-IS01-09C**	**7/7**	**0.86 - 1.8**	**6.7E+01**	**1.7E+01**	**3.9E+01**	**N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-66-6	Zinc	4.1E+00		1.8E+01		MG/KG	IR42-IS01-09C	7/7	1.1 - 2.4	1.8E+01	6.6E+00	2.3E+03	N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for bis(2-ethylhexyl)phthalate used as a surrogate for di-n-octylphthalate.
RSL value for Cadmium (diet) used as surrogate for cadmium.
RSL value for hexavalent chromium (chromium VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
C = Carcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = saturation concentration higher than noncarcinogenic based RSL, therefore Csat used as screening level
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
N/A = Not available
ND = Not Detected
mg/kg = milligram per kilogram

APPENDIX D
TABLE D-2.9
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 42

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background (BBK)
Detection Limit Below Screening Level (DLBSL)

APPENDIX D

TABLE D-2.9a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample Location of Maximum Detected Concentration	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
PAHs (mg/kg)								
Benzo(a)anthracene	2 / 7	5.4E-02 J	IR42-IS01-09C	1.5E-01	1E-06		4E-07	
Benzo(a)pyrene	2 / 7	2.4E-02	IR42-IS08-09C	1.5E-02	1E-06		2E-06	
Benzo(b)fluoranthene	3 / 7	2.5E-02 J	IR42-IS01-09C	1.5E-01	1E-06		2E-07	
Metals (mg/kg)								
Aluminum	7 / 7	1.2E+04	IR42-IS01-09C	7.7E+04	1	0.2		Nervous System
Arsenic	7 / 7	4.6E+00	IR42-IS01-09C	3.9E-01	1E-06		1E-05	
Chromium	7 / 7	1.7E+01 J	IR42-IS01-09C	2.9E-01	1E-06		6E-05	
Iron	7 / 7	1.3E+04 J	IR42-IS01-09C	5.5E+04	1	0.2		Gastrointestinal
Vanadium	7 / 7	6.7E+01	IR42-IS01-09C	3.9E+02	1	0.2		Kidney
Cumulative Corresponding Hazard Index[d]						**0.6**		
Cumulative Corresponding Cancer Risk[e]							**7E-05**	

Total Nervous System HI =	0.2
Total Gastrointestinal HI =	0.2
Total Kidney HI =	0.2

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

J = Estimated Value

mg/kg = milligrams per kilogram

NA = Not available/not applicable

HI = Hazard Index

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.9b

Step 3 Soil Screening - Risk Ratio, 95% UCL

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42 - Subsurface Soil

Analyte	Detection Frequency	95% UCL		95% UCL Rationale	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
PAHs (mg/kg)									
Benzo(a)anthracene	2 / 7	5.4E-02	Max	6	1.5E-01	1.0E-06		4.E-07	
Benzo(a)pyrene	2 / 7	2.0E-02	95% KM-t	5	1.5E-02	1.0E-06		1.E-06	
Benzo(b)fluoranthene	3 / 7	2.5E-02	Max	6	1.5E-01	1.0E-06		2.E-07	
Metals (mg/kg)									
Arsenic	7 / 7	4.0E+00	95% Stud-t	2,3,4	3.9E-01	1.0E-06		1E-05	
Chromium	7 / 7	1.5E+01	95% Stud-t	2,3,4	2.9E-01	1.0E-06		5E-05	
Cumulative Corresponding Hazard Index[d]							**NA**		
Cumulative Corresponding Cancer Risk[e]								**6E-05**	

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05,

Constituents selected as COPCs are indicated by shading.

mg/kg = milligrams per kilogram

HI = Hazard Index

ProUCL, Version 4.00.04 used to determine distribution of data and calculate UCL, following recommendations

in users guide (USEPA.February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Maximum Detected Value (Max); 95% Student's-T test UCL (95% Stud-t); 95% Kaplan-Meier (t) UCL (95% KM-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Anderson-Darling Test indicates data are gamma distributed.

(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.

(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(6) Maximum value used because calculated UCL exceeds maximum concentration.

APPENDIX D

TABLE D-2.10

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	9.1E+02 N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
Site 42	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.1E-01 C**	7.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/3	3 - 3	3.0E+00	NA	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.7E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	1.2E+01	1.2E+01	UG/L	IR42-TW03-09C	1/3	2.5 - 2.5	1.2E+01	NA	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	BSL
	71-43-2	Benzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.1E-01 C	1.0E+00	15A NCAC 2L	YES	DLASL
												5.0E+00	MCL		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.2E-01 C	6.0E-01	15A NCAC 2L	YES	DLASL
												8.0E+01	MCL		
	75-25-2	Bromoform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.5E+00 C*	4.0E+00	15A NCAC 2L	NO	DLBSL
												8.0E+01	MCL		
	74-83-9	Bromomethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	2.0E-01 J	4.2E-01 J	UG/L	IR42-TW03-09C	2/3	1 - 1	4.2E-01	NA	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.9E-01 C	8.0E+01	MCL	YES	DLASL
												7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		

APPENDIX D
TABLE D-2.10
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Limited Site Assessment, MCB Camp Lejeune, North Carolina
Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.9E+01	N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.5E+00	C	7.0E+02	MCL	NO	DLBSL
													6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	6.8E+01	N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+03	N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.2E+01	C	2.0E+01	15A NCAC 2L	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	8.8E+01	N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.8E+00	C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.6E+02	N	1.0E+02	MCL	NO	DLBSL
													7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.1E-01	C	5.0E+00	MCL	YES	DLASL
													7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.3E+02	N	1.0E+03	MCL	NO	DLBSL
														15A NCAC 2L		
	79-01-6	Trichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+00	C	5.0E+00	MCL	NO	DLBSL
													3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.3E+02	N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.6E-02	C	2.0E+00	MCL	YES	DLASL
													3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	2.0E+01	N	1.0E+04	MCL	NO	DLBSL
													5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	3.7E+01	N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	1.1E+01	N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	NA	4.3E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+02	N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.2E-01	C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+00	C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	7.3E+00	N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.2E-01	C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+00	N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E+02	N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+01	N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.5E+01	N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.5E-01	C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	3.7E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	2.9E-01	N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	N/A		N/A	N/A	NO	NTX

APPENDIX D

TABLE D-2.10

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.4E-01	C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+01	N	4.0E+01	15A NCAC 2L	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	3.4E+00	C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	1.2E-01	C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.2E+02	N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.2E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+03	N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-01	C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+02	N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-02	C	2.0E-01	MCL	YES	DLASL
													5.0E-02	15A NCAC 2L		
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-03	C	2.0E-01	MCL	YES	DLASL
													5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-02	C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-01	C	5.0E-01	15A NCAC 2L	YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.5E+01	C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.8E+03	N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	N/A		N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E+00	C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+02	N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	4.8E+00	C	1.0E+02	15A NCAC 2L	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-03	C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+00	NC	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E+03	N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	N/A		N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.5E+02	N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.5E+02	N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	4.2E-02	C	1.0E+00	MCL	YES	DLASL
													2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	8.6E-01	C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.2E+01	N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	3.7E+00	C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	2.9E-02	C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	7.1E+01	C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.4E-01	C*	6.0E+00	15A NCAC 2L	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.2E-01	C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	NA	1.7E-01	C	1.0E+00	MCL	YES	DLASL
													3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+03	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+03	N	3.0E+01	15A NCAC 2L	NO	DLBSL

APPENDIX D

TABLE D-2.10

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value	[4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	129-00-0	Pyrene	ND		ND		UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND		ND		UG/L		0/3	9.6 - 10	1.0E+01	NA	1.1E+01	N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND		ND		UG/L		0/3	9.6 - 10	1.0E+01	NA	1.2E-02	C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	2.1E+00	J	2.1E+00	J	UG/L	IR42-TW02-09C: IR42-TW03-09C	2/3	9.6 - 10	2.1E+00	NA	4.8E+00	C	6.0E+00	MCL	NO	BSL
															3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND		ND		UG/L		0/3	9.6 - 10	1.0E+01	NA	9.6E-03	C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND		ND		UG/L		0/3	9.6 - 10	1.0E+01	NA	1.4E+01	C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**8.5E+03**	**J**	**8.5E+03**	**J**	**UG/L**	**IR42-TW03-09C**	**1/3**	**200 - 200**	**8.5E+03**	**1.9E+03**	3.7E+03	N	50 - 200	SMCL	**YES**	**ASL**
	7440-36-0	Antimony	ND		ND		UG/L		0/3	15 - 15	1.5E+01	3.3E+00	1.5E+00	N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	4.8E+00	J	4.8E+00	J	UG/L	IR42-TW03-09C	1/3	10 - 10	4.8E+00	5.8E+00	4.5E-02	C	1.0E+01	MCL, 15A NCAC 2L	NO	BBK
	7440-39-3	Barium	2.0E+01	J	8.5E+01		UG/L	IR42-TW01-09C	3/3	40 - 40	8.5E+01	8.6E+01	7.3E+02	N	2.0E+03	MCL	NO	BSL
															7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.1E-01	7.3E+00	N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.6E-01	1.8E+00	N	5.0E+00	MCL	YES	DLASL
															2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	5.5E+04	J	2.8E+05	J	UG/L	IR42-TW01-09C	3/3	5000 - 5000	2.8E+05	6.9E+04	N/A		N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.1E+01**		**1.1E+01**		**UG/L**	**IR42-TW03-09C**	**1/3**	**10 - 10**	**1.1E+01**	**3.1E+00**	**4.3E-02**	**C**	**1.0E+02**	**MCL**	**YES**	**ASL**
															1.0E+01	15A NCAC 2L		
	7440-48-4	Cobalt	ND		ND		UG/L		0/3	15 - 15	1.5E+01	3.4E+00	1.1E+00	N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	5.2E+00	J	5.2E+00	J	UG/L	IR42-TW03-09C	1/3	10 - 10	5.2E+00	2.8E+00	1.5E+02	N	1.3E+03	MCL	NO	BSL
															1.0E+03	15A NCAC 2L		
	7439-89-6	**Iron**	**4.8E+02**		**3.2E+04**		**UG/L**	**IR42-TW03-09C**	**3/3**	**100 - 100**	**3.2E+04**	**6.0E+03**	**2.6E+03**	**N**	**3.0E+02**	**15A NCAC 2L**	**YES**	**ASL**
	7439-92-1	Lead	3.0E+00		3.0E+00		UG/L	IR42-TW03-09C	1/3	3 - 3	3.0E+00	2.8E+00	1.5E+01		1.5E+01	MCL, 15A NCAC 2L	NO	BSL
	7439-95-4	Magnesium	7.5E+03		2.7E+04		UG/L	IR42-TW02-09C	3/3	5000 - 5000	2.7E+04	6.4E+03	N/A		N/A	N/A	NO	NUT
	7439-96-5	**Manganese**	**4.0E+01**		**1.3E+03**		**UG/L**	**IR42-TW01-09C**	**3/3**	**15 - 15**	**1.3E+03**	**2.1E+02**	**8.8E+01**	**N**	**5.0E+01**	**15A NCAC 2L**	**YES**	**ASL**
	7439-97-6	Mercury	ND		ND		UG/L		0/3	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00	N	2.0E+00	MCL	NO	DLBSL
															1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	3.8E+00	J	1.1E+01		UG/L	IR42-TW03-09C	3/3	10 - 10	1.1E+01	8.0E+00	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	2.6E+03	J	8.9E+03		UG/L	IR42-TW02-09C	3/3	5000 - 5000	8.9E+03	3.3E+03	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND		ND		UG/L		0/3	5 - 5	5.0E+00	3.1E+00	1.8E+01	N	5.0E+01	MCL	NO	DLBSL
															2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND		ND		UG/L		0/3	10 - 10	1.0E+01	7.7E-01	1.8E+01	N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	1.9E+05	J	2.3E+05	J	UG/L	IR42-TW01-09C	3/3	5000 - 5000	2.3E+05	2.3E+04	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		UG/L		0/3	2 - 2	2.0E+00	3.8E+00	N/A		2.0E+00	MCL	NO	BBK
	7440-62-2	Vanadium	1.3E+01	J	1.3E+01	J	UG/L	IR42-TW03-09C	1/3	15 - 15	1.3E+01	4.7E+00	1.8E+01	N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	1.7E+01	J	1.7E+01	J	UG/L	IR42-TW03-09C	1/3	25 - 25	1.7E+01	4.2E+01	1.1E+03	N	1.0E+03	15A NCAC 2L	NO	BSL

APPENDIX D

TABLE D-2.10

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for tapwater (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Below Background (BBK)
- Detection Limit Below Screening Level (DLBSL)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
C* = Carcinogenic (where nc PRG<100 x ca PRG)
C**= Carcinogenic (where nc PRG < 10 X ca PRG, therefore, nc PRG used)
N = Noncarcinogenic
N/A = Not available
ND = Not Detected
ug/L = microgram per liter

APPENDIX D

TABLE D-2.10a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (ug/L)								
Aluminum	1 / 3	8.5E+03 J	IR42-TW03-09C	3.7E+04	1	0.2		Nervous System
Chromium	1 / 3	1.1E+01	IR42-TW03-09C	4.3E-02	1E-06		3E-04	
Iron	3 / 3	3.2E+04	IR42-TW03-09C	2.6E+04	1	1.2		Gastrointestinal
Manganese	3 / 3	1.3E+03	IR42-TW01-09C	8.8E+02	1	1.5		CNS
Cumulative Corresponding Hazard Index[d]						**3**		
Cumulative Corresponding Cancer Risk[e]							**3E-04**	
						Total Nervous System/CNS HI =		**2**
						Total Gastrointestinal HI =		**1**

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

J = Estimated Value

ug/L = microgram per liter

NA = Not available/not applicable

HI = Hazard Index

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.11

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air	67-64-1	Acetone	1.2E+01		1.2E+01		UG/L	IR42-TW03-09C	1/3	2.5 - 2.5	1.2E+01	NA	2.5E+06	N	NA	NA	NO	BSL
Site 42	75-15-0	Carbon disulfide	2.0E-01	J	4.2E-01	J	UG/L	IR42-TW03-09C	2/3	1 - 1	4.2E-01	NA	1.3E+02	N	NA	NA	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.11a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.11a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 42

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non-Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
67-64-1	Acetone	N/A	3.2E+03	3.2E+03	1.3E-03	N/A	2.5E+06
75-15-0	Carbon disulfide	N/A	7.3E+01	7.3E+01	5.5E-01	N/A	1.3E+02

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. Average groundwater temperature of 22.01°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non-cancer}$)
Equation 2: Cgw = $C_{target,ia} \times 10^{-3}$ m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.12

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 53	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.4E+02 NS	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	9.1E+02 NS	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	6.4E-04 J	6.4E-04 J	MG/KG	IR53-IS01D-4-5-09C	1/8	0.0092 - 0.016	6.4E-04	N/A	6.2E+00 C**	2.2E+00	NCSSL	NO	BSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/8	0.0046 - 0.0079	7.9E-03	N/A	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.9E+02 NS	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	1.0E-01 J	1.0E-01 J	MG/KG	IR53-IS01D-4-5-09C	1/8	0.0092 - 0.016	1.0E-01	N/A	2.8E+03 NS	1.6E+01	NCSSL	NO	BSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.1E+01 NS	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	3.4E-01 J	3.4E-01 J	MG/KG	IR53-IS01D-4-5-09C	1/8	0.0092 - 0.016	3.4E-01	N/A	6.1E+03 N	2.4E+01	NCSSL	NO	BSL
	71-43-2	Benzene	1.3E-03 J	1.3E-03 J	MG/KG	IR53-IS02-3_5-4_5-09C	1/8	0.0092 - 0.016	1.3E-03	N/A	1.1E+00 C*	7.3E-03	NCSSL	NO	BSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	5.5E-03 J	5.5E-03 J	MG/KG	IR53-IS02-3_5-4_5-09C	1/8	0.0092 - 0.016	5.5E-03	N/A	8.2E+01 NS	3.8E+00	NCSSL	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.5E+03 NS	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.9E-01 C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	6.1E-04 J	6.1E-04 J	MG/KG	IR53-IS02-3_5-4_5-09C	1/8	0.0092 - 0.016	6.1E-04	N/A	1.2E+02 NS	N/A	N/A	NO	BSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	1.6E-03 J	1.9E-03 J	MG/KG	IR53-IS02-3_5-4_5-09C	2/8	0.0092 - 0.016	1.9E-03	N/A	5.4E+00 C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	1.2E-02 J	1.2E-02 J	MG/KG	IR53-IS01D-4-5-09C	1/8	0.0092 - 0.016	1.2E-02	N/A	2.1E+02 NS	1.3E+00	NCSSL	NO	BSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	7.3E-04 J	7.3E-04 J	MG/KG	IR53-IS02-3_5-4_5-09C	1/8	0.0092 - 0.016	7.3E-04	N/A	5.7E+01 NS	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.1E+01 C	2.3E-02	NCSSL	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.12

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.3E+02 NS	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	1.7E-03 J	2.2E-03 J	MG/KG	IR53-IS01D-4-5-09C	2/8	0.0092 - 0.016	2.2E-03	N/A	5.0E+02 NS	5.5E+00	NCSSL	NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.5E+01 N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	2.8E+00 C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	7.9E+01 N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.0E-02 C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.0092 - 0.016	1.6E-02	N/A	6.3E+01 NS	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.1E+02 NS	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.2E+02 N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.9E+01 N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.1E+01 N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.1E+01 N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.44 - 0.56	5.6E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.4E+02 N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.4E+02 N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.7E+03 N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.1E+00 C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.12

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	56-55-3	Benzo(a)anthracene	ND	ND	MG/KG		0/8	0.055 - 0.069	6.9E-02	N/A	1.5E-01 C	1.8E-01	NCSSL	NO	DLBSL
	50-32-8	Benzo(a)pyrene	1.1E-03 J	2.8E-03 J	MG/KG	IR53-IS01D-4-5-09C	8/8	0.0058 - 0.0074	2.8E-03	N/A	1.5E-02 C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	2.2E-03 J	3.9E-03 J	MG/KG	IR53-IS01D-4-5-09C	5/8	0.055 - 0.069	3.9E-03	N/A	1.5E-01 C	6.0E-01	NCSSL	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.7E+02 N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.5E+00 C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.1E-01 C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	1.5E-01 J	2.2E-01 J	MG/KG	IR53-IS01-4-5-09C	3/8	0.22 - 0.28	2.2E-01	N/A	3.1E+03 N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	DLBSL
	218-01-9	Chrysene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	MG/KG		0/8	0.0058 - 0.0074	7.4E-03	N/A	1.5E-02 C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	7.8E+00 NC	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/8	0.36 - 0.46	4.6E-01	N/A	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	MG/KG		0/8	0.055 - 0.069	6.9E-02	N/A	1.5E-01 C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/8	0.055 - 0.069	6.9E-02	N/A	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/8	0.028 - 0.035	3.5E-02	N/A	6.9E-02 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	8.9E-01 C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/8	0.22 - 0.28	2.8E-01	N/A	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL

APPENDIX D

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OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/8	0.018 - 0.023	2.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**1.8E+03**	**1.5E+04**	**MG/KG**	**IR53-IS05-2-3-09C**	**8/8**	**10.8 - 13.8**	**1.5E+04**	**1.0E+04**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony [1]	ND	ND	MG/KG		0/	-		3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**3.1E-01 J**	**7.5E+00 J**	**MG/KG**	**IR53-IS06-5-6-09C**	**8/8**	**0.54 - 0.69**	**7.5E+00**	**2.1E+00**	**3.9E-01 C***	**5.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-39-3	Barium	4.9E+00	3.5E+01	MG/KG	IR53-IS07-1-2-09C	8/8	2.2 - 2.8	3.5E+01	1.7E+01	1.5E+03 N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	1.1E-01 J	2.0E-01 J	MG/KG	IR53-IS06-5-6-09C	6/8	0.27 - 0.344	2.0E-01	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	6.1E-02 J	1.3E-01 J	MG/KG	IR53-IS02-3_5-4_5-09C	2/8	0.27 - 0.344	1.3E-01	2.3E-02	7.0E+00 N	3.0E+00	NCSSL	NO	BSL
	7440-70-2	Calcium	1.4E+02 J	3.2E+04	MG/KG	IR53-IS02-3_5-4_5-09C	8/8	275 - 540	3.2E+04	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**2.7E+00 J**	**2.7E+01 J**	**MG/KG**	**IR53-IS06-5-6-09C**	**8/8**	**0.54 - 0.69**	**2.7E+01**	**1.5E+01**	**2.9E-01 C**	**3.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-48-4	Cobalt	4.7E-01 J	1.0E+00	MG/KG	IR53-IS05-2-3-09C	4/8	0.81 - 1	1.0E+00	8.2E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	6.9E-01	2.8E+00	MG/KG	IR53-IS06-5-6-09C	7/8	0.54 - 0.69	2.8E+00	2.6E+00	3.1E+02 N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	**Iron**	**8.7E+02 J**	**1.2E+04 J**	**MG/KG**	**IR53-IS06-5-6-09C**	**8/8**	**5.4 - 6.9**	**1.2E+04**	**5.4E+03**	**5.5E+03 N**	**1.5E+02**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	2.4E+00	1.4E+01	MG/KG	IR53-IS07-1-2-09C	8/8	0.162 - 0.206	1.4E+01	8.5E+00	4.0E+02	2.7E+02	NCSSL	NO	BSL
	7439-95-4	Magnesium	7.7E+01 J	6.2E+02 J	MG/KG	IR53-IS02-3_5-4_5-09C	8/8	270 - 344	6.2E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.3E+00	1.7E+01	MG/KG	IR53-IS01D-4-5-09C	8/8	0.81 - 1	1.7E+01	9.3E+00	1.8E+02 N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	2.1E-02 J	5.8E-02	MG/KG	IR53-IS07-1-2-09C	6/8	0.035 - 0.044	5.8E-02	7.1E-02	2.3E+00 N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	4.8E-01 J	4.1E+00	MG/KG	IR53-IS05-2-3-09C	8/8	0.54 - 0.69	4.1E+00	2.3E+00	1.5E+02 N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	1.0E+02 J	7.7E+02 J	MG/KG	IR53-IS06-5-6-09C	8/8	270 - 344	7.7E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.9E-01 J	6.5E-01	MG/KG	IR53-IS07-1-2-09C	7/8	0.27 - 0.34	6.5E-01	5.1E-01	3.9E+01 N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/8	0.54 - 0.688	6.9E-01	1.3E-01	3.9E+01 N	3.4E+00	NCSSL	NO	DLBSL
	7440-23-5	Sodium	6.9E+01 J	6.9E+01 J	MG/KG	IR53-IS02-3_5-4_5-09C	1/8	270 - 344	6.9E+01	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/8	0.43 - 0.55	5.5E-01	3.8E-01	N/A	N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	3.1E+00 J	3.5E+01 J	MG/KG	IR53-IS06-5-6-09C	8/8	0.81 - 1	3.5E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	3.1E+00	7.8E+00	MG/KG	IR53-IS06-5-6-09C	7/8	1.1 - 1.4	7.8E+00	6.6E+00	2.3E+03 N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for Anthracene used as surrogate for phenanthrene.

RSL value for bis(2-ethylhexyl)phthalate used as a surrogate for di-n-octylphthalate.

RSL value for Cadmium (diet) used as surrogate for cadmium.

RSL value for hexavalent chromium (chromium VI) used as surrogate for chromium.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

C = Carcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N = Noncarcinogenic

S = saturation concentration higher than noncarcinogenic based RSL, therefore Csat used as screening level

NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)

N/A = Not available

APPENDIX D

TABLE D-2.12

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Pyrene used as surrogate for benzo(g,h,i)perylene.

[1] = Antimony had all R (rejected) qualifiers associated with data. Data could not be used in risk assessment.

ND = Not Detected

mg/kg = milligram per kilogram

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Below Background (BBK)
	Detection Limit Below Screening Level (DLBSL)

APPENDIX D

TABLE D-2.12a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53 - Subsurface Soil

Analyte	Detection Frequency	Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	8 / 8	1.5E+04	IR53-IS05-2-3-09C	7.7E+04	1	0.2		Nervous System
Arsenic	8 / 8	7.5E+00 J	IR53-IS06-5-6-09C	3.9E-01	1E-06		2E-05	
Chromium	8 / 8	2.7E+01 J	IR53-IS06-5-6-09C	2.9E-01	1E-06		9E-05	
Iron	8 / 8	1.2E+04 J	IR53-IS06-5-6-09C	5.5E+04	1	0.2		Gastrointestinal
Cumulative Corresponding Hazard Index[d]						**0.4**		
Cumulative Corresponding Cancer Risk[e]							**1E-04**	
						Total Nervous System HI =		0.2
						Total Gastrointestinal HI =		0.2

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

J = Estimated Value

mg/kg = Milligrams per kilogram

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.12b

Step 3 Soil Screening - Risk Ratio, 95% UCL

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53 - Subsurface Soil

Analyte	Detection Frequency	UCL		UCL Rationale	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)									
Arsenic	8 / 8	4.7E+00	G-App	1, 3, 4	3.9E-01	1E-06		1E-05	
Chromium	8 / 8	1.8E+01	95% Stud-t	1,2,3,4	2.9E-01	1E-06		6E-05	
Cumulative Corresponding Hazard Index[d]							**NA**		
Cumulative Corresponding Cancer Risk[e]								**7E-05**	

[a] Corresponding Hazard Index equals UCL divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals UCL divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05,

Constituents selected as COPCs are indicated by shading.

mg/kg = milligrams per kilogram

HI = Hazard Index

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA.February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Student's-T test UCL (95% Stud-t); Approximate Gamma UCL (G-App)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Anderson-Darling Test indicates data are gamma distributed.

(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
Site 53	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.1E-01 C**	7.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/3	3 - 3	3.0E+00	N/A	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.7E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/3	2.5 - 2.5	2.5E+00	N/A	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	15A NCAC 2L		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	75-25-2	Bromoform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	15A NCAC 2L		
	74-83-9	Bromomethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	1.1E+00	1.1E+00	UG/L	IR53-TW03-09C	1/3	1 - 1	1.1E+00	N/A	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	Chloroform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.9E-01 C	8.0E+01	MCL	YES	DLASL
												7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.8E+01 N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.2E+01 C	2.0E+01	15A NCAC 2L	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A		N/A	N/A	YES	DLASL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.1E-01 C	5.0E+00	MCL	YES	DLASL
												7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	79-01-6	Trichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.0E+00 C	5.0E+00	MCL	NO	DLBSL
												3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.3E+02 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.6E-02 C	2.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.0E+01 N	1.0E+04	MCL	NO	DLBSL
												5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	3.7E+01 N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.1E+01 N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+02 N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+01 N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.5E+01 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.2E+02 N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.2E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.5E+01 C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	DLBSL
	218-01-9	Chrysene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	1.3E+00 J	1.3E+00 J	UG/L	IR53-TW02-09C	1/3	9.2 - 10	1.3E+00	N/A	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	N/A	1.0E+02	15A NCAC 2L	NO	NTX

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+00 NC	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	23 - 25	2.5E+01	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	9.2 - 10	1.0E+01	N/A	1.4E+01 C	N/A	N/A	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	2.6E-01 C**	5.0E-01	MCL	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/3	0.46 - 0.52	5.2E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	7429-90-5	**Aluminum**	**2.2E+03 J**	**5.0E+04**	**UG/L**	**IR53-TW03-09C**	**3/3**	**200 - 200**	**5.0E+04**	**1.9E+03**	**3.7E+03 N**	**50 - 200**	**2MCL**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	UG/L		0/3	15 - 15	1.5E+01	3.3E+00	1.5E+00 N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	3.6E+00 J	5.0E+00 J	UG/L	IR53-TW01-09C	2/3	1.5 - 10	5.0E+00	5.8E+00	4.5E-02 C	1.0E+01	MCL	NO	BBK
												1.0E+01	15A NCAC 2L		

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-39-3	Barium	2.4E+01 J	1.2E+02	UG/L	IR53-TW03-09C	3/3	40 - 40	1.2E+02	8.6E+01	7.3E+02 N	2.0E+03	MCL	NO	BSL
												7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND	ND	UG/L		0/3	5 - 5	5.0E+00	3.1E-01	7.3E+00 N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	1.3E+00 J	1.3E+00 J	UG/L	IR53-TW03-09C	1/3	5 - 5	1.3E+00	3.6E-01	1.8E+00 N	5.0E+00	MCL	NO	BSL
												2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	1.3E+03 J	6.6E+03 J	UG/L	IR53-TW01-09C	3/3	5000 - 5000	6.6E+03	6.9E+04	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**2.6E+00 J**	**7.1E+01**	**UG/L**	**IR53-TW03-09C**	**3/3**	**10 - 10**	**7.1E+01**	**3.1E+00**	**4.3E-02 C**	**1.0E+02**	**MCL**	**YES**	**ASL**
												1.0E+01	15A NCAC 2L		
	7440-48-4	**Cobalt**	**2.9E+01**	**2.9E+01**	**UG/L**	**IR53-TW03-09C**	**1/3**	**15 - 15**	**2.9E+01**	**3.4E+00**	**1.1E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.8E+01	1.8E+01	UG/L	IR53-TW03-09C	1/3	10 - 10	1.8E+01	2.8E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	15A NCAC 2L		
	7439-89-6	**Iron**	**4.7E+03**	**9.4E+04**	**UG/L**	**IR53-TW03-09C**	**3/3**	**100 - 100**	**9.4E+04**	**6.0E+03**	**2.6E+03 N**	**3.0E+02**	**15A NCAC 2L**	**YES**	**ASL**
	7439-92-1	**Lead**	**1.9E+00 J**	**2.9E+01**	**UG/L**	**IR53-TW03-09C**	**2/3**	**3 - 3**	**2.9E+01**	**2.8E+00**	**1.5E+01**	**1.5E+01**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7439-95-4	Magnesium	1.4E+03 J	3.3E+03 J	UG/L	IR53-TW03-09C	3/3	5000 - 5000	3.3E+03	6.4E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.3E+01	9.5E+01	UG/L	IR53-TW03-09C	3/3	15 - 15	9.5E+01	2.1E+02	8.8E+01 N	5.0E+01	15A NCAC 2L	NO	BBK
	7439-97-6	Mercury	1.3E-01 J	1.3E-01 J	UG/L	IR53-TW03-09C	1/3	0.2 - 0.2	1.3E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	BSL
												1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	5.4E+00 J	5.5E+01	UG/L	IR53-TW03-09C	3/3	10 - 10	5.5E+01	8.0E+00	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.2E+03 J	3.1E+03 J	UG/L	IR53-TW03-09C	2/3	5000 - 5000	3.1E+03	3.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	4.0E+00 J	4.0E+00 J	UG/L	IR53-TW03-09C	1/3	5 - 5	4.0E+00	3.1E+00	1.8E+01 N	5.0E+01	MCL	NO	BSL
												2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND	ND	UG/L		0/3	10 - 10	1.0E+01	7.7E-01	1.8E+01 N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	3.2E+03 J	5.8E+03 J	UG/L	IR53-TW02D-09C	2/3	5000 - 5000	5.8E+03	2.3E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/3	2 - 2	2.0E+00	3.8E+00	N/A	2.0E+00	MCL	NO	BBK
	7440-62-2	**Vanadium**	**1.2E+01 J**	**8.0E+01**	**UG/L**	**IR53-TW03-09C**	**2/3**	**15 - 15**	**8.0E+01**	**4.7E+00**	**1.8E+01 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-66-6	Zinc	1.2E+01 J	6.8E+01	UG/L	IR53-TW03-09C	2/3	25 - 25	6.8E+01	4.2E+01	1.1E+03 N	1.0E+03	15A NCAC 2L	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for tapwater (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.

RSL value for 2-chlorophenol used as surrogate for 2-nitrophenol.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for Anthracene used as surrogate for Phenanthrene.

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

C = Carcinogenic

C* = Carcinogenic (where nc PRG<100 x ca PRG)

C**= Carcinogenic (where nc PRG < 10 X ca PRG, therefore, nc PRG used)

APPENDIX D

TABLE D-2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

N = Noncarcinogenic
N/A = Not available
ND = Not Detected
ug/L = microgram per liter

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Below Background (BBK)
- Detection Limit Below Screening Level (DLBSL)

APPENDIX D

TABLE D-2.13a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
METAL (ug/L)								
Aluminum	3 / 3	5.0E+04	IR53-TW03-09C	3.7E+04	1	1		Nervous System
Chromium	3 / 3	7.1E+01	IR53-TW03-09C	4.3E-02	1E-06		2E-03	
Cobalt	1 / 3	2.9E+01	IR53-TW03-09C	1.1E+01	1	3		Thyroid
Iron	3 / 3	9.4E+04	IR53-TW03-09C	2.6E+04	1	4		Gastrointestinal
Lead	2 / 3	2.9E+01	IR53-TW03-09C	N/A				
Vanadium	2 / 3	8.0E+01	IR53-TW03-09C	1.8E+02	1	0.4		Kidney
Cumulative Corresponding Hazard Index[d]						**8**		
Cumulative Corresponding Cancer Risk[e]							**2E-03**	

Total Nervous System HI =	**1**
Total Thyroid HI =	**3**
Total Gastrointestinal HI =	**4**
Total Kidney HI =	0.4

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.14

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air Site 53	75-15-0	Carbon disulfide	1.1E+00	1.1E+00	UG/L	IR53-TW03-09C	1/3	1 - 1	1.1E+00	N/A	1.3E+02 N	NA	NA	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.14a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.14a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 53

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non-Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
75-15-0	Carbon disulfide	N/A	7.3E+01	7.3E+01	5.7E-01	N/A	1.3E+02

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. Average groundwater temperature of 23.06°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non-cancer}$)
Equation 2: Cgw = $C_{target,ia} \times 10^{-3}$ m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.4E+02 S	1.2E+00	NCSSL	NO	DLBSL
Site 55	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	9.1E+02 S	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.2E+00 C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/7	0.0048 - 0.0065	6.5E-03	N/A	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.9E+02 N	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.8E+03 N	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.1E+01 N	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	5.3E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	3.6E-02	3.6E-02	MG/KG	IR55-IS07-3-4-09C	1/6	0.0095 - 0.013	3.6E-02	N/A	6.1E+03 N	2.4E+01	NCSSL	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.1E+00 C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	8.2E+01 N	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.5E+03 N	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.9E-01 C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.2E+02 S	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	1.1E-03 J	1.5E-03 J	MG/KG	IR55-IS06-3-4-09C	2/7	0.0095 - 0.013	1.5E-03	N/A	5.4E+00 C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.1E+02 N	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	7.8E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	5.7E+01 N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	75-09-2	Methylene chloride	9.5E-03 J	4.3E-02	MG/KG	IR55-IS03-1-2-09C	3/7	0.0095 - 0.013	4.3E-02	N/A	1.1E+01 C	2.3E-02	NCSSL	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.3E+02 N	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	1.3E-03 J	1.3E-03 J	MG/KG	IR55-IS03-1-2-09C	1/7	0.0095 - 0.013	1.3E-03	N/A	5.0E+02 N	5.5E+00	NCSSL	NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.5E+01 N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	2.8E+00 C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	7.9E+01 N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.0E-02 C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/7	0.0095 - 0.013	1.3E-02	N/A	6.3E+01 N	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.1E+02 S	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.2E+02 N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.8E+02 S	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.9E+01 N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.1E+01 N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.1E+01 N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/7	0.42 - 0.51	5.1E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.4E+02 N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.4E+02 N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.7E+03 N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.1E+00 C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	56-55-3	Benzo(a)anthracene	7.3E-03 J	8.4E-03 J	MG/KG	IR55-IS04-4-5-09C : IR55-IS06-3-4-09C	5/7	0.052 - 0.064	8.4E-03	N/A	1.5E-01 C	1.8E-01	NCSSL	NO	BSL
	50-32-8	Benzo(a)pyrene	1.3E-03 J	1.3E-03 J	MG/KG	IR55-IS04-4-5-09C	1/7	0.0056 - 0.0068	1.3E-03	N/A	1.5E-02 C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	2.5E-03 J	2.5E-03 J	MG/KG	IR55-IS06-3-4-09C	1/7	0.052 - 0.064	2.5E-03	N/A	1.5E-01 C	6.0E-01	NCSSL	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.7E+02 N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.5E+00 C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.1E-01 C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	8.7E-02 J	1.6E-01 J	MG/KG	IR55-IS06-3-4-09C	2/7	0.21 - 0.26	1.6E-01	N/A	3.1E+03 N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	1.3E-02	1.3E-02	MG/KG	IR55-IS02-4-5-09C	1/7	0.0056 - 0.0068	1.3E-02	N/A	1.5E-02 C	1.9E-01	NCSSL	NO	BSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	7.8E+00 N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/7	0.21 - 0.42	4.2E-01	N/A	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	MG/KG		0/7	0.052 - 0.064	6.4E-02	N/A	1.5E-01 C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/7	0.052 - 0.064	6.4E-02	N/A	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/7	0.026 - 0.032	3.2E-02	N/A	6.9E-02 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	6.1E-02 J	6.1E-02 J	MG/KG	IR55-IS02-4-5-09C	1/7	0.017 - 0.021	6.1E-02	N/A	8.9E-01 C	3.1E-02	NCSSL	NO	BSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	72-54-8	4,4'-DDD	3.6E-04 J	4.6E-03	MG/KG	IR55-IS06-3-4-09C	4/7	0.00036 - 0.00085	4.6E-03	N/A	2.0E+00 C	2.4E-01	NCSSL	NO	BSL
	72-55-9	4,4'-DDE	2.8E-04 J	3.9E-03	MG/KG	IR55-IS03-1-2-09C	4/7	0.00036 - 0.00085	3.9E-03	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	6.5E-04 J	1.8E-03	MG/KG	IR55-IS06-3-4-09C	4/7	0.00036 - 0.00085	1.8E-03	N/A	1.7E+00 C*	3.4E-01	NCSSL	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	2.9E-02 C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	2.9E-04 J	2.9E-04 J	MG/KG	IR55-IS07-3-4-09C	1/7	0.00035 - 0.00042	2.9E-04	N/A	7.7E-02 C	0.0012	NCSSL	NO	BSL
	5103-71-9	alpha-Chlordane	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	1.6E+00 C*	0.068	NCSSL	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/7	0.017 - 0.021	2.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	2.6E-04 J	2.6E-04 J	MG/KG	IR55-IS07-3-4-09C	1/7	0.00035 - 0.00042	2.6E-04	N/A	2.7E-01 C	0.0012	NCSSL	NO	BSL
	319-86-8	delta-BHC	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	2.7E-01 C	0.0012	NCSSL	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	MG/KG		0/7	0.00036 - 0.00085	8.5E-04	N/A	3.0E-02 C	0.00081	NCSSL	NO	DLBSL
	959-98-8	Endosulfan I	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	3.7E+01 N	5.6	NCSSL	NO	DLBSL
	33213-65-9	Endosulfan II	5.9E-04 J	5.9E-04 J	MG/KG	IR55-IS01-7-8-09C	1/7	0.00036 - 0.00085	5.9E-04	N/A	3.7E+01 N	5.6	NCSSL	NO	BSL
	1031-07-8	Endosulfan sulfate	ND	ND	MG/KG		0/7	0.00036 - 0.00085	8.5E-04	N/A	3.7E+01 N	5.6	NCSSL	NO	DLBSL
	72-20-8	Endrin	ND	ND	MG/KG		0/7	0.00036 - 0.00085	8.5E-04	N/A	1.8E+00 N	8.1E-01	NCSSL	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/7	0.00036 - 0.00085	8.5E-04	N/A	1.8E+00 N	0.81	NCSSL	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	MG/KG		0/7	0.00036 - 0.00085	8.5E-04	N/A	1.8E+00 N	0.81	NCSSL	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	1.7E-04 J	1.7E-04 J	MG/KG	IR55-IS07-3-4-09C	1/7	0.00035 - 0.00042	1.7E-04	N/A	5.2E-01 C*	0.0018	NCSSL	NO	BSL
	5103-74-2	gamma-Chlordane	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	1.6E+00 C*	0.068	NCSSL	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	1.1E-01 C	6.6E-03	NCSSL	NO	DLBSL
	1024-57-3	Heptachlor epoxide	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	5.3E-02 C*	8.2E-04	NCSSL	NO	DLBSL
	72-43-5	Methoxychlor	ND	ND	MG/KG		0/7	0.00035 - 0.00042	4.2E-04	N/A	3.1E+01 N	2.2E+01	NCSSL	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/7	0.035 - 0.072	7.2E-02	N/A	4.4E-01 C	4.6E-02	NCSSL	NO	DLBSL
	93-76-5	2,4,5-T	ND	ND	MG/KG		0/7	0.0052 - 0.0064	6.4E-03	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	93-72-1	2,4,5-TP (Silvex)	ND	ND	MG/KG		0/7	0.0052 - 0.0064	6.4E-03	N/A	4.9E+01 N	3.8E-01	NCSSL	NO	DLBSL
	94-75-7	2,4-D	ND	ND	MG/KG		0/7	0.052 - 0.064	6.4E-02	N/A	6.9E+01 N	3.2E-01	NCSSL	NO	DLBSL
	94-82-6	2,4-DB	ND	ND	MG/KG		0/7	0.052 - 0.064	6.4E-02	N/A	4.9E+01 N	N/A	N/A	NO	DLBSL
	120-36-5	2,4-DP (Dichloroprop)	ND	ND	MG/KG		0/7	0.052 - 0.064	6.4E-02	N/A	N/A	N/A	N/A	NO	DLBSL
	75-99-0	Dalapon	ND	ND	MG/KG		0/7	0.13 - 0.16	1.6E-01	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	1918-00-9	Dicamba	ND	ND	MG/KG		0/7	0.0052 - 0.0064	6.4E-03	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-85-7	Dinoseb	ND	ND	MG/KG		0/7	0.026 - 0.032	3.2E-02	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	94-74-6	MCPA	ND	ND	MG/KG		0/7	5.2 - 6.4	6.4E+00	N/A	3.1E+00 N	N/A	N/A	YES	DLASL
	93-65-2	MCPP	ND	ND	MG/KG		0/7	5.2 - 6.4	6.4E+00	N/A	6.1E+00 N	N/A	N/A	YES	DLASL
	7429-90-5	**Aluminum**	**1.0E+03**	**1.8E+04**	**MG/KG**	**IR55-IS06-3-4-09C**	**7/7**	**10.4 - 25.3**	**1.8E+04**	**1.0E+04**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/7	0.78 - 1.9	1.9E+00	3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**6.0E-01**	**7.0E+00**	**MG/KG**	**IR55-IS01D-7-8-09C**	**7/7**	**0.52 - 1.3**	**7.0E+00**	**2.1E+00**	**3.9E-01 C***	**5.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-39-3	Barium	3.8E+00	2.5E+01	MG/KG	IR55-IS06-3-4-09C	7/7	2.1 - 5.1	2.5E+01	1.7E+01	1.5E+03 N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	1.4E-01 J	2.3E-01 J	MG/KG	IR55-IS06-3-4-09C	3/7	0.26 - 0.63	2.3E-01	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	ND	ND	MG/KG		0/7	0.26 - 0.63	6.3E-01	2.3E-02	7.0E+00 N	3.0E+00	NCSSL	NO	DLBSL
	7440-70-2	Calcium	1.0E+02 J	4.1E+02 J	MG/KG	IR55-IS02-4-5-09C	6/7	260 - 632	4.1E+02	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**3.2E+00 J**	**2.2E+01**	**MG/KG**	**IR55-IS06-3-4-09C**	**7/7**	**0.52 - 1.3**	**2.2E+01**	**1.5E+01**	**2.9E-01 C**	**3.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-48-4	Cobalt	3.8E-01 J	9.8E-01 J	MG/KG	IR55-IS06-3-4-09C	3/7	0.78 - 1.9	9.8E-01	8.2E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	6.1E-01	7.8E+00	MG/KG	IR55-IS06-3-4-09C	6/7	0.52 - 1.3	7.8E+00	2.6E+00	3.1E+02 N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	**Iron**	**7.4E+02**	**9.0E+03**	**MG/KG**	**IR55-IS06-3-4-09C**	**7/7**	**5.2 - 12.6**	**9.0E+03**	**5.4E+03**	**5.5E+03 N**	**1.5E+02**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	2.1E+00	1.1E+01	MG/KG	IR55-IS06-3-4-09C	7/7	0.16 - 0.38	1.1E+01	8.5E+00	4.0E+02 NL	2.7E+02	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7439-95-4	Magnesium	1.3E+02 J	6.2E+02 J	MG/KG	IR55-IS06-3-4-09C	6/7	260 - 632	6.2E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	4.1E+00	1.5E+01	MG/KG	IR55-IS06-3-4-09C	7/7	0.78 - 1.9	1.5E+01	9.3E+00	1.8E+02 N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	1.7E-02 J	2.7E-02 J	MG/KG	IR55-IS03-1-2-09C	4/7	0.034 - 0.042	2.7E-02	7.1E-02	2.3E+00 N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	2.6E-01 J	4.6E+00	MG/KG	IR55-IS06-3-4-09C	7/7	0.52 - 1.3	4.6E+00	2.3E+00	1.5E+02 N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	5.4E+01 J	6.0E+02 J	MG/KG	IR55-IS06-3-4-09C	7/7	260 - 632	6.0E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	3.2E-01	5.3E-01	MG/KG	IR55-IS07-3-4-09C	5/7	0.26 - 0.63	5.3E-01	5.1E-01	3.9E+01 N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	6.0E-02 J	6.0E-02 J	MG/KG	IR55-IS07-3-4-09C	1/7	0.52 - 1.3	6.0E-02	1.3E-01	3.9E+01 N	3.4E+00	NCSSL	NO	BSL
	7440-23-5	Sodium	ND	ND	MG/KG		0/7	260 - 632	6.3E+02	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/7	0.42 - 1	1.0E+00	3.8E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	3.4E+00	2.8E+01	MG/KG	IR55-IS06-3-4-09C	7/7	0.78 - 1.9	2.8E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	7.9E-01 J	5.9E+00	MG/KG	IR55-IS04-4-5-09C	4/7	1.3 - 3.2	5.9E+00	6.6E+00	2.3E+03 N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

RSL value for p-Cresol used as surrogate for 4-methylphenol.

RSL value for Chromium(VI) used as surrogate for chromium.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)
	Below Background Level (BBL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

C = Carcinogenic

N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N = Noncarcinogenic

S = concentration exceeds Csat, used Csat as screening value

NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)

mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.15a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	7 / 7	1.8E+04	IR55-IS06-3-4-09C	7.7E+04	1	0.2		Nervous System
Arsenic	7 / 7	7.0E+00	IR55-IS01D-7-8-09C	3.9E-01	1E-06		2E-05	
Chromium	7 / 7	2.2E+01	IR55-IS06-3-4-09C	2.9E-01	1E-06		8E-05	
Iron	7 / 7	9.0E+03	IR55-IS06-3-4-09C	5.5E+04	1	0.2		Gastrointestinal
Cumulative Corresponding Hazard Index[d]						**0.4**		
Cumulative Corresponding Cancer Risk[e]							**9E-05**	

Total Nervous System HI =	0.2
Total Gastrointestinal HI =	0.2

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

CNS = Central Nervous System

mg/kg = milligrams per kilogram

NA = Not available/not applicable

HI = Hazard Index

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.15b

Step 3 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55 - Subsurface Soil

Analyte	Detection Frequency	UCL		UCL Rationale	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)									
Arsenic	7 / 7	5.3E+00	95% Stud-t	1, 2, 3	3.9E-01	1E-06		1E-05	NA
Chromium	7 / 7	1.7E+01	95% Stud-t	1, 2, 3	2.9E-01	1E-06		6E-05	NA
Cumulative Corresponding Hazard Index[c]							**NA**		
Cumulative Corresponding Cancer Risk[d]								**7E-05**	

[a] Corresponding Hazard Index equals UCL divided by the RSL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals UCL divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituen

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

mg/kg = milligrams per kilogram

HI = Hazard Index

ProUCL, Version 4.00.04 used to determine distribution of data and calculate UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Student's-T test UCL (95% Stud-t);

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Test indicates data are gamma distributed.

(4) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater Site 55	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.1E-01 C**	7.0E+01	MCL, 15A NCAC 2L	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/2	3 - 3	3.0E+00	N/A	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.7E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/3	2.5 - 2.5	2.5E+00	N/A	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	15A NCAC 2L		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	75-25-2	Bromoform	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	15A NCAC 2L		
	74-83-9	Bromomethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	2.8E-01 J	6.1E-01 J	UG/L	IR55-TW02-09C	2/3	1 - 1	6.1E-01	N/A	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	Chloroform	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.9E-01 C	8.0E+01	MCL	YES	DLASL
												7.0E+01	15A NCAC 2L		
	74-87-3	Chloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.7E+01 N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.8E+01 N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	MCL,15A NCAC 2L	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.2E+01 C	2.0E+01	15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.6E+03 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.1E-01 C	5.0E+00	MCL	YES	DLASL
												7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.1E+01 N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	79-01-6	Trichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+00 C	5.0E+00	MCL	NO	DLBSL
												3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.3E+02 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.6E-02 C	2.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+01 N	1.0E+04	MCL	NO	DLBSL
												5.0E+02	15A NCAC 2L		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+02 N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+01 N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.5E+01 N	3.0E+01	15A NCAC 2L	NO	DLBSL

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.2E+02 N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.2E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	15A NCAC 2L		
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.5E+00 C	1.0E+03	15A NCAC 2L	YES	DLASL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	1.5E+00 J	1.5E+00 J	UG/L	IR55-TW02-09C	1/3	9.6 - 10	1.5E+00	N/A	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	4.8E+00 C	1.0E+02	15A NCAC 2L	YES	DLASL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.4E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	24 - 25	2.5E+01	N/A	1.7E+01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/3	9.6 - 10	1.0E+01	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	72-54-8	4,4'-DDD	8.0E-03 J	8.0E-03 J	UG/L	IR55-TW03-09C	1/3	0.019 - 0.02	8.0E-03	N/A	2.8E-01 C	1.0E-01	15A NCAC 2L	NO	BSL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	2.0E-01 C	N/A		NO	DLBSL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	2.0E-01 C*	1.0E-01	15A NCAC 2L	NO	DLBSL
	309-00-2	Aldrin	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	4.0E-03 C	N/A		YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	1.1E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	1.9E-01 C*	1.0E-01	15A NCAC 2L	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	2.6E-01 C**	5.0E-01	MCL	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	6.8E-03 C	5.0E-01	MCL	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/3	0.47 - 0.49	4.9E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	3.7E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	3.7E-02 C	2.0E-02	15A NCAC 2L	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	4.2E-03 C	2.0E-03	15A NCAC 2L	YES	DLASL
	959-98-8	Endosulfan I	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	2.2E+01 N	4.0E+01	15A NCAC 2L	NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/3	0.019 - 0.02	2.0E-02	N/A	1.1E+00 N	2.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	4.0E-03 J	4.0E-03 J	UG/L	IR55-TW02-09C	1/3	0.0094 - 0.0098	4.0E-03	N/A	6.1E-02 C	2.0E-01	MCL	NO	BSL
												3.0E-02	15A NCAC 2L		
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	1.9E-01 C*	1.0E-01	15A NCAC 2L	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	1.5E-02 C	4.0E-01	MCL	NO	DLBSL
												8.0E-03	15A NCAC 2L		
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/3	0.0094 - 0.0098	9.8E-03	N/A	7.4E-03 C*	2.0E-01	MCL	YES	DLASL
												4.0E-03	15A NCAC 2L		

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	72-43-5	Methoxychlor	3.7E-03 J	3.7E-03 J	UG/L	IR55-TW03D-09C	1/3	0.0094 - 0.0098	3.7E-03	N/A	1.8E+01 N	4.0E+01	MCL, 15A NCAC 2L	NO	BSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/3	0.94 - 0.98	9.8E-01	N/A	6.1E-02 C	3.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	93-76-5	2,4,5-T	ND	ND	UG/L		0/3	0.048 - 0.05	5.0E-02	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	93-72-1	2,4,5-TP (Silvex)	ND	ND	UG/L		0/3	0.048 - 0.05	5.0E-02	N/A	2.9E+01 N	5.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	94-75-7	2,4-D	ND	ND	UG/L		0/3	0.48 - 0.5	5.0E-01	N/A	3.7E+01 N	7.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
	94-82-6	2,4-DB	ND	ND	UG/L		0/3	0.48 - 0.5	5.0E-01	N/A	2.9E+01 N	N/A	N/A	NO	DLBSL
	120-36-5	2,4-DP (Dichloroprop)	ND	ND	UG/L		0/3	0.48 - 0.5	5.0E-01	N/A		N/A	N/A	YES	DLASL
	75-99-0	Dalapon	ND	ND	UG/L		0/3	1.2 - 1.2	1.2E+00	N/A	1.1E+02 N	2.0E+02	MCL	NO	DLBSL
	1918-00-9	Dicamba	ND	ND	UG/L		0/3	0.048 - 0.05	5.0E-02	N/A	1.1E+02 N	N/A	N/A	NO	DLBSL
	88-85-7	Dinoseb	ND	ND	UG/L		0/3	0.24 - 0.25	2.5E-01	N/A	3.7E+00 N	7.0E+00	MCL	NO	DLBSL
	94-74-6	MCPA	ND	ND	UG/L		0/3	48 - 50	5.0E+01	N/A	1.8E+00 N	N/A	N/A	YES	DLASL
	93-65-2	MCPP	ND	ND	UG/L		0/3	48 - 50	5.0E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	7429-90-5	**Aluminum**	**1.1E+04 J**	**3.0E+04**	**UG/L**	**IR55-TW03-09C**	**2/3**	**200 - 200**	**3.0E+04**	**1.9E+03**	**3.7E+03 N**	**50 - 200**	**MCL**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	UG/L		0/3	15 - 15	1.5E+01	3.3E+00	1.5E+00 N	6.0E+00	SMCL	YES	DLASL
	7440-38-2	**Arsenic**	**6.1E+00 J**	**1.8E+01**	**UG/L**	**IR55-TW03-09C**	**2/3**	**10 - 10**	**1.8E+01**	**5.8E+00**	**4.5E-02 C**	**1.0E+01**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7440-39-3	Barium	3.5E+01 J	1.2E+02	UG/L	IR55-TW03-09C	3/3	40 - 40	1.2E+02	8.6E+01	7.3E+02 N	2.0E+03	MCL	NO	BSL
												7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND	ND	UG/L		0/3	5 - 5	5.0E+00	3.1E-01	7.3E+00 N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	ND	ND	UG/L		0/3	5 - 5	5.0E+00	3.6E-01	1.8E+00 N	5.0E+00	MCL	YES	DLASL
												2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	3.6E+03 J	3.6E+03 J	UG/L	IR55-TW02-09C	1/3	5000 - 5000	3.6E+03	6.9E+04	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.4E+01**	**4.4E+01**	**UG/L**	**IR55-TW03-09C**	**2/3**	**10 - 10**	**4.4E+01**	**3.1E+00**	**4.3E-02 C**	**1.0E+02**	**MCL**	**YES**	**ASL**
												1.0E+01	**15A NCAC 2L**		
	7440-48-4	Cobalt	ND	ND	UG/L		0/3	15 - 15	1.5E+01	3.4E+00	1.1E+00 N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	7.9E+00 J	1.1E+01	UG/L	IR55-TW01-09C	2/3	10 - 10	1.1E+01	2.8E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	15A NCAC 2L		
	7439-89-6	**Iron**	**4.7E+03**	**6.0E+04**	**UG/L**	**IR55-TW03D-09C**	**3/3**	**100 - 100**	**6.0E+04**	**6.0E+03**	**2.6E+03 N**	**3.0E+02**	**SMCL**	**YES**	**ASL**
												3.0E+02	**15A NCAC 2L**		
	7439-92-1	Lead	2.2E+00 J	1.4E+01	UG/L	IR55-TW03-09C	2/3	3 - 3	1.4E+01	2.8E+00	1.5E+01	1.5E+01	MCL, 15A NCAC 2L	NO	NTX
	7439-95-4	Magnesium	2.3E+03 J	1.6E+04	UG/L	IR55-TW03D-09C	3/3	5000 - 5000	1.6E+04	6.4E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	**Manganese**	**4.2E+01**	**3.5E+02**	**UG/L**	**IR55-TW03D-09C**	**3/3**	**15 - 15**	**3.5E+02**	**2.1E+02**	**8.8E+01 N**	**5.0E+01**	**SMCL, 15A NCAC 2L**	**YES**	**ASL**
	7439-97-6	Mercury	ND	ND	UG/L		0/3	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	DLBSL
												1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	1.0E+01	5.6E+01 J	UG/L	IR55-TW03-09C	3/3	10 - 10	5.6E+01	8.0E+00	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.2E+03 J	1.6E+04	UG/L	IR55-TW03D-09C	3/3	5000 - 5000	1.6E+04	3.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/3	5 - 5	5.0E+00	3.1E+00	1.8E+01 N	5.0E+01	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND	ND	UG/L		0/3	10 - 10	1.0E+01	7.7E-01	1.8E+01 N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	8.6E+03	4.7E+04	UG/L	IR55-TW03-09C	3/3	5000 - 5000	4.7E+04	2.3E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/3	2 - 2	2.0E+00	3.8E+00	N/A	2.0E+00	MCL	NO	NTX
	7440-62-2	**Vanadium**	**1.6E+01**	**4.5E+01**	**UG/L**	**IR55-TW03-09C**	**2/3**	**15 - 15**	**4.5E+01**	**4.7E+00**	**1.8E+01 N**	**N/A**	N/A	**YES**	**ASL**
	7440-66-6	Zinc	9.4E+00 J	9.4E+00 J	UG/L	IR55-TW02-09C	1/3	25 - 25	9.4E+00	4.2E+01	1.1E+03 N	5.0E+02	SMCL	NO	BSL
												1.1E+03	15A NCAC 2L		

APPENDIX D

TABLE D-2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for p-cresol used as surrogate for 4-methylphenol.
RSL value for methoxychlor used as surrogate for 4-chlorophenyl-phenylether.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for Chromium(VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively, but discussed in uncertainty assessment

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
SMCL = Secondary Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
ND = Not detected
ug/L = micrograms per liter
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N/A = Not available

APPENDIX D

TABLE D-2.16a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
METAL (ug/L)								
Aluminum	2 / 3	3.0E+04	IR55-TW03-09C	4.E+04	1	0.8		Nervous System
Arsenic	2 / 3	1.8E+01	IR55-TW03-09C	5.E-02	1E-06		4E-04	
Chromium	2 / 3	4.4E+01	IR55-TW03-09C	4.E-02	1E-06		1E-03	
Iron	3 / 3	6.0E+04	IR55-TW03D-09C	3.E+04	1	2		Gastrointestinal
Manganese	3 / 3	3.5E+02	IR55-TW03D-09C	9.E+02	1	0.4		CNS
Vanadium	2 / 3	4.5E+01	IR55-TW03-09C	2.E+02	1	0.3		Kidney
Cumulative Corresponding Hazard Index[d]						**4**		
Cumulative Corresponding Cancer Risk[e]							**1E-03**	

Total Nervous System/CNS HI =	**1.2**
Total Gastrointestinal HI =	**2**
Total Kidney HI =	0.3

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.17

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air Site 55	75-15-0	Carbon disulfide	2.8E-01 J	6.1E-01 J	UG/L	IR55-TW02-09C	2/3	9.5 - 13	6.1E-01	N/A	1.2E+02 N	N/A	N/A	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.17a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.17a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 55

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non-Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
75-15-0	Carbon disulfide	N/A	7.3E+01	7.3E+01	6.0E-01	N/A	1.2E+02

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004.
Average groundwater temperature of 24.38°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non-cancer}$)
Equation 2: Cgw = $C_{target,ia} \times 10^{-3}$ m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.18

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 61	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.4E+02 S	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	9.1E+02 S	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.2E+00 C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/8	0.0039 - 0.0058	5.8E-03	N/A	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.9E+02 N	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.8E+03 N	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.1E+01 N	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	5.3E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.1E+03 N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.1E+00 C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	8.2E+01 N	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.5E+03 N	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	1.5E-03 J	1.5E-03 J	MG/KG	IR61-IS08-09C	1/8	0.0078 - 0.012	1.5E-03	N/A	2.9E-01 C	3.4E-01	NCSSL	NO	BSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.2E+02 S	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	7.0E-04 J	1.0E-03 J	MG/KG	IR61-IS06-09C	6/8	0.0078 - 0.012	1.0E-03	N/A	5.4E+00 C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.1E+02 N	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	7.8E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	5.7E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	1.7E-03 J	8.6E-02	MG/KG	IR61-IS07D-09C	3/8	0.0078 - 0.012	8.6E-02	N/A	1.1E+01 C	2.3E-02	NCSSL	NO	BSL

APPENDIX D

TABLE D-2.18

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.3E+02 N	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	5.0E+02 N	5.5E+00	NCSSL	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.5E+01 N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	2.8E+00 C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	7.9E+01 N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.0E-02 C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.0078 - 0.012	1.2E-02	N/A	6.3E+01 N	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.1E+02 S	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.2E+02 N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.8E+02 S	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.9E+01 N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.1E+01 N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.1E+01 N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.44 - 0.52	5.2E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.4E+02 N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.4E+02 N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.7E+03 N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.1E+00 C	2.5E-02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.18

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	MG/KG		0/8	0.056 - 0.065	6.5E-02	N/A	1.5E-01 C	1.8E-01	NCSSL	NO	DLBSL
	50-32-8	Benzo(a)pyrene	1.3E-03 J	1.4E-03 J	MG/KG	IR61-IS06-09C : IR61-IS08-09C	3/8	0.0059 - 0.007	1.4E-03	N/A	1.5E-02 C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	MG/KG		0/8	0.056 - 0.065	6.5E-02	N/A	1.5E-01 C	6.0E-01	NCSSL	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.7E+02 N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.5E+00 C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.1E-01 C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	8.0E-02 J	1.2E-01 J	MG/KG	IR61-IS08-09C	3/8	0.22 - 0.26	1.2E-01	N/A	3.1E+03 N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	MG/KG		0/8	0.0059 - 0.007	7.0E-03	N/A	1.5E-02 C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	7.8E+00 N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/8	0.37 - 0.44	4.4E-01	N/A	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	MG/KG		0/8	0.056 - 0.065	6.5E-02	N/A	1.5E-01 C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/8	0.056 - 0.065	6.5E-02	N/A	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/8	0.028 - 0.033	3.3E-02	N/A	6.9E-02 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/8	0.018 - 0.022	2.2E-02	N/A	8.9E-01 C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/8	0.22 - 0.26	2.6E-01	N/A	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	**Aluminum**	**3.5E+03**	**1.4E+04**	**MG/KG**	**IR61-IS05-09C**	**8/8**	**11.1 - 13.2**	**1.4E+04**	**1.0E+04**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/8	0.83 - 0.99	9.9E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	Arsenic	4.4E-01 J	1.4E+00	MG/KG	IR61-IS04-09C	8/8	0.56 - 0.66	1.4E+00	2.1E+00	3.9E-01 C*	5.8E-03	NCSSL	NO	BBK

APPENDIX D

TABLE D-2.18

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-39-3	Barium	7.3E+00	2.8E+01	MG/KG	IR61-IS05-09C	8/8	2.2 - 2.6	2.8E+01	1.7E+01	1.5E+03 N	5.8E-01	NCSSL	NO	BSL
	7440-41-7	Beryllium	8.0E-02 J	2.4E-01 J	MG/KG	IR61-IS05-09C	6/8	0.28 - 0.33	2.4E-01	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	ND	ND	MG/KG		0/8	0.28 - 0.33	3.3E-01	2.3E-02	7.0E+00 N	3.0E-03	NCSSL	NO	DLBSL
	7440-70-2	Calcium	7.8E+01 J	9.1E+02	MG/KG	IR61-IS01-09C	4/8	278 - 331	9.1E+02	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	4.3E+00	1.3E+01	MG/KG	IR61-IS04-09C	8/8	0.56 - 0.66	1.3E+01	1.5E+01	2.9E-01 C	3.8E-03	NCSSL	NO	BBK
	7440-48-4	Cobalt	4.6E-01 J	9.1E-01	MG/KG	IR61-IS05-09C	6/8	0.83 - 0.99	9.1E-01	8.2E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	3.6E-01 J	1.8E+00	MG/KG	IR61-IS04-09C	5/8	0.56 - 0.66	1.8E+00	2.6E+00	3.1E+02 N	7.0E-01	NCSSL	NO	BSL
	7439-89-6	**Iron**	**2.0E+03**	**1.0E+04**	**MG/KG**	**IR61-TW-S01-09C**	**8/8**	**5.6 - 6.6**	**1.0E+04**	**5.4E+03**	**5.5E+03 N**	**1.5E-01**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	3.3E+00	6.5E+00	MG/KG	IR61-IS08-09C	8/8	0.17 - 0.2	6.5E+00	8.5E+00	4.0E+02 NL	2.7E-01	NCSSL	NO	BSL
	7439-95-4	Magnesium	1.1E+02 J	4.5E+02 J	MG/KG	IR61-IS05-09C	8/8	278 - 331	4.5E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	3.7E+00	1.1E+01	MG/KG	IR61-IS01-09C	8/8	0.83 - 0.99	1.1E+01	9.3E+00	1.8E+02 N	6.5E-02	NCSSL	NO	BSL
	7439-97-6	Mercury	1.7E-02 J	1.7E-02 J	MG/KG	-IS01-09C : IR61-IS08	2/8	0.033 - 0.041	1.7E-02	7.1E-02	2.3E+00 N	1.0E-03	NCSSL	NO	BSL
	7440-02-0	Nickel	1.1E+00	4.3E+00	MG/KG	IR61-IS05-09C	8/8	0.56 - 0.66	4.3E+00	2.3E+00	1.5E+02 N	1.3E-01	NCSSL	NO	BSL
	7440-09-7	Potassium	8.8E+01 J	2.8E+02 J	MG/KG	IR61-IS08-09C	8/8	278 - 331	2.8E+02	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.3E-01 J	3.6E-01	MG/KG	IR61-IS04-09C	4/8	0.28 - 0.33	3.6E-01	5.1E-01	3.9E+01 N	2.1E-03	NCSSL	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/8	0.56 - 0.66	6.6E-01	1.3E-01	3.9E+01 N	3.4E-03	NCSSL	NO	DLBSL
	7440-23-5	Sodium	6.5E+01 J	6.5E+01 J	MG/KG	IR61-IS01-09C	1/8	278 - 331	6.5E+01	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/8	0.45 - 0.53	5.3E-01	3.8E-01	N/A	N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	5.1E+00	1.9E+01	MG/KG	IR61-TW-S01-09C	8/8	0.83 - 0.99	1.9E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	1.9E+00	6.0E+00	MG/KG	IR61-TW-S01-09C	8/8	1.4 - 1.7	6.0E+00	6.6E+00	2.3E+03 N	1.2E+00	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

RSL value for p-Cresol used as surrogate for 4-methylphenol.

RSL value for Chromium(VI) used as surrogate for chromium.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

C = Carcinogenic

N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N = Noncarcinogenic

S = concentration exceeds Csat, used Csat as screening value

NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)

mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.18

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)
- Below Background Level (BBK)

APPENDIX D

TABLE D-2.18a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	8 / 8	1.4E+04	IR61-IS05-09C	7.7.E+04	1	0.2		Nervous System
Iron	8 / 8	1.0E+04	IR61-TW-S01-09C	5.5E+04	1	0.2		Gastrointestinal
Cumulative Corresponding Hazard Index[d]						**0.4**		
Cumulative Corresponding Cancer Risk[e]							**NA**	

Total Nervous System HI =	0.2
Total Gastrointestinal HI =	0.2

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

mg/kg = milligrams per kilogram

NA = Not available/not applicable

HI = Hazard Index

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater Site 61	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.4E+00 C	6.0E+00	15A NCAC 2L	YES	DLASL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.1E-01 C**	7.0E+01	MCL, NC2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/3	3.9 - 5.8	5.8E+00	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.7E+00 N	N/A	N/A	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	15A NCAC 2L		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	75-25-2	Bromoform	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	15A NCAC 2L		
	74-83-9	Bromomethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	9.1E+00 N	1.0E+02	MCL	YES	DLASL
												5.0E+01	15A NCAC 2L		

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	75-00-3	Chloroethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL
	67-66-3	**Chloroform**	**2.0E+00**	**2.0E+00**	**UG/L**	**IR61-TW03-09C**	**1/3**	**7.8 - 12**	**2.0E+00**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**15A NCAC 2L**		
	74-87-3	Chloromethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01		1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.9E+01 N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	1.4E-01 J	1.4E-01 J	UG/L	IR61-TW01-09C	1/3	7.8 - 12	1.4E-01	N/A	1.5E+00 C	7.0E+02	MCL	NO	BSL
												6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/3	1 - 1	1.0E+00	N/A	6.8E+01 N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.2E+01 C	2.0E+01	15A NCAC 2L	YES	DLASL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.8E+00 C	5.0E+00	MCL, 15A NCAC 2L	YES	DLASL
											1.6E+03 N	1.0E+02	MCL		
	100-42-5	Styrene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.1E-01 C	5.0E+00	MCL	YES	DLASL
												7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.3E+02 N	1.0E+03	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.3E+02 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.6E-02 C	2.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	2.0E+01 N	1.0E+04	MCL	NO	DLBSL
												5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	3.7E+01 N	7.0E+01	MCL, NC2CLGW	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	1.1E+01 N	1.0E+02	MCL, 15A NCAC 2L	YES	DLASL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/3	7.8 - 12	1.2E+01	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.8E+02 N	4.0E+02	15A NCAC 2L	YES	DLASL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.1E+01 N	N/A	N/A	YES	DLASL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	7.3E+01 N	1.0E+02	15A NCAC 2L	YES	DLASL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	N/A	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.2E-01 C	N/A	N/A	YES	DLASL

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.8E+01 N	4.0E-01	15A NCAC 2L	YES	DLASL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.5E+01 N	3.0E+01	15A NCAC 2L	YES	DLASL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.8E+02 N	N/A	N/A	YES	DLASL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	440 - 520	5.2E+02	N/A	3.7E+01 N	N/A	N/A	YES	DLASL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	440 - 520	5.2E+02	N/A	3.7E+01 N	N/A	N/A	YES	DLASL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	23 - 24	2.4E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	N/A	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.8E+01 N	4.0E+01	15A NCAC 2L	YES	DLASL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	440 - 520	5.2E+02	N/A	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	440 - 520	5.2E+02	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.2E+02 N	8.0E+01	15A NCAC 2L	YES	DLASL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.2E+02 N	2.0E+02	15A NCAC 2L	YES	DLASL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.7E+02 N	N/A	NA	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/3	5.9 - 7	7.0E+00	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/3	56 - 65	6.5E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	YES	DLASL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.5E+01 C	1.0E+03	15A NCAC 2L	YES	DLASL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	N/A	N/A		NO	DLBSL
	218-01-9	Chrysene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/3	370 - 440	4.4E+02	N/A	4.8E+00 C	1.0E+02	15A NCAC 2L	YES	DLASL

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	N/A	N/A	N/A	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	YES	DLASL
	86-73-7	Fluorene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	YES	DLASL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	2.2E+01 N	5.0E+01	MCL	YES	DLASL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/3	56 - 65	6.5E+01	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	18 - 22	2.2E+01	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	2.4E-01	1.1E+03 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	9.0E+00	1.1E+03 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/3	220 - 260	2.6E+02	2.4E-01	1.1E+02 N	2.0E+02	15A NCAC 2L	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.1E+01 N	N/A	N/A	YES	DLASL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	1.2E-02 C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/3	220 - 260	2.6E+02	N/A	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	28 - 33	3.3E+01	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	9.2 - 9.4	9.4E+00	N/A	1.4E+01 C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**2.7E+02**	**1.1E+05**	**UG/L**	**IR61-TW01-09C**	**3/3**	**11.1 - 13.2**	**1.1E+05**	**1.9E+03**	**3.7E+03 N**	**50 - 200**	**SMCL**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	UG/L		0/3	0.83 - 0.99	9.9E-01	3.3E+00	1.5E+00 N	6.0E+00	MCL	NO	DLBSL
	7440-38-2	**Arsenic**	**1.7E+00**	**1.4E+01**	**UG/L**	**IR61-TW03D-09C**	**3/3**	**0.56 - 0.66**	**1.4E+01**	**5.8E+00**	**4.5E-02 C**	**1.0E+01**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7440-39-3	Barium	1.4E+01 J	2.3E+02	UG/L	IR61-TW01-09C	3/3	40 - 40	2.3E+02	8.6E+01	7.3E+02 N	2.0E+03	MCL, 15A NCAC 2L	NO	BSL
												7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	3.5E+00 J	3.5E+00 J	UG/L	IR61-TW01-09C	1/3	0.28 - 0.33	3.5E+00	3.1E-01	7.3E+00 N	4.0E+00	MCL	NO	BSL
	7440-43-9	**Cadmium**	**2.2E+00 J**	**2.2E+00 J**	**UG/L**	**IR61-TW01-09C**	**1/3**	**0.28 - 0.33**	**2.2E+00**	**3.6E-01**	**1.8E+00 N**	**5.0E+00**	**MCL**	**YES**	**ASL**
												2.0E+00	**15A NCAC 2L**		
	7440-70-2	Calcium	2.8E+04 J	7.4E+05 J	UG/L	IR61-TW01-09C	3/3	5000 - 25000	7.4E+05	6.9E+04	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**2.4E+01**	**1.5E+02**	**UG/L**	**IR61-TW01-09C**	**2/3**	**0.56 - 0.66**	**1.5E+02**	**3.1E+00**	**4.3E-02 C**	**1.0E+02**	**MCL**	**YES**	**ASL**
												1.0E+01	**15A NCAC 2L**		

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-48-4	**Cobalt**	**5.5E+00 J**	**1.3E+01 J**	**UG/L**	**IR61-TW01-09C**	**2/3**	**15 - 15**	**1.3E+01**	**3.4E+00**	**1.1E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.9E+01	1.9E+01	UG/L	IR61-TW01-09C	1/3	0.56 - 0.66	1.9E+01	2.8E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	15A NCAC 2L		
	7439-89-6	**Iron**	**1.1E+03 J**	**1.5E+05 J**	**UG/L**	**IR61-TW01-09C**	**3/3**	**5.6 - 6.6**	**1.5E+05**	**6.0E+03**	**2.6E+03 N**	**3.0E+02**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7439-92-1	**Lead**	**4.7E+00**	**9.3E+01**	**UG/L**	**IR61-TW01-09C**	**2/3**	**0.17 - 0.2**	**9.3E+01**	**2.8E+00**	**1.5E+01**	**1.5E+01**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7439-95-4	Magnesium	1.3E+03 J	1.4E+04	UG/L	IR61-TW01-09C	3/3	278 - 331	1.4E+04	6.4E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	**Manganese**	**1.4E+02**	**6.4E+02**	**UG/L**	**IR61-TW01-09C**	**3/3**	**15 - 15**	**6.4E+02**	**2.1E+02**	**8.8E+01 N**	**5.0E+01**	**15A NCAC 2L**	**YES**	**ASL**
	7439-97-6	Mercury	1.4E-01 J	1.4E-01 J	UG/L	IR61-TW01-09C	1/3	0.033 - 0.041	1.4E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	BSL
												1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	7.4E+00 J	6.0E+01	UG/L	IR61-TW01-09C	3/3	0.56 - 0.66	6.0E+01	8.0E+00	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.7E+03 J	5.0E+03 J	UG/L	IR61-TW01-09C	2/3	5000 - 5000	5.0E+03	3.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/3	0.28 - 0.33	3.3E-01	3.1E+00	1.8E+01 N	5.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND	ND	UG/L		0/3	10 - 10	1.0E+01	7.7E-01	1.8E+01 N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	8.3E+03	1.2E+04	UG/L	IR61-TW01-09C	3/3	278 - 331	1.2E+04	2.3E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/3	0.45 - 0.53	5.3E-01	3.8E+00	N/A	2.0E+00	15A NCAC 2L	NO	BBK
	7440-62-2	**Vanadium**	**2.8E+01**	**1.7E+02**	**UG/L**	**IR61-TW01-09C**	**2/3**	**15 - 15**	**1.7E+02**	**4.7E+00**	**1.8E+01 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-66-6	Zinc	2.4E+01 J	2.0E+02	UG/L	IR61-TW01-09C	2/3	25 - 100	2.0E+02	4.2E+01	1.1E+03 N	1.0E+03	15A NCAC 2L	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Chromium(VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
SMCL = Secondary MCL
15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
ND = Not detected
ug/L = micrograms per liter
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N/A = Not available

APPENDIX D

TABLE D-2.19

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively, but discussed in uncertainty assessment

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Level (BBK)

APPENDIX D

TABLE D-2.19a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Volatile Organic Compounds (ug/L)								
Chloroform	1 / 3	2.0E+00	IR61-TW03-09C	1.9E-01	1E-06		1E-05	
Metals (ug/L)								
Aluminum	3 / 3	1.1E+05	IR61-TW01-09C	3.7E+04	1	3		Nervous system
Arsenic	3 / 3	1.4E+01	IR61-TW03D-09C	4.5E-02	1E-06		3E-04	
Cadmium	1 / 3	2.2E+00 J	IR61-TW01-09C	1.8E+01	1	0.1		Blood
Chromium	2 / 3	1.5E+02	IR61-TW01-09C	4.3E-02	1E-06		3.E-03	
Cobalt	2 / 3	1.3E+01 J	IR61-TW01-09C	1.1E+01	1	1		Thyroid
Iron	2 / 3	1.5E+05 J	IR61-TW01-09C	2.6E+04	1	6		Gastrointestinal
Lead	2 / 3	9.3E+01	IR61-TW01-09C	N/A				
Manganese	3 / 3	6.4E+02	IR61-TW01-09C	8.8E+02	1	0.7		CNS
Vanadium	2 / 3	1.7E+02	IR61-TW01-09C	1.8E+02	1	0.9		Kidney
Cumulative Corresponding Hazard Index[d]						**12**		
Cumulative Corresponding Cancer Risk[e]							4E-03	

Total Nervous System/CNS HI =	4
Total Blood HI =	0.1
Total Thyroid HI =	1
Total Gastrointestinal HI =	6
Total Kidney HI =	0.9

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.20

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air	67-66-3	Chloroform	2.0E+00	2.0E+00	UG/L	IR61-TW03-09C	1/3	7.8 - 12	2.0E+00	N/A	8.0E+01 M	N/A	N/A	NO	BSL
Site 61	100-41-4	Ethylbenzene	1.4E-01 J	1.4E-01 J	UG/L	IR61-TW01-09C	1/3	7.8 - 12	1.4E-01	N/A	7.0E+02 M	N/A	N/A	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.20a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.20a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 61

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non\text{-}Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
67-66-3	Chloroform	1.1E-01	1.0E+01	1.1E-01	1.2E-01	8.0E+01	8.0E+01
100-41-4	Ethylbenzene	9.7E-01	1.0E+02	9.7E-01	2.3E-01	7.0E+02	7.0E+02

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. The H'TS for cyclohexane is the Henry's Law Constant (dimensionless) (H') at reference temperature due to the lack of chemical specific data available to calculate the H'TS.
Average groundwater temperature of 18.56°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non\text{-}cancer}$)
Equation 2: Cgw = $C_{target,ia} \times 10^{-3}$ m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.21

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil Site 62	71-55-6	1,1,1-Trichloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.4E+02	NS	1.2E+00	NCSSL	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	5.6E-01	C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	9.1E+02	NS	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.1E+00	C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	3.3E+00	C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.4E+01	N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.2E+00	C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		MG/KG		0/8	0.0047 - 0.0067	6.7E-03	N/A	5.4E-03	C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	3.4E-02	C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.9E+02	NS	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	4.3E-01	C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	8.9E-01	C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.4E+00	C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.4E+00	C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.8E+03	N	1.6E+01	NCSSL	NO	DLBSL
	591-78-6	2-Hexanone	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.1E+01	NS	1.2E+00	NCSSL	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	5.3E+02	NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND		ND		MG/KG		0/3	0.0094 - 0.011	1.1E-02	N/A	6.1E+03	N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.1E+00	C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.7E-01	C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.1E+01	C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	7.3E-01	N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	8.2E+01	NS	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.1E-01	C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.9E+01	N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.5E+03	NS	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	1.0E-03	J	2.7E-03	J	MG/KG	IR62-IS05-7-8-09C	3/8	0.0094 - 0.013	2.7E-03	N/A	2.9E-01	C	3.4E-01	NCSSL	NO	BSL
	74-87-3	Chloromethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.2E+01	N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.6E+01	N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.2E+02	NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.8E-01	C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.8E+01	N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	7.3E-04	J	8.9E-04	J	MG/KG	IR62-IS02D-11-12-09C	2/8	0.0094 - 0.013	8.9E-04	N/A	5.4E+00	C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.1E+02	NS	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	7.8E+03	NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	5.7E+01	NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND		ND		MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.1E+01	C	2.3E-02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.21

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	4.3E+01	C	8.5E-02	NCSSL	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.3E+02	NS	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	5.5E-01	C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	5.0E+02	NS	5.5E+00	NCSSL	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.5E+01	N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	1.7E+00	C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	2.8E+00	C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	7.9E+01	N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.0E-02	C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.0094 - 0.013	1.3E-02	N/A	6.3E+01	NS	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.1E+02	NS	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	4.6E+00	C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	6.1E+02	N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+00	C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.8E+01	N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.2E+02	N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	1.2E+01	N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.6E+00	C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+00	N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.8E+02	NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.9E+01	N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.1E+01	N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.1E+02	N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	6.1E+01	N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.9E+01	N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.1E+00	C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	6.1E+01	N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	4.9E-01	N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	N/A		N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+02	N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.4E+00	C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.1E+01	N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.1E+01	N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	2.4E+01	C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.45 - 0.52	5.2E-01	N/A	4.8E+00	C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.4E+02	N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.4E+02	N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	7.8E+02	NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.7E+03	N	6.6E+02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.21

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier		Maximum [1] Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening Toxicity Value	[4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1912-24-9	Atrazine	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.1E+00	C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	7.2E-02	J	7.2E-02	J	MG/KG	IR62-IS01-9-10-09C	1/8	0.23 - 0.26	7.2E-02	N/A	7.8E+02	NS	N/A	N/A	NO	BSL
	56-55-3	Benzo(a)anthracene	7.8E-03	J	9.9E-03	J	MG/KG	IR62-IS02D-11-12-09C	5/8	0.057 - 0.065	9.9E-03	N/A	1.5E-01	C	1.8E-01	NCSSL	NO	BSL
	50-32-8	Benzo(a)pyrene	2.0E-03	J	2.0E-03	J	MG/KG	IR62-IS02D-11-12-09C	1/8	0.006 - 0.0069	2.0E-03	N/A	1.5E-02	C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	1.8E-03	J	2.5E-03	J	MG/KG	IR62-IS02-11-12-09C : IR62-IS02D-11-12-09C	3/8	0.057 - 0.065	2.5E-03	N/A	1.5E-01	C	6.0E-01	NCSSL	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.7E+02	N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.5E+00	C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.8E+01	N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.1E-01	C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.5E+01	C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.6E+02	C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	9.1E-02	J	1.2E-01	J	MG/KG	IR62-IS01-9-10-09C	2/8	0.23 - 0.26	1.2E-01	N/A	3.1E+03	N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	N/A		N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.5E+01	C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND		ND		MG/KG		0/8	0.006 - 0.0069	6.9E-03	N/A	1.5E-02	C	1.9E-01	NCSSL	NO	DLBSL
	132-64-9	Dibenzofuran	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	7.8E+00	N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	4.9E+03	N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	N/A		N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+02	N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.5E+01	C*	3.8E+01	NCSSL	NO	BSL
	206-44-0	Fluoranthene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.3E+02	N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	2.3E+02	N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.0E-01	C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+00	C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.7E+01	N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	6.1E+00	C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND		ND		MG/KG		0/8	0.057 - 0.065	6.5E-02	N/A	1.5E-01	C	2.0E+00	NCSSL	NO	DLBSL
	78-59-1	Isophorone	ND		ND		MG/KG		0/8	0.057 - 0.065	6.5E-02	N/A	5.1E+02	C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	3.6E+00	C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND		ND		MG/KG		0/8	0.029 - 0.033	3.3E-02	N/A	6.9E-02	C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	9.9E+01	C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	4.8E+00	C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND		ND		MG/KG		0/8	0.019 - 0.022	2.2E-02	N/A	8.9E-01	C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.7E+03	N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.8E+03	N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND		ND		MG/KG		0/8	0.23 - 0.26	2.6E-01	N/A	1.7E+02	N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	**Aluminum**	**4.6E+02**		**1.8E+04**		**MG/KG**	**IR62-IS08-3-4-09C**	**8/8**	**11.4 - 13**	**1.8E+04**	**1.0E+04**	**7.7E+03**	**N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND		ND		MG/KG		0/8	0.86 - 0.98	9.8E-01	3.6E-01	3.1E+00	N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**2.5E-01**	**J**	**7.8E+00**		**MG/KG**	**IR62-IS08-3-4-09C**	**8/8**	**0.57 - 0.65**	**7.8E+00**	**2.1E+00**	**3.9E-01**	**C***	**5.8E+00**	**NCSSL**	**YES**	**ASL**

APPENDIX D

TABLE D-2.21

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-39-3	Barium	2.8E+00		2.0E+01		MG/KG	IR62-IS08-3-4-09C	8/8	2.3 - 2.6	2.0E+01	1.7E+01	1.5E+03	N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	6.0E-02	J	5.9E-01		MG/KG	IR62-IS04-14-15-09C	7/8	0.29 - 0.33	5.9E-01	1.7E-01	1.6E+01	N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	ND		ND		MG/KG		0/8	0.29 - 0.33	3.3E-01	2.3E-02	7.0E+00	N	3.0E+00	NCSSL	NO	DLBSL
	7440-70-2	Calcium	1.2E+02	J	7.4E+02	J	MG/KG	IR62-IS08-3-4-09C	4/8	286 - 325	7.4E+02	4.4E+02	N/A		N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.8E+00**	**J**	**2.7E+01**	**J**	**MG/KG**	**IR62-IS04-14-15-09C**	**8/8**	**0.57 - 0.65**	**2.7E+01**	**1.5E+01**	**2.9E-01**	**C**	**3.8E+00**	**NCSSL**	**YES**	**ASL**
	7440-48-4	Cobalt	5.0E-01	J	1.1E+00		MG/KG	IR62-IS07-12-13-09C	6/8	0.86 - 0.98	1.1E+00	8.2E-01	2.3E+00	N	N/A	N/A	NO	BSL
	7440-50-8	Copper	3.3E+00		7.2E+00		MG/KG	IR62-IS04-14-15-09C	7/8	0.57 - 0.65	7.2E+00	2.6E+00	3.1E+02	N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	**Iron**	**2.3E+02**		**2.1E+04**		**MG/KG**	**IR62-IS04-14-15-09C**	**8/8**	**5.7 - 6.5**	**2.1E+04**	**5.4E+03**	**5.5E+03**	**N**	**1.5E+02**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	2.2E+00		8.6E+00		MG/KG	IR62-IS04-14-15-09C	8/8	0.17 - 0.2	8.6E+00	8.5E+00	4.0E+02		2.7E+02	NCSSL	NO	BSL
	7439-95-4	Magnesium	1.9E+02	J	7.8E+02	J	MG/KG	IR62-IS08-3-4-09C	7/8	286 - 325	7.8E+02	3.6E+02	N/A		N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.2E+00		1.7E+01		MG/KG	IR62-IS04-14-15-09C	8/8	0.86 - 0.98	1.7E+01	9.3E+00	1.8E+02	N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	2.1E-02	J	2.1E-02	J	MG/KG	IR62-IS08-3-4-09C	1/8	0.034 - 0.046	2.1E-02	7.1E-02	2.3E+00	N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	2.9E-01	J	4.2E+00		MG/KG	IR62-IS08-3-4-09C	8/8	0.57 - 0.65	4.2E+00	2.3E+00	1.5E+02	N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	2.0E+02	J	8.8E+02		MG/KG	IR62-IS04-14-15-09C	7/8	286 - 325	8.8E+02	3.6E+02	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.5E-01	J	2.9E-01	J	MG/KG	IR62-IS04-14-15-09C	2/8	0.29 - 0.33	2.9E-01	5.1E-01	3.9E+01	N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	7.0E-02	J	1.0E-01	J	MG/KG	IR62-IS04-14-15-09C	4/8	0.57 - 0.65	1.0E-01	1.3E-01	3.9E+01	N	3.4E+00	NCSSL	NO	BSL
	7440-23-5	Sodium	ND		ND		MG/KG		0/8	286 - 325	3.3E+02	6.8E+01	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		MG/KG		0/8	0.46 - 0.52	5.2E-01	3.8E-01	N/A		N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	1.8E+00		3.9E+01		MG/KG	IR62-IS04-14-15-09C	8/8	0.86 - 0.98	3.9E+01	1.7E+01	3.9E+01	N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	6.8E-01	J	1.7E+01		MG/KG	IR62-IS04-14-15-09C	8/8	1.4 - 1.6	1.7E+01	6.6E+00	2.3E+03	N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites for residential soil (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for bis(2-ethylhexyl)phthalate used as a surrogate for di-n-octylphthalate.
RSL value for Cadmium (diet) used as surrogate for cadmium.
RSL value for hexavalent chromium (chromium VI) used as surrogate for chromium.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
C = Carcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = saturation concentration higher than noncarcinogenic based RSL, therefore Csat used as screening level
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
N/A = Not available
ND = Not Detected
mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.21

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

Deletion Reason:
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background (BBK)
Detection Limit Below Screening Level (DLBSL)

APPENDIX D

TABLED- 2.21a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil Screening Level	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	8 / 8	1.8E+04	IR62-IS08-3-4-09C	7.7E+04	1	0.2		Nervous System
Arsenic	8 / 8	7.8E+00	IR62-IS08-3-4-09C	3.9E-01	1.0E-06		2E-05	
Chromium	8 / 8	2.7E+01 J	IR62-IS04-14-15-09C	2.9E-01	1.0E-06		9E-05	
Iron	8 / 8	2.1E+04	IR62-IS04-14-15-09C	5.5E+04	1	0.4		Gastrointestinal
Cumulative Corresponding Hazard Index[d]						**0.6**		
Cumulative Corresponding Cancer Risk[e]							**1E-04**	

Total Nervous System HI =	0.2
Total Gastrointestinal HI =	0.4

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

mg/kg = milligrams per kilogram

NA = Not available/not applicable

HI = Hazard Index

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.21b

Step 3 Soil Screening - Risk Ratio, 95% UCL

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 62 - Subsurface Soil

Analyte	Detection Frequency	UCL		UCL Rationale	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)									
Arsenic	8 / 8	5.9E+00	95% Stud-t	2, 3, 4	3.9E-01	1.0E-06		2E-05	
Chromium	8 / 8	2.3E+01	95% Stud-t	2	2.9E-01	1.0E-06		8E-05	
Cumulative Corresponding Hazard Index[d]							**NA**		
Cumulative Corresponding Cancer Risk[e]								**9E-05**	

[a] Corresponding Hazard Index equals UCL divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals UCL divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

mg/kg = milligrams per kilogram

HI = Hazard Index

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA.February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Student's-T test UCL (95% Stud-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Anderson-Darling Test indicates data are gamma distributed.

(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.

APPENDIX D

TABLE D-2.22

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Subsurface Soil	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.4E+02 S	1.2E+00	NCSSL	NO	DLBSL
Site 66	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	5.6E-01 C	1.2E-03	NCSSL	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	9.1E+02 S	9.2E+03	NCSSL	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	3.3E+00 C	3.0E-02	NCSSL	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.4E+01 N	4.6E-02	NCSSL	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.2E+00 C**	2.2E+00	NCSSL	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/17	0.0038 - 0.0063	6.3E-03	N/A	5.4E-03 C	2.5E-04	NCSSL	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	3.4E-02 C	9.7E-05	NCSSL	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.9E+02 N	2.4E-01	NCSSL	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	4.3E-01 C	2.0E-03	NCSSL	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	8.9E-01 C*	3.3E-03	NCSSL	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.4E+00 C	7.6E+00	NCSSL	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.4E+00 C	7.0E-02	NCSSL	NO	DLBSL
	78-93-3	2-Butanone	1.0E-02 J	3.2E-02 J	MG/KG	IR66-TW-S02-09C	2/17	0.0076 - 0.013	3.2E-02	N/A	2.8E+03 N	1.6E+01	NCSSL	NO	BSL
	591-78-6	2-Hexanone	5.6E-03 J	5.6E-03 J	MG/KG	IR66-TW-S04-09C	1/17	0.0076 - 0.013	5.6E-03	N/A	2.1E+01 N	1.2E+00	NCSSL	NO	BSL
	108-10-1	4-Methyl-2-pentanone	5.8E-04 J	9.1E-04 J	MG/KG	IR66-TW-S06-09C	3/17	0.0076 - 0.013	9.1E-04	N/A	5.3E+02 N	N/A	N/A	NO	BSL
	67-64-1	Acetone	ND	ND	MG/KG		0/16	0.0076 - 0.013	1.3E-02	N/A	6.1E+03 N	2.4E+01	NCSSL	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.1E+00 C*	7.3E-03	NCSSL	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.7E-01 C	2.9E-03	NCSSL	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.1E+01 C*	1.9E-02	NCSSL	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	8.2E+01 N	3.8E+00	NCSSL	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.1E-01 C	2.0E-03	NCSSL	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.9E+01 N	4.5E-01	NCSSL	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.5E+03 N	1.6E+01	NCSSL	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.9E-01 C	3.4E-01	NCSSL	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.2E+01 N	1.5E-02	NCSSL	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.6E+01 N	3.6E-01	NCSSL	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.2E+02 S	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.8E-01 C	1.9E-03	NCSSL	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.8E+01 N	2.9E+01	NCSSL	NO	DLBSL
	100-41-4	Ethylbenzene	7.2E-04 J	9.4E-04 J	MG/KG	IR66-TW-S07-09C	4/17	0.0076 - 0.013	9.4E-04	N/A	5.4E+00 C	8.1E+00	NCSSL	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.1E+02 N	1.3E+00	NCSSL	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	7.8E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	5.7E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	5.2E-03 J	5.3E-02	MG/KG	IR66-TW-S06-09C	5/17	0.0076 - 0.013	5.3E-02	N/A	1.1E+01 C	2.3E-02	NCSSL	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	4.3E+01 C	8.5E-02	NCSSL	NO	DLBSL

APPENDIX D

TABLE D-2.22

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3 Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	100-42-5	Styrene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.3E+02 N	9.2E-01	NCSSL	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	5.5E-01 C	5.0E-03	NCSSL	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	5.0E+02 N	5.5E+00	NCSSL	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.5E+01 N	5.1E-01	NCSSL	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	1.7E+00 C*	2.3E-03	NCSSL	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	2.8E+00 C	1.8E-02	NCSSL	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	7.9E+01 N	2.4E+01	NCSSL	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.0E-02 C	1.9E-04	NCSSL	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/17	0.0076 - 0.013	1.3E-02	N/A	6.3E+01 N	6.0E+00	NCSSL	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.1E+02 S	4.3E+01	NCSSL	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.2E+02 N	1.4E+00	NCSSL	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.8E+02 S	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.9E+01 N	4.1E-03	NCSSL	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.1E+01 N	1.6E+00	NCSSL	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.1E+01 N	4.0E-01	NCSSL	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/17	0.42 - 0.55	5.5E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.4E+02 N	8.4E+00	NCSSL	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.4E+02 N	1.1E+01	NCSSL	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.7E+03 N	6.6E+02	NCSSL	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.1E+00 C	2.5E-02	NCSSL	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL

APPENDIX D

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Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	56-55-3	Benzo(a)anthracene	7.0E-03 J	7.9E-03 J	MG/KG	IR66-TW-S01-09C	5/17	0.053 - 0.069	7.9E-03	N/A	1.5E-01 C	1.8E-01	NCSSL	NO	BSL
	50-32-8	Benzo(a)pyrene	1.4E-03 J	1.4E-03 J	MG/KG	IR66-TW-S02-09C : IR66-TW-S09-09C	2/17	0.0056 - 0.0073	1.4E-03	N/A	1.5E-02 C	5.9E-02	NCSSL	NO	BSL
	205-99-2	Benzo(b)fluoranthene	1.8E-03 J	2.0E-03 J	MG/KG	IR66-TW-S05-09C	3/17	0.053 - 0.069	2.0E-03	N/A	1.5E-01 C	6.0E-01	NCSSL	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.7E+02 N	3.6E+02	NCSSL	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.5E+00 C	5.9E+00	NCSSL	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.1E-01 C	1.4E-04	NCSSL	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.5E+01 C*	7.2E+00	NCSSL	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.6E+02 C*	1.5E+02	NCSSL	NO	DLBSL
	105-60-2	Caprolactam	7.8E-02 J	2.6E-01	MG/KG	IR66-TW-S10-09C	8/17	0.21 - 0.28	2.6E-01	N/A	3.1E+03 N	1.8E+01	NCSSL	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.5E+01 C	1.8E+01	NCSSL	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	1.3E-02	1.4E-02	MG/KG	IR66-TW-S05-09C : IR66-TW-S09-09C	3/17	0.0056 - 0.0073	1.4E-02	N/A	1.5E-02 C	1.9E-01	NCSSL	NO	BSL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	7.8E+00 N	4.7E+00	NCSSL	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	4.9E+03 N	3.7E+01	NCSSL	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+02 N	1.9E+01	NCSSL	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/17	0.22 - 0.46	4.6E-01	N/A	3.5E+01 C*	3.8E+01	NCSSL	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.3E+02 N	3.3E+02	NCSSL	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	2.3E+02 N	5.6E+01	NCSSL	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.0E-01 C	2.6E-03	NCSSL	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+00 C**	8.7E-03	NCSSL	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	2.6E-02 J	2.8E-02 J	MG/KG	IR66-TW-S09-09C	3/17	0.053 - 0.069	2.8E-02	N/A	1.5E-01 C	2.0E+00	NCSSL	NO	BSL
	78-59-1	Isophorone	ND	ND	MG/KG		0/17	0.053 - 0.069	6.9E-02	N/A	5.1E+02 C*	2.1E-01	NCSSL	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	3.6E+00 C*	2.1E-01	NCSSL	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	9.1E-03 J	9.1E-03 J	MG/KG	IR66-IS01-09C	1/17	0.027 - 0.035	9.1E-03	N/A	6.9E-02 C	N/A	N/A	NO	BSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/17	0.018 - 0.023	2.3E-02	N/A	8.9E-01 C	3.1E-02	NCSSL	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.7E+03 N	5.7E+01	NCSSL	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.8E+03 N	2.3E-01	NCSSL	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/17	0.21 - 0.28	2.8E-01	N/A	1.7E+02 N	2.2E+02	NCSSL	NO	DLBSL
	7429-90-5	**Aluminum**	**3.9E+02**	**1.1E+04**	**MG/KG**	**IR66-IS03-09C**	**17/17**	**10.5 - 13.6**	**1.1E+04**	**1.0E+04**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/10	0.79 - 0.93	9.3E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	**3.2E-01 J**	**1.0E+01**	**MG/KG**	**IR66-IS03-09C**	**16/17**	**0.52 - 0.68**	**1.0E+01**	**2.1E+00**	**3.9E-01 C***	**5.8E-03**	**NCSSL**	**YES**	**ASL**
	7440-39-3	Barium	8.4E-01 J	2.6E+01	MG/KG	IR66-IS03-09C	17/17	2.1 - 2.7	2.6E+01	1.7E+01	1.5E+03 N	5.8E-01	NCSSL	NO	BSL
	7440-41-7	Beryllium	6.9E-02 J	1.5E+00	MG/KG	IR66-TW-S04-09C	15/17	0.26 - 0.34	1.5E+00	1.7E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	1.1E-01 J	1.2E-01 J	MG/KG	IR66-TW-S04-09C	2/17	0.26 - 0.34	1.2E-01	2.3E-02	7.0E+00 N	3.0E-03	NCSSL	NO	BSL
	7440-70-2	Calcium	2.0E+02 J	8.7E+03 J	MG/KG	IR66-IS04-09C	12/17	261 - 341	8.7E+03	4.4E+02	N/A	N/A	N/A	NO	NUT

APPENDIX D

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Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-47-3	**Chromium**	**1.5E+00 J**	**2.0E+01 J**	**MG/KG**	**IR66-IS03-09C**	**17/17**	**0.52 - 0.68**	**2.0E+01**	**1.5E+01**	**2.9E-01 C**	**3.8E-03**	**NCSSL**	**YES**	**ASL**
	7440-48-4	**Cobalt**	**2.9E-01 J**	**5.6E+00**	**MG/KG**	**IR66-IS03-09C**	**8/17**	**0.78 - 1**	**5.6E+00**	**8.2E-01**	**2.3E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	4.0E-01 J	5.0E+00	MG/KG	IR66-IS03-09C	14/17	0.52 - 0.68	5.0E+00	2.6E+00	3.1E+02 N	7.0E-01	NCSSL	NO	BSL
	7439-89-6	**Iron**	**2.8E+02**	**1.6E+04 J**	**MG/KG**	**IR66-IS03-09C**	**17/17**	**5.2 - 6.8**	**1.6E+04**	**5.4E+03**	**5.5E+03 N**	**1.5E-01**	**NCSSL**	**YES**	**ASL**
	7439-92-1	Lead	8.6E-01	1.3E+01	MG/KG	IR66-IS03-09C	17/17	0.16 - 0.2	1.3E+01	8.5E+00	4.0E+02 NL	2.7E-01	NCSSL	NO	BSL
	7439-95-4	Magnesium	6.9E+01 J	1.3E+03 J	MG/KG	IR66-IS03-09C	16/17	261 - 341	1.3E+03	3.6E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	**Manganese**	**1.1E+00**	**2.1E+02 J**	**MG/KG**	**IR66-TW-S04-09C**	**17/17**	**0.78 - 1**	**2.1E+02**	**9.3E+00**	**1.8E+02 N**	**6.5E-02**	**NCSSL**	**YES**	**ASL**
	7439-97-6	Mercury	ND	ND	MG/KG		0/17	0.032 - 0.044	4.4E-02	7.1E-02	2.3E+00 N	1.0E-03	NCSSL	NO	DLBSL
	7440-02-0	Nickel	2.4E-01 J	1.2E+01	MG/KG	IR66-IS03-09C	17/17	0.52 - 0.68	1.2E+01	2.3E+00	1.5E+02 N	1.3E-01	NCSSL	NO	BSL
	7440-09-7	Potassium	1.2E+02 J	1.3E+03 J	MG/KG	IR66-IS03-09C	15/17	261 - 341	1.3E+03	3.6E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.1E-01 J	4.2E-01	MG/KG	IR66-IS04-09C	2/17	0.26 - 0.34	4.2E-01	5.1E-01	3.9E+01 N	2.1E-03	NCSSL	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/17	0.52 - 0.68	6.8E-01	1.3E-01	3.9E+01 N	3.4E-03	NCSSL	NO	DLBSL
	7440-23-5	Sodium	6.8E+01 J	6.8E+01 J	MG/KG	IR66-IS04-09C	1/17	261 - 341	6.8E+01	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/17	0.42 - 2.5	2.5E+00	3.8E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	8.4E-01 J	2.6E+01	MG/KG	IR66-IS04-09C	17/17	0.78 - 1	2.6E+01	1.7E+01	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	5.5E-01 J	4.3E+01	MG/KG	IR66-IS03-09C	5/17	1 - 1.5	4.3E+01	6.6E+00	2.3E+03 N	1.2E+00	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.
[3] Background values are two times the arithmetic mean basewide background subsurface soil concentrations.
[4] Oak Ridge National Laboratory (ORNL). November 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for p-Cresol used as surrogate for 4-methylphenol.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for Anthracene used as surrogate for Phenanthrene.
RSL value for Manganese (Non-diet) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for Methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Pyrene used as surrogate for Benzo(g,h,i)perylene.
[5] Rationale Co

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)
- Below Background Level (BBK)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = concentration exceeds Csat, used Csat as screening value
NCSSL = North Carolina Soil Screening Levels (NCDENR, 2010)
mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.22a

Step 2 Soil Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Subsurface Soil

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)								
Aluminum	17 / 17	1.1E+04	IR66-IS03-09C	7.7E+04	1	0.1		Nervous System
Arsenic	16 / 17	1.0E+01	IR66-IS03-09C	3.9E-01	1E-06		3E-05	
Chromium	17 / 17	2.0E+01 J	IR66-IS03-09C	2.9E-01	1E-06		7E-05	
Cobalt	8 / 17	5.6E+00	IR66-IS03-09C	2.3E+01	1	0.2		Thyroid
Iron	17 / 17	1.6E+04 J	IR66-IS03-09C	5.5E+04	1	0.3		Gastrointestinal
Manganese	17 / 17	2.1E+02 J	IR66-TW-S04-09C	1.8E+03	1	0.1		CNS
Cumulative Corresponding Hazard Index[d]						**0.8**		
Cumulative Corresponding Cancer Risk[e]							**1E-04**	
						Total Nervous System/CNS HI =		0.3
						Total Thyroid HI =		0.2
						Total Gastrointestinal HI =		0.3

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Informatic

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

mg/kg = milograms per kilogram

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.22b

Step 3 Surface Soil Screening - Risk Ratio, 95% UCL

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Subsurface Soil

Analyte	Detection Frequency	UCL		UCL Rationale	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (mg/kg)									
Arsenic	16 / 17	5.7E+00	95% KM	1, 3	3.9E-01	1E-06		1E-05	
Chromium	17 / 17	1.0E+01	App. Gamma	1, 3	2.9E-01	1E-06		4E-05	
Cumulative Corresponding Hazard Index[d]							**NA**		
Cumulative Corresponding Cancer Risk[e]								**5E-05**	

[a] Corresponding Hazard Index equals UCL divided by the RSL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals UCL divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05,

Constituents selected as COPCs are indicated by shading.

mg/kg = milligrams per kilogram

HI = Hazard Index

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations

in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier Chebyshev (95% KM); 95% Approximate Gamma UCL (App. Gamma)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Test indicates data are gamma distributed.

(4) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

APPENDIX D

TABLE D-2.23

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Groundwater Site 66	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, NC2CLGW	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	6.7E-02 C	2.0E-01	15A NCAC 2L	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	15A NCAC 2L	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.4E+00 C	6.0E+00	15A NCAC 2L	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.1E-01 C**	7.0E+01	MCL, NC2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	15A NCAC 2L		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	15A NCAC 2L		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	15A NCAC 2L	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	15A NCAC 2L		
	78-93-3	2-Butanone	ND	ND	UG/L		0/12	3 - 3	3.0E+00	N/A	7.1E+02 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.7E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	5.8E+00	5.8E+00	UG/L	IR66-TW06-09C	1/12	2.5 - 2.5	5.8E+00	N/A	2.2E+03 N	6.0E+03	15A NCAC 2L	NO	BSL
	71-43-2	Benzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	15A NCAC 2L		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-01	15A NCAC 2L		
	75-25-2	Bromoform	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	15A NCAC 2L		
	74-83-9	Bromomethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	1.8E-01 J	6.4E-01 J	UG/L	IR66-TW06-09C	2/12	1 - 1	6.4E-01	N/A	1.0E+02 N	7.0E+02	15A NCAC 2L	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	15A NCAC 2L		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	15A NCAC 2L		
	75-00-3	Chloroethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	15A NCAC 2L	NO	DLBSL
	67-66-3	**Chloroform**	**1.1E-01 J**	**1.7E+00**	**UG/L**	**IR66-TW01-09C**	**2/12**	**1 - 1**	**1.7E+00**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**15A NCAC 2L**		
	74-87-3	Chloromethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00		1.9E+01 N	3.0E+00	15A NCAC 2L	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.23

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	15A NCAC 2L		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	15A NCAC 2L	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	15A NCAC 2L		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	6.8E+01 N	7.0E+01	15A NCAC 2L	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.2E+01 C	2.0E+01	15A NCAC 2L	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	MCL, 15A NCAC 2L	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	15A NCAC 2L		
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.1E-01 C	5.0E+00	MCL	YES	DLASL
												7.0E-01	15A NCAC 2L		
	108-88-3	Toluene	1.2E-01 J	1.2E-01 J	UG/L	IR66-TW12-09C	1/12	1 - 1	1.2E-01	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	15A NCAC 2L		
	79-01-6	Trichloroethene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.0E+00 C	5.0E+00	MCL	NO	DLBSL
												3.0E+00	15A NCAC 2L		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.3E+02 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.6E-02 C	2.0E+00	MCL	YES	DLASL
												3.0E-02	15A NCAC 2L		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	2.0E+01 N	1.0E+04	MCL	NO	DLBSL
												5.0E+02	15A NCAC 2L		
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	3.7E+01 N	7.0E+01	MCL, NC2CLGW	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	1.1E+01 N	1.0E+02	MCL, 15A NCAC 2L	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/12	1 - 1	1.0E+00	N/A	4.3E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+02 N	4.0E+02	15A NCAC 2L	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	7.3E+01 N	1.0E+02	15A NCAC 2L	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	7.3E+00 N	N/A	N/A	YES	DLASL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+01 N	4.0E-01	15A NCAC 2L	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.5E+01 N	3.0E+01	15A NCAC 2L	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.23

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	N/A	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	1.4E+00 J	1.4E+00 J	UG/L	IR66-TW06-09C	1/12	9.2 - 9.8	1.4E+00	N/A	1.8E+01 N	4.0E+01	15A NCAC 2L	NO	BSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	3.4E+00 C*	N/A	N/A	YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/12	23 - 24	2.4E+01	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.2E+02 N	8.0E+01	15A NCAC 2L	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.2E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+02 N	N/A	NA	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.1E+03 N	2.0E+03	15A NCAC 2L	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-01 C	3.0E+00	MCL, 15A NCAC 2L	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	15A NCAC 2L		
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.1E+02 N	2.0E+02	15A NCAC 2L	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-01 C	5.0E-01	15A NCAC 2L	YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.5E+01 C	1.0E+03	15A NCAC 2L	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.8E+03 N	4.0E+03	15A NCAC 2L	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	N/A	N/A		NO	DLBSL
	218-01-9	Chrysene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E+00 C	5.0E+00	15A NCAC 2L	YES	DLASL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+02 N	7.0E+02	15A NCAC 2L	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	4.8E+00 C	1.0E+02	15A NCAC 2L	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-03 C	5.0E-03	15A NCAC 2L	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E+03 N	6.0E+03	15A NCAC 2L	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	N/A	N/A		NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.5E+02 N	3.0E+02	15A NCAC 2L	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	15A NCAC 2L		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	8.6E-01 C*	4.0E-01	15A NCAC 2L	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.2E+01 N	5.0E+01	MCL	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	2.9E-02 C	5.0E-02	15A NCAC 2L	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	7.1E+01 C	4.0E+01	15A NCAC 2L	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.4E-01 C*	6.0E+00	15A NCAC 2L	YES	DLASL

APPENDIX D

TABLE D-2.23

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	98-95-3	Nitrobenzene	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.2E-01	C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND		ND		UG/L		0/12	23 - 24	2.4E+01	N/A	1.7E-01	C	1.0E+00	MCL	YES	DLASL
															3.0E-01	15A NCAC 2L		
	85-01-8	Phenanthrene	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	2.4E-01	1.1E+03	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	108-95-2	Phenol	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	9.0E+00	1.1E+03	N	3.0E+01	15A NCAC 2L	NO	DLBSL
	129-00-0	Pyrene	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	2.4E-01	1.1E+02	N	2.0E+02	15A NCAC 2L	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.1E+01	N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.2E-02	C	3.0E-02	15A NCAC 2L	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	4.8E+00	C	6.0E+00	MCL	YES	DLASL
															3.0E+00	15A NCAC 2L		
	621-64-7	n-Nitroso-di-n-propylamine	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	9.6E-03	C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND		ND		UG/L		0/12	9.2 - 9.8	9.8E+00	N/A	1.4E+01	C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**2.0E+02**	**J**	**6.6E+03**		**UG/L**	**IR66-TW03-09C**	**10/12**	**200 - 200**	**6.6E+03**	**1.9E+03**	**3.7E+03**	**N**	**50 - 200**	**SMCL**	**YES**	**ASL**
	7440-36-0	Antimony	ND		ND		UG/L		0/12	15 - 15	1.5E+01	3.3E+00	1.5E+00	N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	3.3E+00	J	3.3E+00	J	UG/L	IR66-TW03-09C	1/12	10 - 10	3.3E+00	5.8E+00	4.5E-02	C	1.0E+01	MCL, 15A NCAC 2L	NO	BBK
	7440-39-3	Barium	9.3E+00	J	8.8E+01		UG/L	IR66-TW09-09C	12/12	40 - 40	8.8E+01	8.6E+01	7.3E+02	N	2.0E+03	MCL, 15A NCAC 2L	NO	BSL
															7.0E+02	15A NCAC 2L		
	7440-41-7	Beryllium	ND		ND		UG/L		0/12	5 - 5	5.0E+00	3.1E-01	7.3E+00	N	4.0E+00	MCL	NO	DLBSL
	7440-43-9	Cadmium	ND		ND		UG/L		0/12	5 - 5	5.0E+00	3.6E-01	1.8E+00	N	5.0E+00	MCL	YES	DLASL
															2.0E+00	15A NCAC 2L		
	7440-70-2	Calcium	2.0E+03	J	7.5E+04		UG/L	IR66-TW11-09C	12/12	5000 - 5000	7.5E+04	6.9E+04	N/A		N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**2.0E+00**	**J**	**3.0E+01**		**UG/L**	**IR66-TW06-09C**	**9/12**	**10 - 10**	**3.0E+01**	**3.1E+00**	**4.3E-02**	**C**	**1.0E+02**	**MCL**	**YES**	**ASL**
															1.0E+01	**15A NCAC 2L**		
	7440-48-4	**Cobalt**	**5.4E+00**	**J**	**1.7E+01**		**UG/L**	**IR66-TW10D-09C**	**3/12**	**15 - 15.01**	**1.7E+01**	**3.4E+00**	**1.1E+00**	**N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.1E+01		1.1E+01		UG/L	IR66-TW11-09C	1/12	10 - 10	1.1E+01	2.8E+00	1.5E+02	N	1.3E+03	MCL	NO	BSL
															1.0E+03	15A NCAC 2L		
	7439-89-6	**Iron**	**5.0E+02**		**2.7E+04**		**UG/L**	**IR66-TW09-09C**	**12/12**	**100 - 100**	**2.7E+04**	**6.0E+03**	**2.6E+03**	**N**	**3.0E+02**	**MCL, 15A NCAC 2L**	**YES**	**ASL**
	7439-92-1	Lead	5.0E+00		5.0E+00		UG/L	IR66-TW06-09C	1/12	3 - 3	5.0E+00	2.8E+00	1.5E+01		1.5E+01	MCL, 15A NCAC 2L	NO	BSL
	7439-95-4	Magnesium	1.2E+03	J	9.1E+03		UG/L	IR66-TW09-09C	10/12	5000 - 5000	9.1E+03	6.4E+03	N/A		N/A	N/A	NO	NUT
	7439-96-5	**Manganese**	**1.8E+01**		**2.7E+03**		**UG/L**	**IR66-TW10D-09C**	**12/12**	**15 - 15**	**2.7E+03**	**2.1E+02**	**8.8E+01**	**N**	**5.0E+01**	**15A NCAC 2L**	**YES**	**ASL**
	7439-97-6	Mercury	ND		ND		UG/L		0/12	0.2 - 0.2	2.0E-01	1.0E-01	1.1E+00	N	2.0E+00	MCL	NO	DLBSL
															1.0E+00	15A NCAC 2L		
	7440-02-0	Nickel	4.7E+00	J	2.9E+01		UG/L	IR66-TW10D-09C	10/12	10 - 10	2.9E+01	8.0E+00	7.3E+01	N	1.0E+02	15A NCAC 2L	NO	BSL
	7440-09-7	Potassium	1.0E+03	J	2.8E+03	J	UG/L	IR66-TW09-09C	10/12	5000 - 5000	2.8E+03	3.3E+03	N/A		N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND		ND		UG/L		0/12	5 - 5	5.0E+00	3.1E+00	1.8E+01	N	5.0E+01	MCL, 15A NCAC 2L	NO	DLBSL
															2.0E+01	15A NCAC 2L		
	7440-22-4	Silver	ND		ND		UG/L		0/12	10 - 10	1.0E+01	7.7E-01	1.8E+01	N	2.0E+01	15A NCAC 2L	NO	DLBSL
	7440-23-5	Sodium	6.9E+03		5.1E+04		UG/L	IR66-TW01-09C	12/12	5000 - 5000	5.1E+04	2.3E+04	N/A		N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND		ND		UG/L		0/12	2 - 2	2.0E+00	3.8E+00	N/A		2.0E+00	15A NCAC 2L	NO	DLBSL
	7440-62-2	Vanadium	7.7E+00	J	8.8E+00	J	UG/L	IR66-TW06-09C	2/12	15 - 15	8.8E+00	4.7E+00	1.8E+01	N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	6.0E+00	J	2.0E+01	J	UG/L	IR66-TW10D-09C	8/12	25 - 25	2.0E+01	4.2E+01	1.1E+03	N	1.0E+03	15A NCAC 2L	NO	BSL

APPENDIX D

TABLE D-2.23

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values are two times the arithmetic mean basewide background shallow groundwater concentrations.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Chromium(VI) used as surrogate for chromium.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (mercuric chloride) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively, but discussed in uncertainty assessment

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)
- Below Background Level (BBK)

MCL = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards
SMCL = Secondary MCL
15A NCAC 2L = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
ND = Not detected
ug/L = micrograms per liter
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N/A = Not available

APPENDIX D

TABLE D-2.23a

Step 2 Groundwater Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Groundwater

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk/HI Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Volatile Organic Compounds (ug/L)								
Chloroform	**2 / 12**	**1.7E+00**	**IR66-TW01-09C**	**1.9E-01**	**1E-06**		**9E-06**	
Metals (ug/L)								
Aluminum	**10 / 12**	**6.6E+03**	**IR66-TW03-09C**	**3.7E+04**	**1**	**0.2**		**Nervous System**
Chromium	**9 / 12**	**3.0E+01**	**IR66-TW06-09C**	**4.3E-02**	**1E-06**		**7E-04**	
Cobalt	**3 / 12**	**1.7E+01**	**IR66-TW10D-09C**	**1.1E+01**	**1**	**1.6**		**Thyroid**
Iron	**12 / 12**	**2.7E+04**	**IR66-TW09-09C**	**2.6E+04**	**1**	**1.0**		**Gastrointestinal**
Manganese	**12 / 12**	**2.7E+03**	**IR66-TW10D-09C**	**8.8E+02**	**1**	**3.1**		**CNS**
Cumulative Corresponding Hazard Index[d]						**5.8**		
Cumulative Corresponding Cancer Risk[e]							**7E-04**	

Total Nervous System/CNS HI =	3.3
Total Thyroid HI =	1.6
Total Gastrointestinal HI =	1.0

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable HI level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

CNS = Central Nervous System

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.23b

Step 3 Risk Ratio Screening for Groundwater, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Groundwater

Analyte	Detection Frequency	UCL		UCL Rationale	Tap Water RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Volatile Organic Compounds (ug/L)									
Chloroform	**2 / 12**	**1.4E+00**	**97.5% KM**	**4**	**1.9E-01**	**1E-06**		**7E-06**	
Metals (ug/L)									
Aluminum	**10 / 12**	**3.1E+03**	**95% KM-BCA**	**1, 3**	**3.7E+04**	**1**	**0.1**		**Nervous System**
Chromium	**9 / 12**	**1.8E+01**	**95% KM**	**1, 3**	**4.3E-02**	**1E-06**		**4E-04**	
Cobalt	**3 / 12**	**8.8E+00**	**95% KM-t**	**1, 2**	**1.1E+01**	**1**	**0.8**		**Thyroid**
Iron	12 / 12	1.3E+04	App. Gamma	1, 3	2.6E+04	1	0.5		Gastrointestinal
Manganese	**12 / 12**	**8.7E+02**	**App. Gamma**	**1, 3**	**8.8E+02**	**1**	**1.0**		**CNS**
Cumulative Corresponding Hazard Index[d]							**2.4**		
Cumulative Corresponding Cancer Risk[e]								**4E-04**	

Total Nervous System/CNS HI =	1.1
Total Thyroid HI =	0.8
Total Gastrointestinal HI =	0.5

[a] Corresponding Hazard Index equals UCL divided by the RSL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals UCL divided by the RSL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05,

Constituents selected as COPCs are indicated by shading.

For duplicate sample results, the maximum value was used in the calculation. When only 1 detect was present for a COPC, 1/2 sample quantitation limit was used as a proxy concentration for the non-detects.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations

in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); 95% Kaplan-Meier Chebyshev (95% KM); 95% Kaplan-Meier (percentile Bootstrap) (95% KM-b); 95% Approximate Gamma UCL (App. Gamma); 97.5% Kaplan-Meier Chebyshev (97.5% KM)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.

(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.

(3) Test indicates data are gamma distributed.

(4) Distribution tests are inconclusive

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online].

Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

ug/L = micrograms per liter

HI = Hazard Index

APPENDIX D

TABLE D-2.24

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Indoor Air	67-64-1	Acetone	5.8E+00		5.8E+00		UG/L	IR66-TW06-09C	1/12	2.5 - 2.5	5.8E+00	N/A	2.8E+06	N	N/A	N/A	NO	BSL
Site 66	75-15-0	Carbon disulfide	1.8E-01	J	6.4E-01	J	UG/L	IR66-TW06-09C	2/12	1 - 1	6.4E-01	N/A	1.5E+02	N	N/A	N/A	NO	BSL
	67-66-3	Chloroform	1.1E-01	J	1.7E+00		UG/L	IR66-TW01-09C	2/12	1 - 1	1.7E+00	N/A	8.0E+01	M	N/A	N/A	NO	BSL
	108-88-3	Toluene	1.2E-01	J	1.2E-01	J	UG/L	IR66-TW12-09C	1/12	1 - 1	1.2E-01	N/A	2.6E+03	N	N/A	N/A	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values not available.
[4] Generic groundwater vapor intrusion screening levels (USEPA, 2002); see Table 2.24a.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
N/A = Not available
ug/L = microgram per liter
M = Maximum Contaminant Level from EPA's National Primary Drinking Water Standards

APPENDIX D
TABLE D-2.24a
Calculation of Target Groundwater Concentrations for Vapor Intrusion Screening[1]
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

CAS Number	Constituent	Target Indoor Air Concentration[2], carcinogen (C_{Cancer}) ug/m^3	Target Indoor Air Concentration[2], non-carcinogen ($C_{non\text{-}Cancer}$) ug/m^3	Target Indoor Air Concentration ($C_{target,ia}$) ug/m^3	System Temperature Henry's Law Constant (H'TS)[3] Dimensionless	MCL ug/L	Final Target Groundwater Concentration[4] (C_{gw}) ug/L
67-64-1	Acetone	N/A	3.2E+03	3.2E+03	1.1E-03	N/A	2.8E+06
75-15-0	Carbon disulfide	N/A	7.3E+01	7.3E+01	5.0E-01	N/A	1.5E+02
67-66-3	Chloroform	1.1E-01	1.0E+01	1.1E-01	1.2E-01	8.0E+01	8.0E+01
108-88-3	Toluene	N/A	5.2E+02	5.2E+02	2.0E-01	1.0E+03	2.6E+03

Notes:
[1] The vapor intrusion screening levels [i.e., target groundwater concentration from Table 2c, Subsurface Vapor Intrusion Guidance (EPA, 2002)] were updated using the methodology presented in Appendix D of Subsurface Vapor Intrusion Guidance (EPA, 2002).
[2] Values are Regional Screening Levels (RSL) for residential air (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Oak Ridge National Laboratory (ORNL), November 2010].
[3] H'TS = Henry's Law Constant (dimensionless) at system (i.e., groundwater) temperature. Calculated using equation 3 from USEPA, 2004. The H'TS for cyclohexane is the Henry's Law Constant (dimensionless) (H') at reference temperature due to the lack of chemical specific data available to calculate the H'TS.
Average groundwater temperature of 19.01°C used in calculations.
[4] If the calculated groundwater target concentration is less than the Maximum Contaminant Level (MCL) for the compound, the target concentration is set at the MCL (EPA, 2002).

MCL = maximum contaminant level (EPA, 2010).
N/A = Not available
ug/L = microgram per liter
ug/m^3 = microgram per cubic meter

Variables	Units	Value
$C_{target,ia}$ = Target indoor air conc., minimum	ug/m^3	Solved by Eq. 1
C_{gw} = Target groundwater conc.	ug/L	Solved by Eq. 2
TCR = Target Cancer Risk	unitless	1.00E-06
THQ = Target Hazard Quotient	unitless	1
H'TS = Dimensionless Henry's Law Constant	unitless	Chemical-specific
alpha (α) = Attenuation Factor	unitless	0.001

Equation 1: $C_{target,ia}$ = Minimum(C_{cancer}, $C_{non\text{-}cancer}$)
Equation 2: Cgw = $C_{target,ia}$ x 10^{-3} m^3/L * 1/H'TS * 1/α

APPENDIX D

TABLE D-2.25

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Water Site 66	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+02 A			NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.7E-01 A	4.0E+00	N	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.9E+03 R-n			NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.9E-01 A			YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.4E+00 R-c			NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.3E+02 A			NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.5E+01 A			NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.2E-04 R-c			YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.5E-03 R-c			YES	DLASL
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.2E+02 A			NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.8E-01 A			YES	DLASL
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.0E-01 A			YES	DLASL
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.2E+02 A			NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.3E+01 A			NO	DLBSL
	78-93-3	2-Butanone	ND	ND	UG/L		0/2	3 - 3	3.0E+00	N/A	7.1E+02 R-n			NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.7E+00 R-n			NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+02 R-n			NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/2	2.5 - 2.5	2.5E+00	N/A	2.2E+03 R-n			NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.2E+00 A	5.1E+01	N	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.5E-01 A			YES	DLASL
	75-25-2	Bromoform	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.3E+00 A			NO	DLBSL
	74-83-9	Bromomethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.7E+01 A			NO	DLBSL
	75-15-0	Carbon disulfide	3.0E-01 J	8.9E-01 J	UG/L	IR66-SW02-09C	2/2	1 - 1	8.9E-01	N/A	1.0E+02 R-n			NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.3E-01 A	1.6E+00	N	YES	DLASL
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.0E+02 A			NO	DLBSL
	75-00-3	Chloroethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.1E+03 R-n			NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.7E+00 A			NO	DLBSL
	74-87-3	Chloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.9E+01 R-n			NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.7E+01 R-n			NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.4E-01 A			YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.3E+03 R-n			NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.0E-01 A			YES	DLASL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.9E+01 R-n			NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	5.3E+02 A			NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.8E+01 R-n			NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.7E+03 R-n			NO	DLBSL

APPENDIX D

TABLE D-2.25

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	N/A			NO	NTX
	75-09-2	Methylene chloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	4.6E+00 A			NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.2E+01 R-c			NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.6E+02 R-n			NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	6.9E-01 A	3.3E+00	N	YES	DLASL
	108-88-3	Toluene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.3E+03 A			NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.0E+01 R-n			NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	3.4E-01 A			YES	DLASL
	79-01-6	Trichloroethene	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.5E+00 A	3.0E+01	N	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	1.3E+02 R-n			NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.5E-02 A	2.4E+00	N	YES	DLASL
	1330-20-7	Xylene, total	ND	ND	UG/L		0/2	1 - 1	1.0E+00	N/A	2.0E+01 R-n			NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.8E+02 R-n			NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.4E+03 A			NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	1.8E+03 A			NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.4E+00 A			YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	7.7E+01 A			NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E+02 A			NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	6.9E+01 A			NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.1E-01 A			YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.7E+00 R-n			YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.0E+03 A			NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	8.1E+01 A			NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.5E+01 R-n			NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.8E+02 R-n			NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	3.7E+01 R-n			NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.8E+01 R-n			NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.1E-02 A			YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	N/A			NO	NTX
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	1.3E+01 A			YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	N/A			NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.0E+03 A			NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/1	9.8 - 11	1.1E+01	N/A	3.4E-01 R-c			YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	N/A			NO	NTX
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.8E+01 R-n			NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	3.4E+00 R-c*			YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	1.7E+01 A			YES	DLASL

APPENDIX D

TABLE D-2.25

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	6.7E+02 A			NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	6.7E+02 A			NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.7E+02 R-n			NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	8.3E+03 A			NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.90E-01 C			YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.70E+02 N			NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	N/A			NO	NTX
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.1E+01 R-n			YES	DLASL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.0E-02 A			YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.2E+00 A			YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.5E+03 A			NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.8E+03 R-n			NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	N/A			NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A			YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A			YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.7E+00 R-n			YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.7E+04 A			NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.7E+05 A			NO	DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.0E+03 A			NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	N/A			NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.3E+02 A			NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.1E+03 A			NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.8E-04 A			YES	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	4.4E-01 A	1.8E+01	N	YES	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	4.0E+01 A			NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.4E+00 A			YES	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.8E-03 A	3.1E-02	N	YES	DLBSL
	78-59-1	Isophorone	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.5E+01 A			NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.4E-01 R-c*			YES	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	5.0E-03 A			YES	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	3.3E+00 A			YES	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	1.7E+01 A			NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/2	24 - 28	2.8E+01	N/A	2.7E-01 A			YES	DLBSL

APPENDIX D

TABLE D-2.25

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	8.3E+02 A			NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	2.1E+04 A			NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/2	9.6 - 11	1.1E+01	N/A	8.3E+02 A			NO	DLBSL
	7429-90-5	**Aluminum**	**1.7E+02**	**8.1E+03 J**	**UG/L**	**IR66-SW03-09C**	**2/2**	**50 - 5000**	**8.1E+03**	**N/A**	**3.7E+03 N**			**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	UG/L		0/2	3.75 - 375	3.8E+02	N/A	5.6E+00 A			YES	DLASL
	7440-38-2	**Arsenic**	**4.6E+00 J**	**4.6E+00 J**	**UG/L**	**IR66-SW03-09C**	**1/2**	**1.25 - 250**	**4.6E+00**	**N/A**	**1.8E-02 A**	**1.0E+01**	**N**	**YES**	**ASL**
	7440-39-3	Barium	9.1E+00 J	2.8E+02	UG/L	IR66-SW03-09C	2/2	10 - 1000	2.8E+02	N/A	1.0E+03 A			NO	BSL
	7440-41-7	Beryllium	ND	ND	UG/L		0/2	1.25 - 125	1.3E+02	N/A	7.3E+00 N			YES	DLASL
	7440-43-9	Cadmium	ND	ND	UG/L		0/2	1.25 - 125	1.3E+02	N/A	5.0E+00 A			YES	DLASL
	7440-70-2	Calcium	2.0E+03	2.5E+05 J	UG/L	IR66-SW03-09C	2/2	1250 - 125000	2.5E+05	N/A	N/A			NO	NUT
	7440-47-3	Chromium	ND	ND	UG/L		0/2	1.25 - 250	2.5E+02	N/A	1.0E+02 A			YES	DLASL
	7440-48-4	Cobalt	ND	ND	UG/L		0/2	3.12 - 375	3.8E+02	N/A	1.1E+00 N			YES	DLASL
	7440-50-8	Copper	6.0E+00 J	6.0E+00 J	UG/L	IR66-SW03-09C	1/2	2.5 - 250	6.0E+00	N/A	1.3E+03 A			NO	BSL
	7439-89-6	**Iron**	**9.8E+01**	**1.8E+04**	**UG/L**	**IR66-SW03-09C**	**2/2**	**25 - 2500**	**1.8E+04**	**N/A**	**2.6E+03 N**			**YES**	**ASL**
	7439-92-1	Lead	9.6E+00 J	9.6E+00 J	UG/L	IR66-SW03-09C	1/2	0.75 - 75	9.6E+00	1.5E+01	1.5E+01 M			NO	BSL
	7439-95-4	Magnesium	4.4E+03 J	6.9E+05	UG/L	IR66-SW03-09C	2/2	1250 - 125000	6.9E+05	N/A	N/A			NO	NUT
	7439-96-5	**Manganese**	**1.7E+00 J**	**2.1E+02**	**UG/L**	**IR66-SW03-09C**	**2/2**	**3.75 - 375**	**2.1E+02**	**N/A**	**8.8E+01 N**			**YES**	**ASL**
	7439-97-6	Mercury	ND	ND	UG/L		0/2	0.2 - 0.2	2.0E-01	N/A	1.0E+00 R-n			YES	DLASL
	7440-02-0	Nickel	ND	ND	UG/L		0/2	2.5 - 250	2.5E+02	N/A	7.3E+01 N			YES	DLASL
	7440-09-7	Potassium	2.1E+03 J	2.0E+05	UG/L	IR66-SW03-09C	2/2	1250 - 125000	2.0E+05	N/A	N/A			NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/2	1.5 - 125	1.3E+02	N/A	5.0E+01 A			YES	DLBSL
	7440-22-4	Silver	ND	ND	UG/L		0/2	1.25 - 250	2.5E+02	N/A	1.8E+01 R-n			YES	DLBSL
	7440-23-5	Sodium	4.6E+04	5.4E+06	UG/L	IR66-SW03-09C	2/2	1250 - 125000	5.4E+06	N/A	N/A			NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/2	2 - 10	1.0E+01	N/A	N/A			NO	DLBSL
	7440-62-2	Vanadium	1.3E+01 J	1.3E+01 J	UG/L	IR66-SW03-09C	1/2	3.12 - 375	1.3E+01	N/A	1.8E+01 N			NO	BSL
	7440-66-6	Zinc	3.6E+01 J	3.6E+01 J	UG/L	IR66-SW03-09C	1/2	5 - 625	3.6E+01	N/A	7.4E+03 A			NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening.

[3] Background values not available.

[4] North Carolina WQS for Human Health and Water Supply, Federal Ambient Water Quality Criteria, Consumption of Water and Organisms, or USEPA Regional Screening Levels for Tap Water.
Safe Drinking Water Act Action Level for Lead used as screening level for lead.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N = North Carolina 15A NCAC 2B Human Health, Amended Feb. 2010.
A= Federal Ambient Water Quality Criteria, Consumption of Water and Organisms
M = Action level for lead from Federal Drinking Water MCLs

APPENDIX D

TABLE D-2.25

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

RSL value for p-cresol used as surrogate for 4-methylphenol.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

R-n = USEPA Regional Screening Level, noncarcinogenic
(therefore, RSL divided by 10, see text)
R-c = USEPA Regional Screening Level, Carcinogenic
R-c* = R-n screening level < 100x R-c screening level, therefore
R-n screening value/10 used as screening level
R-c** = R-n screening level < 10x R-c screening level, therefore
R-n screening value/10 used as screening level
N/A = Not available

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA but discussed in uncertainty assessment

Deletion Reason: Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
No Toxicity Information (NTX)
Essential Nutrient (NUT)

APPENDIX D

TABLE D-2.25.Supplement A

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Water Site 66	**7429-90-5**	**Aluminum**	**1.7E+02**	**8.1E+03 J**	**UG/L**	**IR66-SW03-09C**	**2/2**	**10.5 - 52.6**	**8.1E+03**	**N/A**	**3.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-38-2	**Arsenic**	**4.6E+00 J**	**4.6E+00 J**	**UG/L**	**IR66-SW03-09C**	**1/2**	**0.52 - 2.6**	**4.6E+00**	**N/A**	**4.5E-02 C**	**N/A**	**N/A**	**YES**	**ASL**
	7439-89-6	**Iron**	**9.8E+01**	**1.8E+04**	**UG/L**	**IR66-SW03-09C**	**2/2**	**5.2 - 26.3**	**1.8E+04**	**N/A**	**2.6E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7439-96-5	**Manganese**	**1.7E+00 J**	**2.1E+02**	**UG/L**	**IR66-SW03-09C**	**2/2**	**15 - 375**	**2.1E+02**	**N/A**	**8.8E+01 N**	**N/A**	**N/A**	**YES**	**ASL**

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening.

[3] Background values not available.

[4] Tap Water Regional Screening Levels. Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = not available/not applicable

C = Carcinogenic

N = Noncarcinogenic

APPENDIX D

TABLE D-2.25a

Step 2 Surface Water Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Surface Water

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Tap Water RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
Metals (ug/L)								
Aluminum	2 / 2	8.1E+03 J	IR66-SW03-09C	3.7E+04	1	0.2		Nervous System
Arsenic	1 / 2	4.6E+00 J	IR66-SW03-09C	4.5E-02	1E-06		1E-04	
Iron	2 / 2	1.8E+04	IR66-SW03-09C	2.6E+04	1	1		Gastrointestinal
Manganese	2 / 2	2.1E+02	IR66-SW03-09C	8.8E+02	1	0.2		CNS
Cumulative Corresponding Hazard Indexd						**1**		
Cumulative Corresponding Cancer Riske							**1E-04**	
						Total Nervous System/CNS HI =		0.5
						Total Gastrointestinal HI =		1

[a] Corresponding Hazard Index equals maximum detected concentration divided by the SL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the SL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

ug/L = microgram per liter

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D

TABLE D-2.26

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Sediment Site 66	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	6.4E+02 S	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	5.6E-01 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	9.1E+02 S	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	3.3E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.4E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/3	0.0076 - 0.023	2.3E-02	N/A	6.2E+00 C**	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/4	0.0038 - 0.011	1.1E-02	N/A	5.4E-03 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	3.4E-02 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.9E+02 N	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	4.3E-01 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	8.9E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.8E+03 N	N/A	N/A	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	1.4E-03 J	1.5E-03 J	MG/KG	IR66-SD01D-09C	2/4	0.001 - 0.001	1.5E-03	N/A	5.3E+02 N	N/A	N/A	NO	BSL
	67-64-1	Acetone	1.4E-01	4.1E-01	MG/KG	IR66-SD04-09C	3/4	0.0076 - 0.023	4.1E-01	N/A	6.1E+03 N	N/A	N/A	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.1E+00 C*	N/A	N/A	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	6.1E+01 C*	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	5.0E-03 J	3.8E-02	MG/KG	IR66-SD02-09C	2/4	0.0076 - 0.023	3.8E-02	N/A	8.2E+01 N	N/A	N/A	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.9E+01 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.5E+03 N	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.9E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	1.4E-03 J	3.3E-03 J	MG/KG	IR66-SD04-09C	2/4	0.001 - 0.001	3.3E-03	N/A	1.2E+01 N	N/A	N/A	NO	BSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.6E+01 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.2E+02 S	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	6.8E-01 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	5.4E+00 C	N/A	N/A	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	2.1E+02 N	N/A	N/A	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	7.8E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	5.7E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	1.1E+01 C	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.26

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	4.3E+01 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	6.3E+02 N	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	5.5E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	5.0E+02 N	N/A	N/A	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/4	0.001 - 0.001	1.0E-03	N/A	1.5E+01 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	2.8E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	7.9E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	6.0E-02 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/4	0.0076 - 0.023	2.3E-02	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.1E+02 S	N/A	N/A	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.2E+02 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.8E+02 S	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	N/A	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/4	0.42 - 2.1	2.1E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.4E+02 N	N/A	N/A	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.4E+02 N	N/A	N/A	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	7.8E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.7E+03 N	N/A	N/A	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.1E+00 C	N/A	N/A	NO	DLBSL

APPENDIX D

TABLE D-2.26

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	100-52-7	Benzaldehyde	1.4E-01 J	1.4E-01 J	MG/KG	IR66-SD01-09C	1/4	0.21 - 1	1.4E-01	N/A	7.8E+02 N	N/A	N/A	NO	BSL
	56-55-3	Benzo(a)anthracene	ND	ND	MG/KG		0/4	0.053 - 0.26	2.6E-01	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	50-32-8	**Benzo(a)pyrene**	**2.8E-03 J**	**8.0E-03 J**	**MG/KG**	**IR66-SD02-09C**	**3/4**	**0.0056 - 0.028**	**8.0E-03**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**cPAH**
	205-99-2	Benzo(b)fluoranthene	ND	ND	MG/KG		0/4	0.011 - 0.120	1.2E-01	N/A	1.5E-01 C	N/A	N/A	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.7E+02 N	N/A	N/A	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.5E+00 C	N/A	N/A	NO	DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.6E+02 C*	N/A	N/A	NO	DLBSL
	105-60-2	Caprolactam	2.6E-01 J	2.6E-01 J	MG/KG	IR66-SD01-09C	1/4	0.0092 - 0.011	2.6E-01	N/A	3.1E+03 N	N/A	N/A	NO	BSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.5E+01 C	N/A	N/A	NO	DLBSL
	53-70-3	**Dibenz(a,h)anthracene**	**6.4E-02**	**6.4E-02**	**MG/KG**	**IR66-SD02-09C**	**1/4**	**0.0092 - 0.011**	**6.4E-02**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**ASL**
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	7.8E+00 N	N/A	N/A	NO	BSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	4.9E+03 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/4	0.22 - 1.7	1.7E+00	N/A	3.5E+01 C*	N/A	N/A	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.3E+02 N	N/A	N/A	NO	DLBSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.3E+02 N	N/A	N/A	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.0E-01 C	N/A	N/A	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**1.2E-01 J**	**1.2E-01 J**	**MG/KG**	**IR66-SD02-09C**	**1/4**	**0.053 - 0.26**	**1.2E-01**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**cPAH**
	78-59-1	Isophorone	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	5.1E+02 C*	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.6E+00 C*	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/4	0.018 - 0.087	8.7E-02	N/A	8.9E-01 C	N/A	N/A	NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.7E+03 N	N/A	N/A	NO	DLBSL
	108-95-2	Phenol	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	1.8E+03 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	1.7E+02 N	N/A	N/A	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	2.1E-01 C	N/A	N/A	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/4	0.21 - 1	1.0E+00	N/A	3.5E+01 C*	N/A	N/A	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/4	0.027 - 0.13	1.3E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/4	0.0092 - 0.011	1.1E-02	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**2.2E+03**	**7.8E+03**	**MG/KG**	**IR66-SD04-09C**	**4/4**	**10.5 - 52.6**	**7.8E+03**	**N/A**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/4	15 - 375	3.8E+02	N/A	3.1E+00 N	N/A	N/A	YES	DLASL
	7440-38-2	**Arsenic**	**9.8E-01**	**4.0E+00**	**MG/KG**	**IR66-SD02-09C**	**4/4**	**0.52 - 2.6**	**4.0E+00**	**N/A**	**3.9E-01 C***	**N/A**	**N/A**	**YES**	**ASL**
	7440-39-3	Barium	2.3E+00 J	2.9E+01	MG/KG	IR66-SD04-09C	4/4	2.1 - 10.5	2.9E+01	N/A	1.5E+03 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	3.0E-01 J	7.2E-01 J	MG/KG	IR66-SD02-09C	4/4	5 - 125	7.2E-01	N/A	1.6E+01 N	N/A	N/A	NO	BSL

APPENDIX D

TABLE D-2.26

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Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66

Scenario Timeframe: Current/Future
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Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-43-9	Cadmium	ND	ND	MG/KG		0/4	0.26 - 1.3	1.3E+00	N/A	7.0E+00 N	N/A	N/A	NO	DLBSL
	7440-70-2	Calcium	8.5E+02	7.0E+03	MG/KG	IR66-SD02-09C	4/4	261 - 1320	7.0E+03	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**2.2E+00**	**8.0E+00**	**MG/KG**	**IR66-SD04-09C**	**4/4**	**10 - 250**	**8.0E+00**	**N/A**	**2.9E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	Cobalt	7.0E-01 J	7.3E-01 J	MG/KG	IR66-SD04-09C	2/4	0.78 - 3.9	7.3E-01	N/A	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	1.3E+00	5.8E+00	MG/KG	IR66-SD02-09C	4/4	0.52 - 2.6	5.8E+00	N/A	3.1E+02 N	N/A	N/A	NO	BSL
	7439-89-6	**Iron**	**1.3E+03**	**7.4E+03**	**MG/KG**	**IR66-SD02-09C**	**4/4**	**5.2 - 26.3**	**7.4E+03**	**N/A**	**5.5E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7439-92-1	Lead	8.6E+00	1.7E+01	MG/KG	IR66-SD02-09C	4/4	0.16 - 0.79	1.7E+01	N/A	4.0E+02 NL	N/A	N/A	NO	BSL
	7439-95-4	Magnesium	1.4E+03 J	9.4E+03 J	MG/KG	IR66-SD02-09C	4/4	261 - 1320	9.4E+03	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	4.1E+00	1.3E+01	MG/KG	IR66-SD02-09C	4/4	15 - 375	1.3E+01	N/A	1.8E+02 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	4.3E-02 J	1.0E-01 J	MG/KG	IR66-SD02-09C	4/4	0.2 - 0.2	1.0E-01	N/A	2.3E+00 N	N/A	N/A	NO	BSL
	7440-02-0	Nickel	1.6E+00	4.6E+00	MG/KG	IR66-SD02-09C	4/4	0.52 - 2.6	4.6E+00	N/A	1.5E+02 N	N/A	N/A	NO	BSL
	7440-09-7	Potassium	4.4E+02 J	2.0E+03	MG/KG	IR66-SD02-09C	4/4	5000 - 125000	2.0E+03	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	4.9E-01	1.4E+00	MG/KG	IR66-SD02-09C	3/4	0.26 - 1.3	1.4E+00	N/A	3.9E+01 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/4	0.52 - 2.6	2.6E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	7440-23-5	Sodium	5.7E+03	4.2E+04	MG/KG	IR66-SD02-09C	4/4	261 - 1320	4.2E+04	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/4	0.42 - 2.5	2.5E+00	N/A	N/A	N/A	N/A	NO	DLBSL
	7440-62-2	Vanadium	4.6E+00	1.5E+01	MG/KG	IR66-SD02-09C	4/4	0.78 - 3.9	1.5E+01	N/A	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	5.8E+00	2.1E+01	MG/KG	IR66-SD02-09C	4/4	25 - 625	2.1E+01	N/A	2.3E+03 N	N/A	N/A	NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If not detected (ND), used maximum detection limit.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November 2010. Residential Soil Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for Manganese (Non-diet) used as surrogate for manganese.

RSL value for Mercury (mercuric chloride) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA but discussed in uncertainty assessment

Deletion Reason:
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

C = Carcinogenic

N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

S = RSL concentration exceeds Csat, used Csat as screening value

N/A = Not available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

mg/kg = milligram per kilogram

APPENDIX D

TABLE D-2.26a

Step 2 Sediment Screening - Risk Ratio, Maximum Detected Concentration

Limited Site Assessment, MCB Camp Lejeune, North Carolina

Site 66 - Sediment

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ[c]
PAHs (mg/kg)								
Benzo(a)pyrene	3 / 4	8.0E-03 J	IR66-SD02-09C	1.5E-02	1E-06		5E-07	
Dibenz(a,h)anthracene	1 / 4	6.4E-02	IR66-SD02-09C	1.5E-02	1E-06		4E-06	
Indeno(1,2,3-cd)pyrene	1 / 4	1.2E-01 J	IR66-SD02-09C	1.5E-01	1E-06		8E-07	
Metals (mg/kg)								
Aluminum	4 / 4	7.8E+03	IR66-SD04-09C	7.7E+04	1	0.1		Nervous System
Arsenic	4 / 4	4.0E+00	IR66-SD02-09C	3.9E-01	1E-06		1E-05	
Chromium	4 / 4	8.0E+00	IR66-SD04-09C	2.9E-01	1E-06		3E-05	
Iron	4 / 4	7.4E+03	IR66-SD02-09C	5.5E+04	1	0.1		Gastrointestinal
Cumulative Corresponding Hazard Index[d]						**0.2**		
Cumulative Corresponding Cancer Risk[e]							**4E-05**	

Total Nervous System HI =	0.1
Total Gastrointestinal HI =	0.1

[a] Corresponding Hazard Index equals maximum detected concentration divided by the SL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the SL divided by the acceptable risk level.

[c] Target organs were obtained from Oak Ridge National Laboratory's (ORNL, 2010) Risk Assessment Information System (RAIS), available online at http://rais.ornl.gov and from EPA's (2010) Integrated Risk Information (IRIS).

[d] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Constituent of Potential Concern

HI = Hazard Index

mg/kg = milligrams per kilogram

RSL = Oak Ridge National Laboratory (ORNL). November 2010. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

APPENDIX D
Table D-2.27

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build9
User Name: CH2M HILL
Date: 12/07/2009
Site Name: MCB Camp Lejeune, North Carolina
Operable Unit: Limited Site Assessment Site 53
Run Mode: Site Risk Assessment

Water Data
Water Data
Site Specific Arithmetic Mean = 15.4 ug/L
==========

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 15.400 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used

Average multiple source concentration: 150.000 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

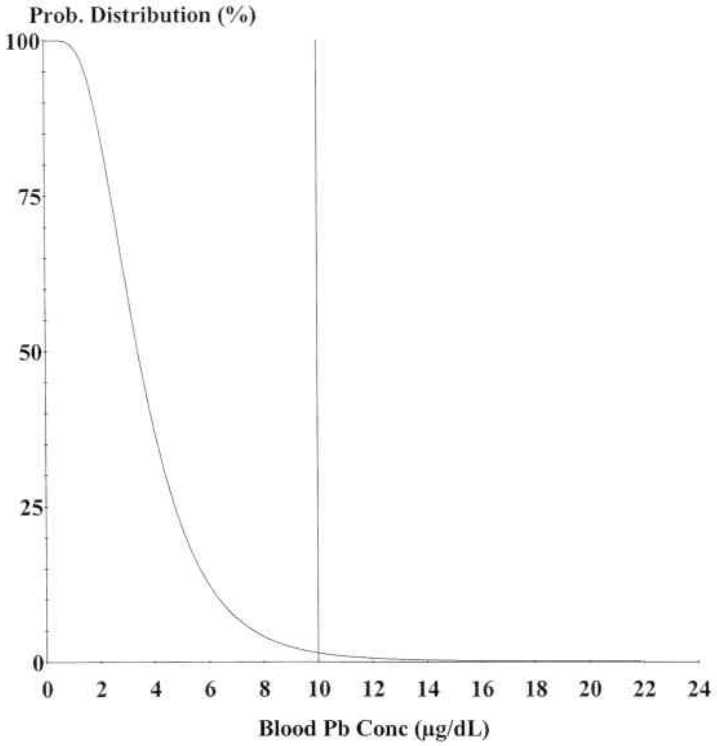
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.048	0.000	1.429
1-2	0.034	0.891	0.000	3.502
2-3	0.062	0.980	0.000	3.685
3-4	0.067	0.949	0.000	3.798
4-5	0.067	0.924	0.000	4.012
5-6	0.093	0.978	0.000	4.261
6-7	0.093	1.063	0.000	4.352

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.081	6.580	3.6
1-2	6.354	10.782	4.4
2-3	6.430	11.157	4.2
3-4	6.502	11.317	4.0
4-5	4.903	9.906	3.4
5-6	4.443	9.775	3.1
6-7	4.214	9.723	2.8



Cutoff = 10.000 µg/dl
Geo Mean = 3.578
GSD = 1.600
% Above = 1.439

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment

Appendix D
Table D-2.28

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build9
User Name: CH2M HILL
Date: 12/07/2009
Site Name: MCB Camp Lejeune, North Carolina
Operable Unit: Limited Site Assessment, Site 61
Run Mode: Site Risk Assessment

Water Data
Site Specific Arithmetic Mean = 50.2 ug/L
==========

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 50.200 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

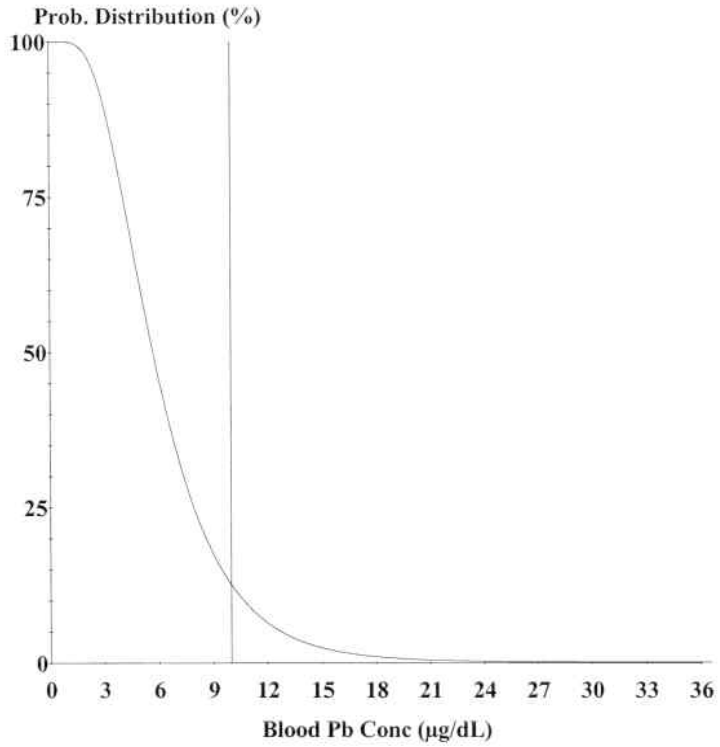
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.014	0.000	4.503
1-2	0.034	0.838	0.000	10.730
2-3	0.062	0.927	0.000	11.358
3-4	0.067	0.903	0.000	11.779
4-5	0.067	0.882	0.000	12.490
5-6	0.093	0.936	0.000	13.295
6-7	0.093	1.021	0.000	13.615

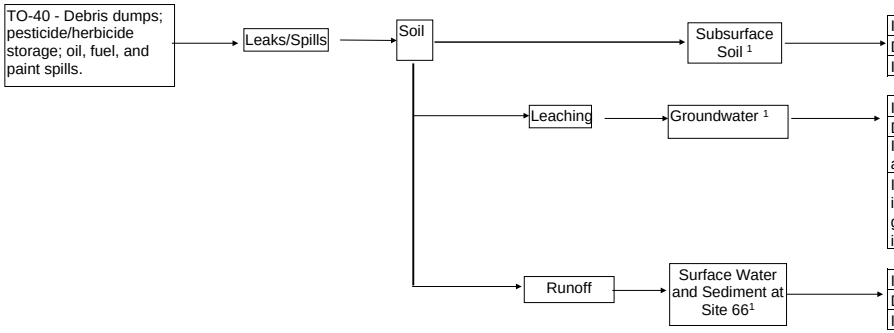
Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.945	9.483	5.1
1-2	5.973	17.576	7.0
2-3	6.080	18.427	6.8
3-4	6.186	18.935	6.6
4-5	4.682	18.121	6.1
5-6	4.253	18.578	5.7
6-7	4.044	18.773	5.3



Cutoff = 10.000 µg/dl
Geo Mean = 5.986
GSD = 1.600
% Above = 13.747

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment
Comment = Geometric Mean



	Potential Human Receptors					
	Current/Future			Future		
Exposure Route	**Industrial Worker**	**Trespasser/ Visitor Adult**	**Trespasser/ Visitor Youth**	**Residential Adult**	**Residential Child**	**Construction Worker**
Ingestion	X	X	X	X	X	X
Dermal Contact	X	X	X	X	X	X
Inhalation	X	X	X	X	X	X
Ingestion	NA	NA	NA	X	X	NA
Dermal Contact	NA	NA	NA	X	X	X
Inhalation - ambient air	NA	NA	NA	X	X	X
Inhalation - vapor intrusion from groundwater to indoor air	X	NA	NA	X	X	NA
Ingestion	X	X	X	NA	NA	X
Dermal Contact	X	X	X	NA	NA	X
Inhalation	NA	NA	NA	NA	NA	NA

[1] Screening level evaluation only for: subsurface soil at all 9 Sites; sediment and surface water at Site 66; and groundwater at 8 Sites (4, 23, 38, 42, 53, 55, 61, and 66).

NA - Not Applicable or pathway is incomplete

X - Potentially complete exposure pathways

FIGURE D-1
Conceptual Site Model for HHRA
TO-40, Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66
Limited Site Assessment, MCB Camp Lejeune, North Carolina

Appendix E
Ecological Risk Screening

APPENDIX E

Ecological Risk Screening

1.0 Introduction

An ecological risk screen (ERS) was conducted for Installation Restoration (IR) Sites 4, 23, 38, 42, 53, 55, 61, 62, and 66. Results for constituents in soil, sediment (Site 66 only), groundwater, and surface water (Site 66 only) were screened against benchmarks intended to be protective of ecological receptors. All data considered in the screening were collected in 2009 and 2010. Because operations at these sites ceased decades ago, surface soils at these sites have likely been disturbed since site activities ceased and would not likely be representative of site conditions when the site was active. Consequently, it was assumed that contamination in surface soil currently present at the sites would not be representative of past site activities and surface soil samples were not collected per the *Confirmatory Sampling Work Plan for Sites 4, 23, 38, 42, 49, 53, 55, 61, 62, and 66 – MCB Camp Lejeune, North Carolina* (CH2M HILL, 2009). Consequently, subsurface soil was deemed more representative of soils that may have been present at the time of site operations. Estimated risk in subsurface soil was assumed to be representative of risk based on exposure to surface soil. Additionally, contaminant sources at several sites were rather benign (construction debris, landscape debris etc.) and are not likely to result in significant contamination.

Environmental Description

The following section presents site background and description for each of the nine sites. A reconnaissance-level survey of all sites was conducted by CH2M HILL personnel in December 2008.

<u>Site 4</u>

Site 4, the Sawmill Road Construction Debris Dump, consists of approximately 0.3 acres of undeveloped land on both sides of Old Sawmill Road. The site is undeveloped with sparse undergrowth and trees and the land generally slopes to the south toward an unnamed lake located approximately 100 feet from the site. A small drainage ditch flows under Old Sawmill Road from north to south toward the lake. Unpaved and unnamed roads providing access to the lake traverse the area south of Old Sawmill Road. According to the IAS report (WAR, 1983), the Sawmill Road Construction Debris Dump contains construction and demolition debris including wood, metal, asphalt, bricks, and concrete.

During a December 2008 site reconnaissance by CH2M HILL personnel it was noted that, debris was piled along the side of the road in the southern portion of the site and there was a cleared and elevated area on the north side of the road. The debris consisted of concrete and other construction material. Groundwater at this site may discharge to the downgradient freshwater lake.

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Site 23

Site 23, the Roads and Grounds, Building 1105, is located within the Hadnot Point Industrial Area (HPIA) and measures approximately 4,400 square feet. According to the IAS Report (WAR, 1983), this area was used for pesticide and herbicide storage and handling between 1957 and 1977. The site is developed with buildings, a paved parking lot, and road shoulder areas. The highest point is generally the center of the site with drainage flowing to the nearest associated storm drain on the roads adjacent to the site. No surface water or wetlands were observed at Site 23 during the December 2008 reconnaissance-level survey and the site is accessed by several driveways and adjacent roads. There are many existing monitoring wells within this area and an investigation in conjunction with a military construction (MILCON) project was recently conducted. The nearest surface water body, the New River, is about 1.5 miles from the site.

Site 38

Site 38, the Camp Geiger Construction Dump, consists of approximately 0.5 acres, located adjacent to NC Highway 17. The dump reportedly contains construction debris and landscape debris. According to IAS report (WAR, 1983), the dump was used until at least 1983. The site is undeveloped with heavy undergrowth and trees and the land generally slopes to the east. No surface water or wetlands were observed at Site 38 during the December 2008 reconnaissance-level survey by CH2M HILL personnel; however, according to the Integrated Natural Resources Management Plan (USMC, 2006), a forested wetland may exist adjacent to the site. Access to this site is limited by a chain link fence bordering the southbound lanes of Highway 17. Groundwater at this site flows to the east. The nearest surface water body, Brinson Creek, a tributary of the New River, is at least 2,500 feet east of the site.

Site 42

Site 42, the Building 705 Bachelor Officers Quarters (BOQ) Dump, consists of approximately 2.8 acres in the MCAS New River portion of the Base. The site is partially developed with buildings, parking spaces, and natural areas. The land generally slopes toward the north-northeast toward Stick Creek, a tributary of the New River. According to IAS report (WAR, 1983), the site was used from 1950 to 1960 and reportedly contains landscape and construction debris.

During the December 2008 reconnaissance-level survey by CH2M HILL, it was noted that a portion of the western site may be defined as wetland. Additionally, it was noted that there is an underground storage tank (UST) suspected to be present along the southern boundary of the site.

Site 53

Site 53, the MCAS Warehouse Building Area, is an area where used crankcase oil, waste oils, JP fuels, and paint thinners were reportedly sprayed on roads for dust control between 1970 and 1975, according to the IAS report (WAR, 1983). The site consists of approximately 3 miles of roadway (most of which forms a large circular loop) adjoining the southwest portion of the air station and is completely developed. Surface water runoff generally slopes toward the shoulders of the roads. One stormwater pond was observed near Site 53 between

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the buildings and a flight line. This stormwater pond is also designated as wetlands. Surface water runoff from Site 53 discharges directly into the stormwater pond or to the drainage ditches that flow to the stormwater pond. The site is approximately 0.5 miles to the north of an unnamed tributary.

During the 2008 site visit by CH2M HILL personnel, it was observed that this site is adjacent to an equipment storage and vehicle fueling area that contains aboveground storage tanks (ASTs) and oil-water separators (OWS).

Site 55

Site 55 consists of a 1-acre marina and recreation area named the Air Station East Perimeter Dump in the IAS report (WAR, 1983). The dump was used from the 1950s until 1960, and reportedly contains barrels of unknown contents or quantity, tires, trash of unknown content, metal planking, and telephone poles. The land slopes toward the southeast toward the New River. Most of the site can be accessed by roads and driveways. The western portion of the site is covered with underbrush. During the December 2008 site visit by CH2M HILL personnel, no debris or waste was observed. There is an underground storage tank along the eastern shore of the site.

Site 61

Site 61 is Rhodes Point Road Dump, located near the Camp Devil Dog area. According to the IAS report (WAR, 1983), the site was reported to include bivouac waste (likely household-type debris), and includes an area of 8 to 10 acres. During the December 2008 site visit by CH2M HILL personnel, vegetation was too thick to access the site. Based on aerial photographs, there appears to be no aquatic features. The site generally slopes to the east toward Town Creek, a tributary to the New River. Groundwater may discharge to a small freshwater creek located north of the site and then be carried east to Town Creek or discharge directly into Town Creek, located approximately 1 mile from the New River.

Site 62

Site 62, the Race Course Area Dump, is located 2 miles south of the New River and is approximately 1 to 2 acres in size. According to the IAS report (WAR, 1983), the site was reported to include bivouac waste (likely household-type debris). The site generally slopes to the south toward a small lake. The site is currently used for war games and site access/use is restricted. There are dirt roads present, however, vegetation is dense.

Site 66

Site 66, the Amphibious Tractor (AMTRAC) Landing Site and Storage, is located in the Courthouse Bay area and covers approximately 40 acres. According to the IAS report (WAR, 1983), the site was reported to have been utilized for vehicle maintenance during training activities beginning in the 1950s; however, the exact operations are unknown. The site supports some areas of standing water and may support wetlands. The site slopes south and west to the New River.

Screening Methodology

An ecological checklist, as required by North Carolina Department of Environment and Natural Resources (NCDENR, 2003), was completed for each site as presented in

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Attachment 1. If sites were considered to support potentially complete exposure pathways, they were further evaluated quantitatively as discussed below.

Soil samples collected between 0 and 5 feet bgs were used in this ERS. If a sample was collected beneath pavement, it was not included in the dataset. It should be noted that surface soil data were not collected at any of the sites. Estimated risk in subsurface soil was assumed to be representative of risk based on exposure to surface soil. Additionally, surface soils at these sites have likely been disturbed since site activities ceased and would not likely be representative of site conditions when the site was active.

All available groundwater, surface water (Site 66 only), and sediment (Site 66 only) data for each site were included in the ERS. The majority of groundwater and surface water samples were not filtered.

For each medium (subsurface soil, groundwater, sediment, and/or surface water), the maximum and average concentrations are presented along with representative Ecological Screening Values (ESVs) intended to be protective of ecological receptors. Hazard Quotients (HQs) were calculated by dividing these statistics by the ESVs. It should be noted that ESVs for inorganics in water are generally based on dissolved concentrations and comparing them to total metals concentrations is conservative and may over-represent risk.

For locations with multiple data points (i.e., a parent and duplicate sample were available), data were reduced to the value of the greatest detected concentration or highest detection limit if there was no detection. Where average concentrations are reported, one half of the detection limit was used for nondetects as the representative concentration when determining the average.

For soil, the EPA Ecological Soil Screening Levels (EcoSSL) (EPA, 2009) were preferentially selected over Region 4 values (EPA, 2001). When no EcoSSL was available for a constituent, the Region 4 value was selected.

A selection hierarchy was also applied to surface water. The NRWQC was preferentially selected over the Region 4 value. However, when no NRWQC was available for a constituent, the Region 4 value was selected as the ESV for that constituent. Marine or freshwater ESVs were used to screen groundwater concentrations assuming that groundwater may discharge to nearby water bodies. When it was uncertain if the receiving water body was marine or freshwater, the lowest of freshwater and marine ESVs were selected.

For sediment, EPA Region 4 values were used.

When ESVs were not available using the selected hierarchy above, supplemental ESVs were identified as available.

A base background study was conducted at MCB Camp Lejeune in June and July 2000 (Baker, 2001). As part of the ERS, subsurface soil and groundwater background concentrations were compared to site-specific media concentrations. Additional lines of evidence in the evaluation include the frequency of detection, frequency of exceedance, magnitude of exceedance, and identification of potential laboratory contaminants.

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2.0 Results of Screening

Results of the screening are presented below, by site and medium.

Site 4

Data included in the ERS included seven suburface soil samples and three groundwater samples. Analyses performed include semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), and inorganics. **Table E-1** presents the subsurface soil screen and **Table E-2** presents the groundwater screen. Groundwater was screened against freshwater ESVs based on the potential for discharge to enter the downgradient freshwater lake.

Subsurface Soil

Maximum detected concentrations of aluminum, iron, and vanadium in subsurface soil exceeded ESVs. Iron and vanadium, however, were both found to be consistent with background. While the maximum and mean HQs for aluminum both exceeded one, the maximum aluminum concentration (15,600 mg/kg) was within the background range (260 – 16,800 mg/kg) suggesting that aluminum is consistent with background (Baker, 2001).

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that very few organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors from exposure to soils at Site 4 are unlikely.

Groundwater

Similar to subsurface soil, the only detected analytes with HQs above one in groundwater were aluminum, iron, and vanadium. All three analytes were either consistent with background (less than 2 times the mean background value) or within the background range (less than the maximum detected background value) and are not considered site-related contaminants.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only two organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater that may discharge into surface water downgradient of Site 4 are unlikely.

Site 23

Site 23 is almost entirely paved and only one soil sample, IR23-IS01, was collected in an unpaved area. Analyses performed include VOCs, SVOCs, pesticides/PCBs, and inorganics. This sample was collected at 6 feet bgs and exceeds the relevant depth range (0-5 feet bgs) for this ERS. However, because this was the only sample collected in an unpaved area, it

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was used in the ERS to screen for risk. There is minimal habitat. Ecological exposures are unlikely but one soil sample was included in the ERS to be conservative. No groundwater data were included in this evaluation because the site is located 1.5 miles from a surface water body. **Table E-3** presents the subsurface soil screen for Site 23.

Maximum detected concentrations of aluminum, iron, and vanadium in subsurface soil exceeded ESVs. However, all three inorganics were found to be consistent with background.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that no organic analytes were detected, most inorganics were found to be consistent with background, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 23 are unlikely.

Site 38

Data included eight subsurface soil samples and three groundwater samples. Analyses performed include VOCs, SVOCs, and metals. **Table E-4** presents the subsurface soil screen while **Table E-5** presents the groundwater screen. Groundwater data were screened against marine ESVs based on the potential to discharge to tributaries of the New River.

Subsurface Soil

Maximum detected concentrations of three inorganics in subsurface soil (aluminum, iron, and vanadium) were greater than the associated ESVs. However, maximum concentrations of aluminum, iron, and vanadium were all found to be consistent with background and are not considered site-related contaminants.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only one organic analyte was detected, most inorganics were found to be consistent with background, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 38 are unlikely.

Groundwater

Cobalt and iron had HQs based on supplemental ESVs greater than one. However, both analytes were consistent with background and are not expected to pose a risk.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that no organic analytes were detected, most inorganics were found to be consistent with background, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater that may discharge into surface water downgradient of Site 38 are unlikely.

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Site 42

Data included seven subsurface soil samples and three groundwater samples. Analyses performed include VOCs, SVOCs, and metals. **Table E-6** presents the subsurface soil screen while **Table E-7** presents the groundwater screen. Groundwater data were screened against marine ESVs based on the potential to discharge to the New River and nearby tributaries. While samples were not collected from within the wetland onsite, soil data were collected across the site and do not indicate the presence of a significant source in the area.

Subsurface Soil

Maximum detected concentrations of six inorganics in subsurface soil (aluminum, cadmium, iron, lead, selenium, and vanadium) were greater than the associated ESVs. Maximum concentrations of aluminum, iron, and selenium were all found to be within the background range and are not considered site-related contaminants. Cadmium and lead both had low magnitude of exceedance based on the maximum concentration with HQs less than 2 suggesting low risk. Additionally, the mean-based HQs were both less than one. Only one of the seven vanadium concentrations (66.6 mg/kg) exceeded the maximum background value (39 mg/kg). The sample with the maximum vanadium concentration also had a field duplicate sample. The field duplicate sample had a lower vanadium concentration of 42.4 mg/kg which only barely exceeded the maximum background value of 39 mg/kg. Additionally, the mean concentration of vanadium (22.2 mg/kg) was less than the maximum background concentration of vanadium (39 mg/kg). Based on the range of background concentrations for vanadium in subsurface soil, the ESV for vanadium (7.8 mg/kg) is considered highly conservative. Consequently, vanadium concentrations are likely the result of naturally occurring concentrations and not a result of site activities.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that limited organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 42 are unlikely.

Groundwater

Copper, iron, manganese, and nickel were the only detected analytes with HQs greater than one. For copper, the magnitude of exceedance was low (maximum HQ = 1.68) and the maximum concentration (5.2 ug/L) barely exceeded the maximum background concentration (5.1 ug/L). While the HQs for iron and nickel were greater than one, concentrations in groundwater at the site were found to be within the background range. Manganese had a maximum-based HQ of 12.8 anda mean-based HQ of 4.61. Considering the maximum background concentration for manganese is 359 ug/L, the supplemental ESV of 100 ug/L is rather conservative. Additionally, inorganics in groundwater are based on total, rather than dissolved, concentrations and result in risk estimates that may be biased high. Because no other risk drivers were identified in groundwater, inorganics were generally found to be within background range, and concentrations are based on total metals, risk from manganese is considered low.

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All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only three organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater that may discharge into surface water downgradient of Site 42 are unlikely.

Site 53

Five subsurface soil samples and three groundwater samples (Table X) were included in this evaluation. Analyses performed include VOCs, SVOCs, pesticides/PCBs, and metals. It should be noted that groundwater arsenic results from IR53-TW03 in 2009 were replaced with newer results collected from this well in 2010. Site 53 consists of an area where used crankcase oil, waste oils, JP fuels, and paint thinners were reportedly sprayed on roads for dust control between 1970 and 1975. **Table E-8** presents the subsurface soil screen and **Table E-9** presents the groundwater screen. Groundwater data were screened against freshwater ESVs based on the potential for groundwater to discharge to nearby drainage ditches and stormwater pond.

Subsurface Soil

Five inorganics including aluminum, iron, lead, selenium, and vanadium had HQs greater than one. All but lead were within the background range and considered to be a result of natural variation. The maximum concentration of lead (13.7 mg/kg) barely exceeded the maximum background value (12.2 mg/kg) and the magnitude of exceedance was low (HQs less than 2).

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that limited organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 53 are unlikely.

Groundwater

Seven inorganics (aluminum, cadmium, copper, iron, lead, nickel, and vanadium) had HQs greater than one. While the maximum concentrations of aluminum and vanadium in groundwater exceeded the ESVs, concentrations in subsurface soil were within the background range, suggesting that both analytes are consistent with background. Copper, lead, and nickel all had a low magnitude of exceedance with maximum-based HQs less than 2. Cadmium was detected in one of three groundwater samples resulting in an HQ of 5.2. Cadmium was not identified as a risk driver in site soils and concentrations detected in groundwater are unlikely to have resulted from site activities. Additionally, because most ESVs are based on dissolved concentrations and available site data consists of total metals, risk is overestimated.

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All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only two organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater from Site 53 are unlikely.

Site 55

Five subsurface soil samples and three groundwater samples were included in this evaluation. Analyses performed include VOCs, SVOCs, pesticides/PCBs, herbicides, and metals. Site 55 consists of a dump that was used from the 1950s until 1960, and reportedly contains barrels of unknown contents or quantity, tires, trash of unknown content, metal planking, and telephone poles. **Table E-10** presents the subsurface soil screen and **Table E-11** presents the groundwater screen. Groundwater data were screened against marine ESVs based on the potential for groundwater to discharge to the New River.

Subsurface Soil

Five inorganics including aluminum, iron, lead, selenium, and vanadium and one pesticide (gamma BHC) had HQs greater than one. Iron, lead, selenium, and vanadium were all within the background range for subsurface soils. The maximum aluminum concentration (17,500 mg/kg) was only slightly greater than the maximum background concentration (16,800 mg/kg) while the average aluminum concentration (8,616 mg/kg) was well within the range of background. While gamma BHC had an HQ greater than one, only one of five concentrations exceeded the ESV and the magnitude of exceedance was low (maximum-based HQ = 3.4).

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that limited organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 55 are unlikely.

Groundwater

Copper, iron, lead, and nickel were the only analytes with HQs greater than one. Copper was detected in 2 of 3 samples and had a maximum-based HQ of 3.45. The mean-based HQ was only 2.54. Because concentrations were based on total copper, risk is likely overestimated. Iron had elevated HQs but the benchmark of 50 ug/L is highly conservative considering the maximum background value is 32,700 ug/L. Iron in unfiltered samples can be orders of magnitude higher than concentration in filtered samples (see total versus dissolved surface water data at Site 66). Considering that no other analytes were identified as risk drivers and iron in subsurface soils was within the background range, risk from iron in groundwater is considered insignificant. Of three detected lead concentrations, only one sample had a concentration that exceeded the ESV and the maximum-based HQ was only 1.67 with a mean-based HQ less than one. Nickel also exceeded the ESV in only one sample

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and had a maximum-based HQ of 6.87 and a mean-based HQ of 3.37. Additionally, lead, and nickel were all within background range in subsurface soils. Because inorganic concentrations in groundwater are based on total metals and most ESVs for inorganics are intended to be compared to dissolved concentrations, estimated risks are conservative and likely overestimated. Based on this and the generally low magnitude of exceedance for each analyte, risk to ecological receptors in the New River is considered low.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only five organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater from Site 55 are unlikely.

Site 61

Eight subsurface soil samples and three groundwater samples were included in this evaluation. Analyses performed include VOCs, SVOCs, and metals. Site 61 consists of a dump that was used for household-type waste. **Table E-12** presents the subsurface soil screen and **Table E-13** presents the groundwater screen. Groundwater data were screened against the lower of freshwater and marine ESVs based on the potential for groundwater to discharge to a freshwater creek or a tributary to the New River.

Subsurface Soil

Three inorganics including aluminum, iron, and vanadium and one VOC (chloroform) had HQs greater than one. The inorganics were all within the background range for subsurface soils. While chloroform had an HQ greater than one, only one of eight concentrations exceeded the ESV and the magnitude of exceedance was low (maximum-based HQ = 1.5). Additionally, chloroform is a known laboratory contaminant (DTSC, 2006).

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only five organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 61 are unlikely.

Groundwater

Eleven inorganics (aluminum, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, vanadium, and zinc) had HQs greater than one. All of these inorganics were either consistent with background or within the background range in site soils suggesting that concentrations in groundwater are not the result of site-related activities. Because groundwater samples were not filtered, reported concentrations are potentially the result of high levels of suspended solids in the samples. Turbidity was very high in SW03 (7500 NTU) and low in SW02 (8 NTU). Turbidity was not available for SW01 where the maximum concentrations of metals were most frequently detected. Additionally, because

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inorganic concentrations in groundwater are based on total metals and the majority of ESVs for inorganics are based on dissolved concentrations, estimated risks are conservative and likely overestimated. Based on this and the fact that inorganics were within background ranges for soil, risk to ecological receptors in the downgradient surface water bodies is considered low.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only two organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater from Site 61 are unlikely.

Site 62

One subsurface soil sample was included in this evaluation. Analyses performed include VOCs, SVOCs, and metals. Groundwater data were not collected at this site. Site 62 consists of a dump that was used for household-type waste. The lack of surface soil samples is an uncertainty related to ecological exposures; however, it is likely that surface soils in the area have been disturbed since the site was active and are no longer representative of past conditions. **Table E-14** presents the subsurface soil screen.

Only two inorganics (aluminum and iron) in subsurface soil had HQs greater than one. However, both analytes were consistent with background and are not considered to pose potential risk.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that very few organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 62 are unlikely.

Site 66

One subsurface soil sample, 12 groundwater samples, two surface water samples, and four sediment samples were included in the ERS. Analyses performed included VOCs, SVOCs, and metals. It should be noted that inorganic surface water sample results from IR66-SW02 collected in 2009 were replaced with newer results collected from the same location in 2010. Overall, contamination associated with this site is likely to be minimal based on the known site activities. **Table E-15** presents the subsurface soil screen, **Table E-16** presents the groundwater screen, **Table E-17** presents the surface water screen, and **Table E-18** presents the sediment screen.

<u>Subsurface Soil</u>

The maximum detected concentrations of aluminum and iron exceeded ESVs in soil. However, both concentrations of aluminum (1,680 mg/kg) and iron (709 mg/kg) were

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consistent with background at the site and significant risks to populations of ecological receptors are unlikely.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only one organic analyte was detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to soils at Site 66 are unlikely.

Groundwater

Maximum detected concentrations of cobalt, copper, iron, manganese and nickel exceeded ESVs in groundwater. While these analytes did exceed ESVs in groundwater, all concentrations in subsurface soils at the site were consistent with background. Because groundwater samples were not filtered, reported concentrations are potentially the result of high levels of suspended solids in the samples. Turbidity measurements were only available for TW06 (207 NTU) and were slightly elevated. Additionally, because inorganic concentrations in groundwater are based on total metals and the majority of inorganic ESVs are based on dissolved concentrations, estimated risks are conservative and likely overestimated. Based on this and the fact that inorganics were within background ranges for soil, risk to ecological receptors in the New River is considered low.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that very few organic analytes were detected, most inorganics were found to be within the background range, and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to groundwater from Site 66 are unlikely.

Surface Water

Maximum detected concentrations of total copper, iron, lead, and manganese in surface water exceeded their marine ESV. For copper, lead, and manganese the magnitudes of exceedance were low (HQs less than 2) and none of these analytes had HQs greater than one based on filtered samples. While iron had an elevated HQ based on total data, the magnitude of exceedance based on dissolved data was low.

All other analytes had HQs less than one, were not detected, lacked screening values, or were consistent with background. While several analytes lacked screening values and had resulting HQs above 1 based on the detection limit, it is unlikely that an actual risk exists based on the fact that only one organic analyte was detected and none of the detected analytes were identified as risk drivers. Consequently, significant risks to populations of ecological receptors exposed to surface water at Site 66 are unlikely.

Sediment

A single detection of dibenz(a,h)anthracene exceeded the ESV in sediment. All other polycyclic aromatic hydrocarbons (PAHs) sampled at Site 66 were either non-detect or

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detected at concentrations below the ESVs. The calculated total high molecular weight (HMW) PAH maximum concentration (203 µg/kg [calculated assuming nondetects equal zero]) was lower than the total HMW PAH sediment ESV (655 µg/kg) (EPA, 2001). Acetone also exceeded the ESV for sediment; however, the magnitude of exceedance was low (HQs less than 2.5) and acetone is a common laboratory contaminant (DTSC, 2006). Selenium also had a maximum-based HQ barely greater than 1 (HQ = 1.4) though the mean-based HQ was less than one. The magnitude of exceedance for selenium was low. Consequently, significant risks to populations of receptors from exposure to sediment constituents at Site 66 are unlikely.

3.0 Uncertainty

The majority of chemicals detected without ESVs were either essential nutrients (e.g., calcium and potassium) or VOCs. The nutrients occur naturally. Limited toxicological data are available for the effects of VOCs on ecological receptors because these chemicals typically are not ecological risk drivers. In some cases, such as with 2-butanone, acetone, chloroform, and bis(2-ethylhexyl)phthalate, the chemicals may be laboratory artifacts (DTSC, 2006).

Surface soil data were not collected at any site. The assumption is that site activities ceased so long ago that surface soil would not be representative of site-related contamination. Consequently, estimated risks in subsurface soils were assumed to be representative of risks in surface soil. This may over- or under-estimate risk.

Undetected chemicals were identified as posing no risk. Although some uncertainty is associated with this approach, it was assumed that if chemicals were present at ecologically relevant levels, they would be detected in some samples.

4.0 Summary

Based on the results of this screening, additional ecological investigation is not recommended for any site. Based on the collected data, risk posed by contaminants in soil, sediment, surface water, and groundwater were considered insignificant.

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Appendix E, Table E-1
Site 4 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	5.20 - 5.80	0 / 3	--	--	--	2.73	0.15	2.99	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
1,2-Dichloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	400	-- / --	0.030	0.014	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	700,000	-- / --	1.71E-05	7.86E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
1,4-Dichlorobenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
2-Butanone	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	50.0	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Bromodichloromethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	1,000,000	-- / --	0.000012	0.000006	--	--	NO	HQs less than one, not detected
Chlorobenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	50.0	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Chloroethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
Chloroform	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	1.00	-- / --	12.0	5.50	--	--	NO	Not detected
Chloromethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
Dibromochloromethane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	11.0 - 12.0	1 / 3	1.10	1.10	IR04-IS05-4-5-09C	4.20	2.70	8.75	50.0	0 / 3	0.022	0.084	--	--	NO	HQs less than one
Isopropylbenzene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	11.0 - 12.0	1 / 3	4.00	4.00	IR04-IS05-4-5-09C	5.17	1.04	6.92	2,000	0 / 3	0.0020	0.0026	--	--	NO	HQs less than one
Methyl-tert-butyl ether (MTBE)	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
Tetrachloroethene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
Toluene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	50.0	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	100	-- / --	0.12	0.055	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	1.00	-- / --	12.0	5.50	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	10.0	-- / --	1.20	0.55	--	--	NO	Not detected
Xylene, total	10.0 - 12.0	0 / 3	--	--	--	5.50	0.50	6.34	50.0	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	210 - 250	0 / 3	--	--	--	117	10.4	134	60,000	-- / --	0.0042	0.0019	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	420 - 490	0 / 3	--	--	--	233	20.2	267	4,000	-- / --	0.12	0.058	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	210 - 250	0 / 3	--	--	--	117	10.4	134	10,000	-- / --	0.025	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	210 - 250	0 / 3	--	--	--	117	10.4	134	3.00	-- / --	83.3	38.9	--	--	NO	Not detected
2,4-Dimethylphenol	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	420 - 490	0 / 3	--	--	--	233	20.2	267	20,000	-- / --	0.025	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,000	-- / --	0.25	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	210 - 250	0 / 3	--	--	--	117	10.4	134	10.0	-- / --	25.0	11.7	--	--	NO	Not detected
2-Methylnaphthalene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
2-Methylphenol	210 - 250	0 / 3	--	--	--	117	10.4	134	500	-- / --	0.50	0.23	--	--	NO	HQs less than one, not detected
2-Nitroaniline	420 - 490	0 / 3	--	--	--	233	20.2	267	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	420 - 490	0 / 3	--	--	--	233	20.2	267	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	420 - 490	0 / 3	--	--	--	233	20.2	267	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-1
Site 4 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chloroaniline	210 - 250	0 / 3	--	--	--	117	10.4	134	20,000	-- / --	0.013	0.0058	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	210 - 250	0 / 3	--	--	--	117	10.4	134	500	-- / --	0.50	0.23	--	--	NO	HQs less than one, not detected
4-Nitroaniline	420 - 490	0 / 3	--	--	--	233	20.2	267	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	420 - 490	0 / 3	--	--	--	233	20.2	267	7,000	-- / --	0.070	0.033	--	--	NO	HQs less than one, not detected
Acenaphthene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
Acenaphthylene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
Acetophenone	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
Atrazine	210 - 250	0 / 3	--	--	--	117	10.4	134	0.050	-- / --	5,000	2,333	--	--	NO	Not detected
Benzaldehyde	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	53.0 - 53.0	2 / 3	8.30	10.0	IR04-IS05-4-5-09C	14.9	10.1	31.9	1,100	0 / 3	0.0091	0.014	--	--	NO	HQs less than one
Benzo(a)pyrene	5.70 - 6.60	0 / 3	--	--	--	3.13	0.25	3.55	1,100	-- / --	0.0060	0.0028	--	--	NO	HQs less than one, not detected
Benzo(b)fluoranthene	53.0 - 62.0	1 / 3	1.90	1.90	IR04-IS04-4-5-09C	19.8	15.7	46.2	1,100	0 / 3	0.0017	0.018	--	--	NO	HQs less than one
Benzo(g,h,i)perylene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,100	-- / --	0.23	0.11	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,100	-- / --	0.23	0.11	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	100	-- / --	2.50	1.17	--	--	NO	Not detected
Butylbenzylphthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	100	-- / --	2.50	1.17	--	--	NO	Not detected
Caprolactam	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,100	-- / --	0.23	0.11	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	5.70 - 6.60	1 / 3	14.0	14.0	IR04-IS04-4-5-09C	6.72	6.31	17.4	1,100	0 / 3	0.013	0.0061	--	--	NO	HQs less than one
Dibenzofuran	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	100,000	-- / --	0.0025	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	200,000	-- / --	0.0013	5.83E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	200,000	-- / --	0.0013	5.83E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	210 - 250	0 / 3	--	--	--	117	10.4	134	100	-- / --	2.50	1.17	--	--	NO	Not detected
Fluoranthene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,100	-- / --	0.23	0.11	--	--	NO	HQs less than one, not detected
Fluorene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	210 - 250	0 / 3	--	--	--	117	10.4	134	2.50	-- / --	100	46.7	--	--	NO	Not detected
Hexachlorobutadiene	210 - 250	0 / 3	--	--	--	117	10.4	134	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	210 - 250	0 / 3	--	--	--	117	10.4	134	10,000	-- / --	0.025	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	210 - 250	0 / 3	--	--	--	117	10.4	134	100	-- / --	2.50	1.17	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	53.0 - 62.0	0 / 3	--	--	--	29.3	2.47	33.5	1,100	-- / --	0.056	0.027	--	--	NO	HQs less than one, not detected
Isophorone	53.0 - 62.0	0 / 3	--	--	--	29.3	2.47	33.5	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	27.0 - 31.0	0 / 3	--	--	--	14.8	1.15	16.8	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	210 - 250	0 / 3	--	--	--	117	10.4	134	20,000	-- / --	0.013	0.0058	--	--	NO	HQs less than one, not detected
Nitrobenzene	210 - 250	0 / 3	--	--	--	117	10.4	134	40,000	-- / --	0.0063	0.0029	--	--	NO	HQs less than one, not detected
Pentachlorophenol	18.0 - 20.0	0 / 3	--	--	--	9.67	0.58	10.6	2,100	-- / --	0.0095	0.0046	--	--	NO	HQs less than one, not detected
Phenanthrene	210 - 250	0 / 3	--	--	--	117	10.4	134	29,000	-- / --	0.0086	0.0040	--	--	NO	HQs less than one, not detected
Phenol	210 - 250	0 / 3	--	--	--	117	10.4	134	50.0	-- / --	5.00	2.33	--	--	NO	Not detected
Pyrene	210 - 250	0 / 3	--	--	--	117	10.4	134	1,100	-- / --	0.23	0.11	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																
Aluminum	-- - --	3 / 3	2,700	15,600	IR04-IS04-4-5-09C	9,600	6,497	20,553	50.0	3 / 3	312	192	10369	YES	NO	Within background range
Antimony	0.79 - 0.92	0 / 3	--	--	--	0.44	0.036	0.50	0.27	-- / --	3.41	1.62	0.36	--	NO	Not detected
Arsenic	-- - --	3 / 3	0.73	1.80	IR04-IS05-4-5-09C	1.24	0.54	2.15	18.0	0 / 3	0.10	0.069	2.12	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	3 / 3	3.90	15.1	IR04-IS04-4-5-09C	9.53	5.60	19.0	330	0 / 3	0.046	0.029	16.6	NO	NO	Consistent with background, HQs less than one
Beryllium	0.26 - 0.26	2 / 3	0.10	0.10	IR04-IS04-4-5-09C	0.11	0.017	0.14	21.0	0 / 3	0.0048	0.0052	0.165	NO	NO	Consistent with background, HQs less than one
Cadmium	0.26 - 0.31	0 / 3	--	--	--	0.15	0.013	0.17	0.36	-- / --	0.86	0.40	0.023	--	NO	HQs less than one, not detected
Calcium [3]	262 - 306	0 / 3	--	--	--	145	12.4	166	NSV	-- / --	NSV	NSV	441	--	NO	Macronutrient, not detected
Chromium	-- - --	3 / 3	2.80	14.4	IR04-IS04-4-5-09C	9.00	5.84	18.8	26.0	0 / 3	0.55	0.35	14.5	NO	NO	Consistent with background, HQs less than one
Cobalt	0.79 - 0.92	1 / 3	0.39	0.39	IR04-IS04-4-5-09C	0.42	0.039	0.48	13.0	0 / 3	0.030	0.032	0.822	NO	NO	Consistent with background, HQs less than one
Copper	-- - --	3 / 3	0.35	1.40	IR04-IS05-4-5-09C	0.85	0.53	1.74	28.0	0 / 3	0.050	0.030	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	3 / 3	1,410	2,890	IR04-IS04-4-5-09C	2,220	750	3,484	200	3 / 3	14.5	11.1	5439	NO	NO	Consistent with background
Lead	-- - --	3 / 3	2.10	6.30	IR04-IS04-4-5-09C	4.03	2.12	7.61	11.0	0 / 3	0.57	0.37	8.49	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	3 / 3	63.4	351	IR04-IS04-4-5-09C	224	147	472	NSV	-- / --	NSV	NSV	363	NO	NO	Consistent with background, macronutrient
Manganese	-- - --	3 / 3	1.70	5.00	IR04-IS04-4-5-09C	3.57	1.69	6.42	220	0 / 3	0.023	0.016	9.25	NO	NO	Consistent with background, HQs less than one
Mercury	0.033 - 0.043	0 / 3	--	--	--	0.019	0.0025	0.023	0.10	-- / --	0.43	0.19	0.071	--	NO	HQs less than one, not detected
Nickel	-- - --	3 / 3	1.00	2.00	IR04-IS04-4-5-09C	1.40	0.53	2.29	38.0	0 / 3	0.053	0.037	2.27	NO	NO	Consistent with background, HQs less than one
Potassium [3]	-- - --	3 / 3	88.5	394	IR04-IS04-4-5-09C	283	169	568	NSV	-- / --	NSV	NSV	361	YES	NO	Within background range, macronutrient
Selenium	0.26 - 0.31	1 / 3	0.33	0.33	IR04-IS04-4-5-09C	0.21	0.11	0.39	0.52	0 / 3	0.63	0.39	0.505	NO	NO	Consistent with background, HQs less than one
Silver	0.52 - 0.61	0 / 3	--	--	--	0.29	0.026	0.33	4.20	-- / --	0.15	0.069	0.129	--	NO	HQs less than one, not detected
Sodium [3]	262 - 306	0 / 3	--	--	--	145	12.4	166	NSV	-- / --	NSV	NSV	68.3	--	NO	Macronutrient, not detected
Thallium	0.42 - 0.49	0 / 3	--	--	--	0.23	0.020	0.27	1.00	-- / --	0.49	0.23	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	3 / 3	3.50	17.1	IR04-IS04-4-5-09C	11.6	7.18	23.7	7.80	2 / 3	2.19	1.49	17.2	NO	NO	Consistent with background
Zinc	5.25 - 5.25	2 / 3	2.70	3.80	IR04-IS04-4-5-09C	3.04	0.66	4.15	46.0	0 / 3	0.083	0.066	6.59	NO	NO	Consistent with background, HQs less than one

Appendix E, Table E-1
Site 4 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UG/KG - Micrograms per kilogram

Appendix E, Table E-2
Site 4 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	528	-- / --	--	--	0.0019	9.47E-04	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	240	-- / --	--	--	0.0042	0.0021	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	940	-- / --	--	--	0.0011	5.32E-04	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	303	-- / --	--	--	0.0033	0.0017	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	44.9	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	15.8	-- / --	--	--	0.063	0.032	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,000	-- / --	--	--	5.00E-04	2.50E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	525	-- / --	--	--	0.0019	9.52E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	50.2	-- / --	--	--	0.020	0.0100	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	11.2	-- / --	--	--	0.089	0.045	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 3	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 2.80	0 / 3	--	--	--	1.30	0.087	1.45	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	53.0	-- / --	--	--	0.019	0.0094	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	293	-- / --	--	--	0.0034	0.0017	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	110	-- / --	--	--	0.0091	0.0045	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	1 / 3	0.26	0.26	IR04-TW03-09C	0.42	0.14	0.65	NSV	-- / --	105	TCEQ, 2006	0.002	0.004	--	--	NO	HQs less than one
Carbon tetrachloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	352	-- / --	--	--	0.0028	0.0014	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	195	-- / --	--	--	0.0051	0.0026	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	289	-- / --	--	--	0.0035	0.0017	--	--	NO	HQs less than one, not detected
Chloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	5,500	-- / --	--	--	1.82E-04	9.09E-05	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	24.4	-- / --	--	--	0.041	0.020	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	453	-- / --	--	--	0.0022	0.0011	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,930	-- / --	--	--	5.18E-04	2.59E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	84.0	-- / --	--	--	0.012	0.0060	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	175	-- / --	--	--	0.0057	0.0029	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,350	-- / --	--	--	7.41E-04	3.70E-04	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	24.4	-- / --	--	--	0.041	0.020	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	3.20	-- / --	--	--	3.00	1.46	--	--	NO	Not detected
2,4-Dichlorophenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	36.5	-- / --	--	--	0.26	0.13	--	--	NO	HQs less than one, not detected
2,4-Dimethylphenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	21.2	-- / --	--	--	0.45	0.22	--	--	NO	HQs less than one, not detected
2,4-Dinitrophenol	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	6.20	-- / --	--	--	3.87	1.88	--	--	NO	Not detected
2,4-Dinitrotoluene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	43.8	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
2-Methylnaphthalene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	3,500	-- / --	--	--	0.0027	0.0013	--	--	NO	HQs less than one, not detected
3,3'-Dichlorobenzidine	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	2.30	-- / --	--	--	10.4	5.07	--	--	NO	Not detected
4-Bromophenyl-phenylether	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	12.2	-- / --	--	--	0.79	0.38	--	--	NO	HQs less than one, not detected

Appendix E, Table E-2
Site 4 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chloro-3-methylphenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	0.30	-- / --	--	--	32.0	15.6	--	--	NO	Not detected
4-Chloroaniline	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chlorophenyl-phenylether	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.20 - 9.60	1 / 3	0.75	0.75	IR04-TW03-09C	3.38	2.28	7.23	NSV	-- / --	272	TCEQ, 2006	0.003	0.01	--	--	NO	HQs less than one
4-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	82.8	-- / --	--	--	0.29	0.14	--	--	NO	HQs less than one, not detected
Acenaphthene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acenaphthylene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethoxy)methane	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	2,380	-- / --	--	--	0.0040	0.0020	--	--	NO	HQs less than one, not detected
bis(2-Ethylhexyl)phthalate	9.20 - 13.0	0 / 3	--	--	--	5.30	1.04	7.06	0.30	-- / --	--	--	43.3	17.7	--	--	NO	Not detected
Butylbenzylphthalate	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	22.0	-- / --	--	--	0.44	0.21	--	--	NO	HQs less than one, not detected
Caprolactam	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	521	-- / --	--	--	0.018	0.0090	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	330	-- / --	--	--	0.029	0.014	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	9.40	-- / --	--	--	1.02	0.50	--	--	NO	Not detected
Di-n-octylphthalate	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV			NO	No screening value, not detected
Fluoranthene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluorene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV			NO	No screening value, not detected
Hexachlorobenzene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV			NO	No screening value, not detected
Hexachlorobutadiene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	0.93	-- / --	--	--	10.3	5.02	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	0.070	-- / --	--	--	137	66.7	--	--	NO	Not detected
Hexachloroethane	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	9.80	-- / --	--	--	0.98	0.48	--	--	NO	HQs less than one, not detected
Indeno(1,2,3-cd)pyrene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	1,170	-- / --	--	--	0.0082	0.0040	--	--	NO	HQs less than one, not detected
Naphthalene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitroso-di-n-propylamine	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	58.5	-- / --	--	--	0.16	0.080	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	270	-- / --	--	--	0.036	0.017	--	--	NO	HQs less than one, not detected
Pentachlorophenol	23.0 - 24.0	0 / 3	--	--	--	11.7	0.29	12.2	15.0	-- / --	--	--	1.60	0.78	--	--	NO	Not detected
Phenanthrene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	256	-- / --	--	--	0.038	0.018	--	--	NO	HQs less than one, not detected
Pyrene	9.20 - 9.60	0 / 3	--	--	--	4.67	0.12	4.86	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (UG/L)																		
Aluminum	200 - 200	2 / 3	497	605	IR04-TW03-09C	401	266	849	87.0	2 / 3	--	--	6.95	4.61	1886	NO	NO	Consistent with background
Antimony	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	160	-- / --	--	--	0.094	0.047	3.28	--	NO	HQs less than one, not detected
Arsenic	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	150	-- / --	--	--	0.067	0.033	5.77	--	NO	HQs less than one, not detected
Barium	-- - --	3 / 3	27.3	83.6	IR04-TW03-09C	47.6	31.2	100	NSV	-- / --	16000	TCEQ, 2006	0.01	0.003	86.2	NO	NO	Consistent with background, HQs less than one
Beryllium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	0.53	-- / --	--	--	9.43	4.72	0.308	--	NO	Not detected
Cadmium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	0.25	-- / --	--	--	20.0	10.0	0.358	--	NO	Not detected
Calcium [3]	-- - --	3 / 3	1,840	6,240	IR04-TW02-09C	3,490	2,397	7,532	NSV	-- / --	--	--	NSV	NSV	69078	NO	NO	Consistent with background, macronutrient
Chromium	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	117	-- / --	--	--	0.085	0.043	3.13	--	NO	HQs less than one, not detected
Cobalt	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	3.4	--	NO	No screening value, not detected
Copper	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	9.00	-- / --	--	--	1.11	0.56	2.76	--	NO	Not detected
Iron	-- - --	3 / 3	2,950	4,350	IR04-TW02-09C	3,817	757	5,093	1,000	3 / 3	--	--	4.35	3.82	5999	NO	NO	Consistent with background
Lead	3.00 - 3.00	0 / 3	--	--	--	1.50	0.0	1.50	25.0	-- / --	--	--	0.12	0.060	2.8	--	NO	HQs less than one, not detected
Magnesium [3]	5,000 - 5,000	2 / 3	1,430	1,870	IR04-TW03-09C	1,933	538	2,840	NSV	-- / --	--	--	NSV	NSV	6363	NO	NO	Consistent with background, macronutrient
Manganese	-- - --	3 / 3	25.7	44.2	IR04-TW01-09C	33.1	9.79	49.6	NSV	-- / --	120	TCEQ, 2006	0.37	0.28	214	NO	NO	Consistent with background, HQs less than one
Mercury	0.20 - 0.20	0 / 3	--	--	--	0.10	1.70E-17	0.10	0.77	-- / --	--	--	0.26	0.13	0.1	--	NO	HQs less than one, not detected
Nickel	10.0 - 10.0	2 / 3	5.70	6.10	IR04-TW03-09C	5.60	0.56	6.54	52.0	0 / 3	--	--	0.12	0.11	7.97	NO	NO	Consistent with background, HQs less than one
Potassium [3]	5,000 - 5,000	1 / 3	1,550	1,550	IR04-TW03-09C	2,183	548	3,108	NSV	-- / --	--	--	NSV	NSV	3277	NO	NO	Consistent with background, macronutrient
Selenium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	5.00	-- / --	--	--	1.00	0.50	3.14	--	NO	HQs less than or equal to one, not detected
Silver	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	0.012	-- / --	--	--	833	417	0.77	--	NO	Not detected
Sodium [3]	-- - --	3 / 3	5,100	9,600	IR04-TW03-09C	6,613	2,587	10,974	NSV	-- / --	--	--	NSV	NSV	22508	NO	NO	Consistent with background, macronutrient
Thallium	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	4.00	-- / --	--	--	0.50	0.25	3.78	--	NO	HQs less than one, not detected

Appendix E, Table E-2
Site 4 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Vanadium	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	4.72	--	NO	No screening value, not detected
Zinc	25.0 - 25.0	2 / 3	6.20	7.50	IR04-TW01-09C	8.73	3.33	14.3	120	0 / 3	--	--	0.063	0.073	42.1	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs are based on freshwater values
ESV - Ecological Screening Value
HQs - Hazard Quotients
NSV - No Screening Value
UCL - Upper Confidence Level

Appendix E, Table E-3
Site 23 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
1,2-Dibromo-3-chloropropane	5.10 - 5.10	0 / 1	--	--	--	2.55	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
1,2-Dichloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	400	-- / --	0.025	0.013	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	700,000	-- / --	0.00001	0.00001	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
1,4-Dichlorobenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
2-Butanone	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	50.0	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Bromodichloromethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	1,000,000	-- / --	1.00E-05	5.00E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	50.0	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Chloroethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
Chloroform	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	1.00	-- / --	10.0	5.00	--	--	NO	Not detected
Chloromethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
Dibromochloromethane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	50.0	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Isopropylbenzene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	2,000	-- / --	0.0050	0.0025	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
Tetrachloroethene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
Toluene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	50.0	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	100	-- / --	0.10	0.050	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	1.00	-- / --	10.0	5.00	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	10.0	-- / --	1.00	0.50	--	--	NO	HQs equal to or less than one, not detected
Xylene, total	10.0 - 10.0	0 / 1	--	--	--	5.00	--	--	50.0	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	220 - 220	0 / 1	--	--	--	110	--	--	60,000	-- / --	0.0037	0.0018	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	430 - 430	0 / 1	--	--	--	215	--	--	4,000	-- / --	0.11	0.054	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	220 - 220	0 / 1	--	--	--	110	--	--	10,000	-- / --	0.022	0.011	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	220 - 220	0 / 1	--	--	--	110	--	--	3.00	-- / --	73.3	36.7	--	--	NO	Not detected
2,4-Dimethylphenol	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	430 - 430	0 / 1	--	--	--	215	--	--	20,000	-- / --	0.022	0.011	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	220 - 220	0 / 1	--	--	--	110	--	--	1,000	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
2-Chlorophenol	220 - 220	0 / 1	--	--	--	110	--	--	10.0	-- / --	22.0	11.0	--	--	NO	Not detected
2-Methylnaphthalene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
2-Methylphenol	220 - 220	0 / 1	--	--	--	110	--	--	500	-- / --	0.44	0.22	--	--	NO	HQs less than one, not detected
2-Nitroaniline	430 - 430	0 / 1	--	--	--	215	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	430 - 430	0 / 1	--	--	--	215	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	430 - 430	0 / 1	--	--	--	215	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-3
Site 23 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chloro-3-methylphenol	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	220 - 220	0 / 1	--	--	--	110	--	--	20,000	-- / --	0.011	0.0055	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	220 - 220	0 / 1	--	--	--	110	--	--	500	-- / --	0.44	0.22	--	--	NO	HQs less than one, not detected
4-Nitroaniline	430 - 430	0 / 1	--	--	--	215	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	430 - 430	0 / 1	--	--	--	215	--	--	7,000	-- / --	0.061	0.031	--	--	NO	HQs less than one, not detected
Acenaphthene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
Acenaphthylene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
Acetophenone	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
Atrazine	220 - 220	0 / 1	--	--	--	110	--	--	0.050	-- / --	4,400	2,200	--	--	NO	Not detected
Benzaldehyde	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	1,100	-- / --	0.049	0.025	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	5.80 - 5.80	0 / 1	--	--	--	2.90	--	--	1,100	-- / --	0.0053	0.0026	--	--	NO	HQs less than one, not detected
Benzo(b)fluoranthene	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	1,100	-- / --	0.049	0.025	--	--	NO	HQs less than one, not detected
Benzo(g,h,i)perylene	220 - 220	0 / 1	--	--	--	110	--	--	1,100	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	220 - 220	0 / 1	--	--	--	110	--	--	1,100	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	220 - 220	0 / 1	--	--	--	110	--	--	100	-- / --	2.20	1.10	--	--	NO	Not detected
Butylbenzylphthalate	220 - 220	0 / 1	--	--	--	110	--	--	100	-- / --	2.20	1.10	--	--	NO	Not detected
Caprolactam	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	220 - 220	0 / 1	--	--	--	110	--	--	1,100	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	5.80 - 5.80	0 / 1	--	--	--	2.90	--	--	1,100	-- / --	0.0053	0.0026	--	--	NO	HQs less than one, not detected
Dibenzofuran	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	220 - 220	0 / 1	--	--	--	110	--	--	100,000	-- / --	0.0022	0.0011	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	220 - 220	0 / 1	--	--	--	110	--	--	200,000	-- / --	0.0011	5.50E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	220 - 220	0 / 1	--	--	--	110	--	--	200,000	-- / --	0.0011	5.50E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	220 - 220	0 / 1	--	--	--	110	--	--	100	-- / --	2.20	1.10	--	--	NO	Not detected
Fluoranthene	220 - 220	0 / 1	--	--	--	110	--	--	1,100	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Fluorene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	220 - 220	0 / 1	--	--	--	110	--	--	2.50	-- / --	88.0	44.0	--	--	NO	Not detected
Hexachlorobutadiene	220 - 220	0 / 1	--	--	--	110	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	220 - 220	0 / 1	--	--	--	110	--	--	10,000	-- / --	0.022	0.011	--	--	NO	HQs less than one, not detected
Hexachloroethane	220 - 220	0 / 1	--	--	--	110	--	--	100	-- / --	2.20	1.10	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	1,100	-- / --	0.049	0.025	--	--	NO	HQs less than one, not detected
Isophorone	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	27.0 - 27.0	0 / 1	--	--	--	13.5	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	220 - 220	0 / 1	--	--	--	110	--	--	20,000	-- / --	0.011	0.0055	--	--	NO	HQs less than one, not detected
Nitrobenzene	220 - 220	0 / 1	--	--	--	110	--	--	40,000	-- / --	0.0055	0.0028	--	--	NO	HQs less than one, not detected
Pentachlorophenol	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	2,100	-- / --	0.0086	0.0043	--	--	NO	HQs less than one, not detected
Phenanthrene	220 - 220	0 / 1	--	--	--	110	--	--	29,000	-- / --	0.0076	0.0038	--	--	NO	HQs less than one, not detected
Phenol	220 - 220	0 / 1	--	--	--	110	--	--	50.0	-- / --	4.40	2.20	--	--	NO	Not detected
Pyrene	220 - 220	0 / 1	--	--	--	110	--	--	1,100	-- / --	0.20	0.10	--	--	NO	HQs less than one, not detected
Pesticide/Polychlorinated Biphenyls (UG/KG)																
4,4'-DDD	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	21.0	-- / --	0.017	0.0086	--	--	NO	HQs less than one, not detected
4,4'-DDE	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	21.0	-- / --	0.017	0.0086	--	--	NO	HQs less than one, not detected
4,4'-DDT	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	21.0	-- / --	0.017	0.0086	--	--	NO	HQs less than one, not detected
Aldrin	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	2.50	-- / --	0.14	0.072	--	--	NO	HQs less than one, not detected
alpha-BHC	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	2.50	-- / --	0.14	0.072	--	--	NO	HQs less than one, not detected
alpha-Chlordane	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Aroclor-1016	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1221	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1232	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1242	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1248	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1254	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
Aroclor-1260	18.0 - 18.0	0 / 1	--	--	--	9.00	--	--	20.0	-- / --	0.90	0.45	--	--	NO	HQs less than one, not detected
beta-BHC	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	1.00	-- / --	0.36	0.18	--	--	NO	HQs less than one, not detected
delta-BHC	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Dieldrin	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	4.90	-- / --	0.073	0.037	--	--	NO	HQs less than one, not detected
Endosulfan I	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Endosulfan II	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Endosulfan sulfate	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Endrin	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	1.00	-- / --	0.36	0.18	--	--	NO	HQs less than one, not detected
Endrin aldehyde	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected

Appendix E, Table E-3
Site 23 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Endrin ketone	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
gamma-BHC (Lindane)	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	0.050	-- / --	7.20	3.60	--	--	NO	Not detected
gamma-Chlordane	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Heptachlor	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Heptachlor epoxide	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Methoxychlor	0.36 - 0.36	0 / 1	--	--	--	0.18	--	--	100	-- / --	0.0036	0.0018	--	--	NO	HQs less than one, not detected
Toxaphene	72.0 - 72.0	0 / 1	--	--	--	36.0	--	--	100	-- / --	0.72	0.36	--	--	NO	HQs less than one, not detected
Herbicides (UG/KG)																
2,4,5-T	5.40 - 5.40	0 / 1	--	--	--	2.70	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-TP (Silvex)	5.40 - 5.40	0 / 1	--	--	--	2.70	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-D	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DB	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DP (Dichloroprop)	54.0 - 54.0	0 / 1	--	--	--	27.0	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dalapon	130 - 130	0 / 1	--	--	--	65.0	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dicamba	5.40 - 5.40	0 / 1	--	--	--	2.70	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dinoseb	27.0 - 27.0	0 / 1	--	--	--	13.5	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
MCPA	5,400 - 5,400	0 / 1	--	--	--	2,700	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
MCPP	5,400 - 5,400	0 / 1	--	--	--	2,700	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (MG/KG)																
Aluminum	-- - --	1 / 1	4,710	4,710	IR23-IS01-6-7-09C	4,710	--	--	50.0	1 / 1	94.2	94.2	10369	NO	NO	Consistent with background
Antimony	0.81 - 0.81	0 / 1	--	--	--	0.41	--	--	0.27	-- / --	3.00	1.50	0.36	--	NO	Not detected
Arsenic	-- - --	1 / 1	1.40	1.40	IR23-IS01-6-7-09C	1.40	--	--	18.0	0 / 1	0.078	0.078	2.12	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	1 / 1	5.30	5.30	IR23-IS01-6-7-09C	5.30	--	--	330	0 / 1	0.016	0.016	16.6	NO	NO	Consistent with background, HQs less than one
Beryllium	0.27 - 0.27	0 / 1	--	--	--	0.14	--	--	21.0	-- / --	0.013	0.0064	0.165	--	NO	HQs less than one, not detected
Cadmium	0.27 - 0.27	0 / 1	--	--	--	0.14	--	--	0.36	-- / --	0.75	0.38	0.023	--	NO	HQs less than one, not detected
Calcium [3]	-- - --	1 / 1	430	430	IR23-IS01-6-7-09C	430	--	--	NSV	-- / --	NSV	NSV	441	NO	NO	Consistent with background, macronutrient
Chromium	-- - --	1 / 1	7.50	7.50	IR23-IS01-6-7-09C	7.50	--	--	26.0	0 / 1	0.29	0.29	14.5	NO	NO	Consistent with background, HQs less than one
Cobalt	0.81 - 0.81	0 / 1	--	--	--	0.41	--	--	13.0	-- / --	0.062	0.031	0.822	--	NO	HQs less than one, not detected
Copper	-- - --	1 / 1	0.55	0.55	IR23-IS01-6-7-09C	0.55	--	--	28.0	0 / 1	0.020	0.020	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	1 / 1	2,400	2,400	IR23-IS01-6-7-09C	2,400	--	--	200	1 / 1	12.0	12.0	5439	NO	NO	Consistent with background
Lead	-- - --	1 / 1	3.00	3.00	IR23-IS01-6-7-09C	3.00	--	--	11.0	0 / 1	0.27	0.27	8.49	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	1 / 1	194	194	IR23-IS01-6-7-09C	194	--	--	NSV	-- / --	NSV	NSV	363	NO	NO	Consistent with background, macronutrient
Manganese	-- - --	1 / 1	3.40	3.40	IR23-IS01-6-7-09C	3.40	--	--	220	0 / 1	0.015	0.015	9.25	NO	NO	Consistent with background, HQs less than one
Mercury	0.037 - 0.037	0 / 1	--	--	--	0.019	--	--	0.10	-- / --	0.37	0.19	0.071	--	NO	HQs less than one, not detected
Nickel	-- - --	1 / 1	1.10	1.10	IR23-IS01-6-7-09C	1.10	--	--	38.0	0 / 1	0.029	0.029	2.27	NO	NO	Consistent with background, HQs less than one
Potassium [3]	-- - --	1 / 1	203	203	IR23-IS01-6-7-09C	203	--	--	NSV	-- / --	NSV	NSV	361	NO	NO	Consistent with background, macronutrient
Selenium	0.27 - 0.27	0 / 1	--	--	--	0.14	--	--	0.52	-- / --	0.52	0.26	0.505	--	NO	HQs less than one, not detected
Silver	0.54 - 0.54	0 / 1	--	--	--	0.27	--	--	4.20	-- / --	0.13	0.064	0.129	--	NO	HQs less than one, not detected
Sodium [3]	268 - 268	0 / 1	--	--	--	134	--	--	NSV	-- / --	NSV	NSV	68.3	--	NO	Macronutrient, not detected
Thallium	0.43 - 0.43	0 / 1	--	--	--	0.22	--	--	1.00	-- / --	0.43	0.22	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	1 / 1	11.0	11.0	IR23-IS01-6-7-09C	11.0	--	--	7.80	1 / 1	1.41	1.41	17.2	NO	NO	Consistent with background
Zinc	-- - --	1 / 1	2.20	2.20	IR23-IS01-6-7-09C	2.20	--	--	46.0	0 / 1	0.048	0.048	6.59	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper Confidence Level
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-4
Site 38 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Geometric Mean	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	4.34 - 6.35	0 / 8	--	--	--	2.66	0.30	2.86	2.64	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Mean HQ less than one, not detected
1,2-Dichloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	400	-- / --	0.032	0.013	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	700,000	-- / --	1.81E-05	7.59E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Not detected
1,4-Dichlorobenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Not detected
2-Butanone	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	50.0	-- / --	0.25	0.11	--	--	NO	HQs less than one, not detected
Bromodichloromethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	1,000,000	-- / --	0.00001	0.00001	--	--	NO	HQs less than one, not detected
Chlorobenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	50.0	-- / --	0.25	0.11	--	--	NO	HQs less than one, not detected
Chloroethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
Chloroform	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	1.00	-- / --	12.7	5.31	--	--	NO	Not detected
Chloromethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
Dibromochloromethane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	50.0	-- / --	0.25	0.11	--	--	NO	HQs less than one, not detected
Isopropylbenzene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	2,000	-- / --	0.0064	0.0027	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
Tetrachloroethene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Mean HQ less than one, not detected
Toluene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	50.0	-- / --	0.25	0.11	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	100	-- / --	0.13	0.053	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	1.00	-- / --	12.7	5.31	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	10.0	-- / --	1.27	0.53	--	--	NO	Mean HQ less than one, not detected
Xylene, total	8.67 - 12.7	0 / 8	--	--	--	5.31	0.60	5.72	5.28	50.0	-- / --	0.25	0.11	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	60,000	-- / --	0.0027	0.0012	--	--	NO	HQs less than one, not detected
2,4,5-Trichlorophenol	270 - 325	0 / 8	--	--	--	145	8.72	151	145	4,000	-- / --	0.081	0.036	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	10,000	-- / --	0.016	0.0073	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	3.00	-- / --	54.3	24.2	--	--	NO	Not detected
2,4-Dimethylphenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	270 - 325	0 / 8	--	--	--	145	8.72	151	145	20,000	-- / --	0.016	0.0073	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,000	-- / --	0.16	0.073	--	--	NO	HQs less than one, not detected
2-Chlorophenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	10.0	-- / --	16.3	7.27	--	--	NO	Not detected
2-Methylnaphthalene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
2-Methylphenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	500	-- / --	0.33	0.15	--	--	NO	HQs less than one, not detected
2-Nitroaniline	270 - 325	0 / 8	--	--	--	145	8.72	151	145	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	270 - 325	0 / 8	--	--	--	145	8.72	151	145	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	270 - 325	0 / 8	--	--	--	145	8.72	151	145	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Geometric Mean	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chloro-3-methylphenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	20,000	-- / --	0.0082	0.0036	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	500	-- / --	0.33	0.15	--	--	NO	HQs less than one, not detected
4-Nitroaniline	270 - 325	0 / 8	--	--	--	145	8.72	151	145	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	270 - 325	0 / 8	--	--	--	145	8.72	151	145	7,000	-- / --	0.046	0.021	--	--	NO	HQs less than one, not detected
Acenaphthene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
Acenaphthylene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
Acetophenone	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
Atrazine	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	0.050	-- / --	3,260	1,454	--	--	NO	Not detected
Benzaldehyde	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	1,100	-- / --	0.0039	0.0018	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	3.61 - 4.34	1 / 8	1.09	1.09	IR38-IS03-6-7-10A	1.84	0.32	2.06	1.81	1,100	0 / 8	0.001	0.0017	--	--	NO	HQs less than one
Benzo(b)fluoranthene	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	1,100	-- / --	0.0039	0.0018	--	--	NO	HQs less than one, not detected
Benzo(g,h,i)perylene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,100	-- / --	0.15	0.066	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,100	-- / --	0.15	0.066	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroisopropyl)ether	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	100	-- / --	1.63	0.73	--	--	NO	Mean HQ less than one, not detected
Butylbenzylphthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	100	-- / --	1.63	0.73	--	--	NO	Mean HQ less than one, not detected
Caprolactam	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,100	-- / --	0.15	0.066	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	1,100	-- / --	0.0039	0.0018	--	--	NO	HQs less than one, not detected
Dibenzofuran	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	100,000	-- / --	0.0016	7.27E-04	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	200,000	-- / --	8.15E-04	3.63E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	200,000	-- / --	8.15E-04	3.63E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	100	-- / --	1.63	0.73	--	--	NO	Mean HQ less than one, not detected
Fluoranthene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,100	-- / --	0.15	0.066	--	--	NO	HQs less than one, not detected
Fluorene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	2.50	-- / --	65.2	29.1	--	--	NO	Not detected
Hexachlorobutadiene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	10,000	-- / --	0.016	0.0073	--	--	NO	HQs less than one, not detected
Hexachloroethane	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	100	-- / --	1.63	0.73	--	--	NO	Mean HQ less than one, not detected
Indeno(1,2,3-cd)pyrene	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	1,100	-- / --	0.0039	0.0018	--	--	NO	HQs less than one, not detected
Isophorone	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	3.61 - 4.34	0 / 8	--	--	--	1.94	0.12	2.02	1.94	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	20,000	-- / --	0.0082	0.0036	--	--	NO	HQs less than one, not detected
Nitrobenzene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	40,000	-- / --	0.0041	0.0018	--	--	NO	HQs less than one, not detected
Pentachlorophenol	18.4 - 22.1	0 / 8	--	--	--	9.88	0.59	10.3	9.87	2,100	-- / --	0.011	0.0047	--	--	NO	HQs less than one, not detected
Phenanthrene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	29,000	-- / --	0.0056	0.0025	--	--	NO	HQs less than one, not detected
Phenol	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	50.0	-- / --	3.26	1.45	--	--	NO	Not detected
Pyrene	135 - 163	0 / 8	--	--	--	72.7	4.44	75.7	72.6	1,100	-- / --	0.15	0.066	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																	
Aluminum	-- - --	8 / 8	1,640	8,900	IR38-IS04-6-7-10A	5,450	2,357	7,029	4,896	50.0	8 / 8	178	109	10369	NO	NO	Consistent with background
Antimony	0.79 - 0.98	0 / 8	--	--	--	0.43	0.031	0.45	0.43	0.27	-- / --	3.61	1.59	0.36	--	NO	Not detected
Arsenic	-- - --	8 / 8	0.79	8.78	IR38-IS05-6-7-10A	2.64	2.73	4.47	1.84	18.0	0 / 8	0.49	0.15	2.12	YES	NO	Within background range, HQs less than one
Barium	-- - --	8 / 8	7.69	85.3	IR38-IS03-6-7-10A	33.4	28.1	52.2	23.5	330	0 / 8	0.26	0.10	16.6	YES	NO	HQs less than one
Beryllium	0.26 - 0.33	4 / 8	0.062	0.19	IR38-IS04-6-7-10A	0.13	0.038	0.16	0.12	21.0	0 / 8	0.0090	0.0062	0.165	YES	NO	Within background range, HQs less than one
Cadmium	0.26 - 0.33	0 / 8	--	--	--	0.14	0.010	0.15	0.14	0.36	-- / --	0.90	0.40	0.023	--	NO	HQs less than one, not detected
Calcium [3]	-- - --	8 / 8	53.4	661	IR38-IS06-6-7-10A	341	214	485	268	NSV	-- / --	NSV	NSV	441	YES	NO	Macronutrient
Chromium	-- - --	8 / 8	5.68	13.5	IR38-IS04-6-7-10A	8.31	2.84	10.2	7.94	26.0	0 / 8	0.52	0.32	14.5	NO	NO	Consistent with background, HQs less than one
Cobalt	0.66 - 0.72	4 / 8	0.35	0.87	IR38-IS04-6-7-10A	0.43	0.19	0.55	0.40	13.0	0 / 8	0.067	0.033	0.822	YES	NO	Within background range, HQs less than one
Copper	-- - --	8 / 8	0.30	1.41	IR38-IS04-6-7-10A	0.81	0.35	1.05	0.74	28.0	0 / 8	0.050	0.029	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	8 / 8	1,000	4,440	IR38-IS04-6-7-10A	2,683	1,362	3,595	2,342	200	8 / 8	22.2	13.4	5439	NO	NO	Consistent with background
Lead	-- - --	8 / 8	1.34	5.73	IR38-IS07-6-7-10A	3.98	1.65	5.08	3.57	11.0	0 / 8	0.52	0.36	8.49	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	8 / 8	143	420	IR38-IS04-6-7-10A	237	86.1	294	225	NSV	-- / --	NSV	NSV	363	YES	NO	Macronutrient
Manganese	-- - --	8 / 8	2.34	9.43	IR38-IS04-6-7-10A	4.78	2.35	6.35	4.34	220	0 / 8	0.043	0.022	9.25	YES	NO	Within background range, HQs less than one
Mercury	0.033 - 0.040	0 / 8	--	--	--	0.019	0.0014	0.019	0.018	0.10	-- / --	0.40	0.19	0.071	--	NO	HQs less than one, not detected
Nickel	-- - --	8 / 8	0.37	2.75	IR38-IS04-6-7-10A	1.10	0.74	1.59	0.92	38.0	0 / 8	0.072	0.029	2.27	YES	NO	Within background range, HQs less than one
Potassium [3]	-- - --	8 / 8	148	354	IR38-IS04-6-7-10A	230	65.4	274	222	NSV	-- / --	NSV	NSV	361	NO	NO	Consistent with background, macronutrient
Selenium	0.32 - 0.37	4 / 8	0.17	0.27	IR38-IS06-6-7-10A	0.20	0.042	0.22	0.19	0.52	0 / 8	0.52	0.38	0.505	NO	NO	Consistent with background, HQs less than one
Silver	0.26 - 0.33	0 / 8	--	--	--	0.14	0.010	0.15	0.14	4.20	-- / --	0.077	0.034	0.129	--	NO	HQs less than one, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Geometric Mean	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Sodium [3]	264 - 325	0 / 8	--	--	--	143	10.3	150	142	NSV	-- / --	NSV	NSV	68.3	--	NO	Macronutrient, not detected
Thallium	0.42 - 0.52	0 / 8	--	--	--	0.23	0.017	0.24	0.23	1.00	-- / --	0.52	0.23	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	8 / 8	4.51	13.2	IR38-IS04-6-7-10A	8.61	2.83	10.5	8.15	7.80	6 / 8	1.69	1.10	17.2	NO	NO	Consistent with background
Zinc	-- - --	8 / 8	1.55	5.22	IR38-IS04-6-7-10A	2.60	1.13	3.36	2.44	46.0	0 / 8	0.11	0.057	6.59	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-5
Site 38 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,240	-- / --	--	--	4.46E-04	2.23E-04	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.50 - 1.50	0 / 3	--	--	--	0.75	0.0	0.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	19.7	-- / --	--	--	0.051	0.025	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,400	-- / --	--	--	4.17E-04	2.08E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	19.9	-- / --	--	--	0.050	0.025	--	--	NO	HQs less than one, not detected
2-Butanone	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Hexanone	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Methyl-2-pentanone	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Acetone	5.50 - 5.50	0 / 3	--	--	--	2.75	0.0	2.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	109	-- / --	--	--	0.0092	0.0046	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Bromoform	1.50 - 1.50	0 / 3	--	--	--	0.75	0.0	0.75	640	-- / --	--	--	0.0023	0.0012	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	120	-- / --	--	--	0.0083	0.0042	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Carbon tetrachloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,500	-- / --	--	--	6.67E-04	3.33E-04	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Chloroform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	815	-- / --	--	--	0.0012	6.13E-04	--	--	NO	HQs less than one, not detected
Chloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.50 - 1.50	0 / 3	--	--	--	0.75	0.0	0.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Dibromochloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Ethylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	4.30	-- / --	--	--	0.23	0.12	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Methyl acetate	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Methylcyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Methylene chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,560	-- / --	--	--	3.91E-04	1.95E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Styrene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Tetrachloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	37.0	-- / --	--	--	0.027	0.014	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.50 - 1.50	0 / 3	--	--	--	0.75	0.0	0.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Trichloroethene	1.50 - 1.50	0 / 3	--	--	--	0.75	0.0	0.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Vinyl chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Xylene, total	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,4,5-Trichlorophenol	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,4,6-Trichlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,4-Dichlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,4-Dimethylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,4-Dinitrophenol	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	48.5	-- / --	--	--	0.52	0.26	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2,6-Dinitrotoluene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Chloronaphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Chlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Methylnaphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Nitroaniline	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
2-Nitrophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
3,3'-Dichlorobenzidine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
3-Nitroaniline	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4,6-Dinitro-2-methylphenol	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Bromophenyl-phenylether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected

Appendix E, Table E-5
Site 38 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chloro-3-methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Chloroaniline	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Chlorophenyl-phenylether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Nitroaniline	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
4-Nitrophenol	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	71.7	-- / --	--	--	0.35	0.17	--	--	NO	HQs less than one, not detected
Acenaphthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	9.70	-- / --	--	--	1.03	0.51	--	--	NO	Not detected
Acenaphthylene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Acetophenone	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Atrazine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzaldehyde	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzo(a)anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzo(a)pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzo(b)fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzo(g,h,i)perylene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Benzo(k)fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
bis(2-Chloroethoxy)methane	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
bis(2-Chloroethyl)ether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
bis(2-Chloroisopropyl)ether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
bis(2-Ethylhexyl)phthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Butylbenzylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	29.4	-- / --	--	--	0.34	0.17	--	--	NO	HQs less than one, not detected
Caprolactam	9.80 - 10.0	0 / 2	--	--	--	4.95	0.071	5.27	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Carbazole	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Chrysene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Dibenz(a,h)anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Dibenzofuran	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Diethylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	759	-- / --	--	--	0.013	0.0065	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	580	-- / --	--	--	0.017	0.0086	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	3.40	-- / --	--	--	2.94	1.46	--	--	NO	Not detected
Di-n-octylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	1.60	-- / --	--	--	6.25	3.10	--	--	NO	Not detected
Fluorene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Hexachlorobenzene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Hexachlorobutadiene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	0.32	-- / --	--	--	31.3	15.5	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	0.070	-- / --	--	--	143	71.0	--	--	NO	Not detected
Hexachloroethane	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	9.40	-- / --	--	--	1.06	0.53	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Isophorone	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	129	-- / --	--	--	0.078	0.039	--	--	NO	HQs less than one, not detected
Naphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	23.5	-- / --	--	--	0.43	0.21	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
n-Nitrosodiphenylamine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	33,000	-- / --	--	--	3.03E-04	1.51E-04	--	--	NO	HQs less than one, not detected
Nitrobenzene	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	30.0	-- / --	--	--	0.83	0.41	--	--	NO	HQs less than one, not detected
Pentachlorophenol	24.5 - 25.0	0 / 3	--	--	--	12.4	0.14	12.7	7.90	-- / --	--	--	3.16	1.57	--	--	NO	Not detected
Phenanthrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Phenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	58.0	-- / --	--	--	0.17	0.086	--	--	NO	HQs less than one, not detected
Pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening level, not detected
Inorganics (UG/L)																		
Aluminum	-- - --	3 / 3	132	592	IR38-GW01-10A	339	234	732	NSV	-- / --	--	--	NSV	NSV	1886	NO	NO	Consistent with background
Antimony	3.75 - 3.75	0 / 3	--	--	--	1.88	0.0	1.88	NSV	-- / --	--	--	NSV	NSV	3.28	--	NO	No screening level, not detected
Arsenic	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	36.0	-- / --	--	--	0.035	0.017	5.77	--	NO	HQs less than one, not detected
Barium	-- - --	3 / 3	25.8	40.2	IR38-GW02-10A	31.0	7.97	44.5	NSV	-- / --	25000	TCEQ, 2006	0.002	0.001	86.2	NO	NO	Consistent with background, HQs less than one
Beryllium	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	NSV	-- / --	--	--	NSV	NSV	0.308	--	NO	No screening level, not detected
Cadmium	-- - --	3 / 3	0.67	0.88	IR38-GW02-10A	0.78	0.11	0.96	8.80	0 / 3	--	--	0.100	0.089	0.358	YES	NO	HQs less than one
Calcium [3]	-- - --	3 / 3	68,100	97,700	IR38-GW01-10A	81,200	15,090	106,640	NSV	-- / --	--	--	NSV	NSV	69078	YES	NO	Macronutrient
Chromium	1.25 - 1.25	2 / 3	1.41	3.53	IR38-GW01-10A	1.86	1.50	4.39	50.0	0 / 3	--	--	0.071	0.037	3.13	YES	NO	Within background range, HQs less than one
Cobalt	-- - --	3 / 3	1.33	2.66	IR38-GW01-10A	1.84	0.72	3.05	NSV	-- / --	1	Buchman, 2008	2.7	1.8	3.4	NO	NO	Consistent with background
Copper	2.50 - 2.50	1 / 3	1.57	1.57	IR38-GW01-10A	1.36	0.18	1.67	3.10	0 / 3	--	--	0.51	0.44	2.76	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	3 / 3	33.1	867	IR38-GW01-10A	379	435	1,112	NSV	-- / --	50	Buchman, 2008	17.3	7.6	5999	NO	NO	Consistent with background
Lead	0.75 - 0.75	1 / 3	0.93	0.93	IR38-GW01-10A	0.56	0.32	1.09	8.10	0 / 3	--	--	0.11	0.069	2.8	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	3 / 3	3,800	6,800	IR38-GW01-10A	5,047	1,563	7,681	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese	-- - --	3 / 3	26.7	54.0	IR38-GW01-10A	36.7	15.0	62.1	NSV	-- / --	100	Buchman, 2008	0.54	0.37	214	NO	NO	Consistent with background, HQs less than one
Mercury	0.20 - 0.20	0 / 3	--	--	--	0.10	1.70E-17	0.10	0.94	-- / --	--	--	0.21	0.11	0.1	--	NO	HQs less than one, not detected
Nickel	2.50 - 2.50	2 / 3	1.37	2.50	IR38-GW01-10A	1.71	0.69	2.87	8.20	0 / 3	--	--	0.30	0.21	7.97	NO	NO	Consistent with background, HQs less than one
Potassium [3]	-- - --	3 / 3	716	1,640	IR38-GW02-10A	1,222	468	2,011	NSV	-- / --	--	--	NSV	NSV	3277	NO	NO	Consistent with background, macronutrient
Selenium	1.50 - 1.50	2 / 3	2.00	2.09	IR38-GW02-10A	1.61	0.75	2.88	71.0	0 / 3	--	--	0.029	0.023	3.14	NO	NO	Consistent with background, HQs less than one
Silver	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	0.23	-- / --	--	--	5.43	2.72	0.77	--	NO	Not detected

Appendix E, Table E-5
Site 38 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Sodium [3]	-- - --	3 / 3	4,000	7,000	IR38-GW01-10A	5,507	1,500	8,036	NSV	-- / --	--	--	NSV	NSV	22508	NO	NO	Consistent with background, macronutrient
Thallium	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	21.3	-- / --	--	--	0.094	0.047	3.78	--	NO	HQs less than one, not detected
Vanadium	3.12 - 3.12	1 / 3	3.01	3.01	IR38-GW01-10A	2.04	0.84	3.45	NSV	-- / --	50	Buchman, 2008	0.06	0.04	4.72	NO	NO	Consistent with background, HQs less than one
Zinc	-- - --	3 / 3	8.15	17.1	IR38-GW02-10A	12.1	4.57	19.8	81.0	0 / 3	--	--	0.21	0.15	42.1	NO	NO	Consistent with background, HQs less than one
Dissolved Metals (UG/L)																		
Aluminum, Dissolved	50.0 - 50.0	2 / 3	62.9	85.5	IR38-GW02-10A	57.8	30.6	109	NSV	-- / --	--	--	NSV	NSV	1886	NO	NO	Consistent with background
Antimony, Dissolved	3.75 - 3.75	0 / 3	--	--	--	1.88	0.0	1.88	NSV	-- / --	--	--	NSV	NSV	3.28	--	NO	Not detected
Arsenic, Dissolved	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	36.0	-- / --	--	--	0.035	0.017	5.77	--	NO	HQs less than one, not detected
Barium, Dissolved	-- - --	3 / 3	19.4	34.3	IR38-GW02-10A	25.9	7.64	38.8	NSV	-- / --	25000	TCEQ, 2006	0.001	0.001	86.2	NO	NO	Consistent with background, HQs less than one
Beryllium, Dissolved	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	NSV	-- / --	--	--	NSV	NSV	0.308	--	NO	Not detected
Cadmium, Dissolved	-- - --	3 / 3	0.55	0.81	IR38-GW02-10A	0.68	0.13	0.90	8.80	0 / 3	--	--	0.091	0.078	0.358	YES	NO	HQs less than one
Calcium, Dissolved [3]	-- - --	3 / 3	59,800	94,900	IR38-GW01-10A	78,267	17,622	107,974	NSV	-- / --	--	--	NSV	NSV	69078	YES	NO	Macronutrient
Chromium, Dissolved	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	50.0	-- / --	--	--	0.025	0.013	3.13	--	NO	HQs less than one, not detected
Cobalt, Dissolved	3.12 - 3.12	2 / 3	1.28	1.54	IR38-GW03-10A	1.46	0.16	1.72	NSV	-- / --	1	Buchman, 2008	1.54	1.46	3.4	NO	NO	Consistent with background
Copper, Dissolved	2.50 - 2.50	0 / 3	--	--	--	1.25	0.0	1.25	3.10	-- / --	--	--	0.81	0.40	2.76	--	NO	HQs less than one, not detected
Iron, Dissolved	25.0 - 25.0	1 / 3	8.52	8.52	IR38-GW02-10A	11.2	2.30	15.0	NSV	-- / --	50	Buchman, 2008	0.17	0.22	5999	NO	NO	Consistent with background, HQs less than one
Lead, Dissolved	0.75 - 0.75	0 / 3	--	--	--	0.38	0.0	0.38	8.10	-- / --	--	--	0.093	0.046	2.8	--	NO	HQs less than one, not detected
Magnesium, Dissolved [3]	-- - --	3 / 3	3,440	6,840	IR38-GW01-10A	5,027	1,711	7,912	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese, Dissolved	-- - --	3 / 3	23.1	49.5	IR38-GW01-10A	34.8	13.5	57.5	NSV	-- / --	100	Buchman, 2008	0.495	0.348	214	NO	NO	Consistent with background, HQs less than one
Mercury, Dissolved	0.20 - 0.20	0 / 3	--	--	--	0.10	1.70E-17	0.10	0.94	-- / --	--	--	0.21	0.11	0.1	--	NO	HQs less than one, not detected
Nickel, Dissolved	2.50 - 2.50	2 / 3	1.42	1.51	IR38-GW02-10A	1.39	0.13	1.62	8.20	0 / 3	--	--	0.18	0.17	7.97	NO	NO	Consistent with background, HQs less than one
Potassium, Dissolved [3]	-- - --	3 / 3	802	1,660	IR38-GW02-10A	1,284	439	2,024	NSV	-- / --	--	--	NSV	NSV	3277	NO	NO	Consistent with background, macronutrient
Selenium, Dissolved	1.50 - 1.50	2 / 3	1.96	2.03	IR38-GW03-10A	1.58	0.72	2.79	71.0	0 / 3	--	--	0.029	0.022	3.14	NO	NO	Consistent with background, HQs less than one
Silver, Dissolved	1.25 - 1.25	0 / 3	--	--	--	0.63	0.0	0.63	0.23	-- / --	--	--	5.43	2.72	0.77	--	NO	Not detected
Sodium, Dissolved [3]	-- - --	3 / 3	4,430	7,560	IR38-GW01-10A	5,903	1,573	8,555	NSV	-- / --	--	--	NSV	NSV	22508	NO	NO	Consistent with background, macronutrient
Thallium, Dissolved	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	21.3	-- / --	--	--	0.094	0.047	3.78	--	NO	HQs less than one, not detected
Vanadium, Dissolved	3.12 - 3.12	0 / 3	--	--	--	1.56	2.72E-16	1.56	NSV	-- / --	--	--	NSV	NSV	4.72	--	NO	Not detected
Zinc, Dissolved	-- - --	3 / 3	3.38	14.2	IR38-GW02-10A	8.31	5.47	17.5	81.0	0 / 3	--	--	0.18	0.10	42.1	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs are based on marine values
ESV - Ecological Screening Value
HQs - hazard quotients
NSV - No Screening Value
UG/L - Micrograms per liter
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-6
Site 42 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	3.90 - 15.0	0 / 7	--	--	--	3.27	2.02	4.76	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
1,2-Dichloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	400	-- / --	--	--	0.075	0.016	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	700,000	-- / --	--	--	4.29E-05	9.29E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
1,4-Dichlorobenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
2-Butanone	7.70 - 30.0	1 / 7	20.0	20.0	IR42-IS08-09C	8.64	6.42	13.4	NSV	-- / --	89,600	Buchman, 2008	2.23E-04	9.65E-05	--	--	NO	HQs less than one
2-Hexanone	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	7.70 - 17.0	2 / 7	0.92	1.40	IR42-IS01-09C	3.97	2.49	5.81	NSV	-- / --	443,000	Buchman, 2008	3.16E-06	8.97E-06	--	--	NO	HQs less than one
Acetone	7.70 - 24.0	5 / 7	28.0	400	IR42-IS01-09C	105	141	208	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, common lab contaminant
Benzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	50.0	-- / --	--	--	0.60	0.13	--	--	NO	HQs less than one, not detected
Bromodichloromethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	7.70 - 30.0	2 / 7	1.60	3.60	IR42-IS06-09C	5.96	4.50	9.26	NSV	-- / --	94	Buchman, 2008	0.04	0.06	--	--	NO	HQs less than one
Carbon tetrachloride	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	1,000,000	-- / --	--	--	3.00E-05	6.50E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	50.0	-- / --	--	--	0.60	0.13	--	--	NO	HQs less than one, not detected
Chloroethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
Chloroform	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	1.00	-- / --	--	--	30.0	6.50	--	--	NO	Not detected
Chloromethane	7.70 - 17.0	1 / 7	3.30	3.30	IR42-IS01-09C	4.83	1.72	6.09	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
cis-1,2-Dichloroethene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
Dibromochloromethane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	7.70 - 17.0	5 / 7	0.81	2.60	IR42-IS01-09C	2.65	2.83	4.73	50.0	0 / 7	--	--	0.052	0.053	--	--	NO	HQs less than one
Isopropylbenzene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	7.70 - 17.0	1 / 7	14.0	14.0	IR42-IS01-09C	6.36	3.72	9.09	2,000	0 / 7	--	--	0.0070	0.0032	--	--	NO	HQs less than one
Methyl-tert-butyl ether (MTBE)	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
Tetrachloroethene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
Toluene	7.70 - 17.0	2 / 7	2.50	9.70	IR42-IS01-09C	5.39	2.66	7.34	50.0	0 / 7	--	--	0.19	0.11	--	--	NO	HQs less than one
trans-1,2-Dichloroethene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	100	-- / --	--	--	0.30	0.065	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	1.00	-- / --	--	--	30.0	6.50	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	7.70 - 30.0	0 / 7	--	--	--	6.50	4.07	9.49	10.0	-- / --	--	--	3.00	0.65	--	--	NO	Not detected
Xylene, total	7.70 - 17.0	5 / 7	1.60	6.10	IR42-IS01-09C	3.94	2.49	5.77	50.0	0 / 7	--	--	0.12	0.079	--	--	NO	HQs less than one
Semivolatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	230 - 500	0 / 7	--	--	--	143	48.6	179	60,000	-- / --	--	--	0.0083	0.0024	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	460 - 1,000	0 / 7	--	--	--	284	98.1	356	4,000	-- / --	--	--	0.25	0.071	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	230 - 500	0 / 7	--	--	--	143	48.6	179	10,000	-- / --	--	--	0.050	0.014	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	230 - 500	0 / 7	--	--	--	143	48.6	179	3.00	-- / --	--	--	167	47.6	--	--	NO	Not detected
2,4-Dimethylphenol	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	460 - 1,000	0 / 7	--	--	--	284	98.1	356	20,000	-- / --	--	--	0.050	0.014	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,000	-- / --	--	--	0.50	0.14	--	--	NO	HQs less than one, not detected
2-Chlorophenol	230 - 500	0 / 7	--	--	--	143	48.6	179	10.0	-- / --	--	--	50.0	14.3	--	--	NO	Not detected
2-Methylnaphthalene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
2-Methylphenol	230 - 500	0 / 7	--	--	--	143	48.6	179	500	-- / --	--	--	1.00	0.29	--	--	NO	HQs equal to or less than one, not detected
2-Nitroaniline	460 - 1,000	0 / 7	--	--	--	284	98.1	356	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	460 - 1,000	0 / 7	--	--	--	284	98.1	356	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	460 - 1,000	0 / 7	--	--	--	284	98.1	356	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	230 - 500	0 / 7	--	--	--	143	48.6	179	20,000	-- / --	--	--	0.025	0.0071	--	--	NO	HQs less than one, not detected

Appendix E, Table E-6
Site 42 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chlorophenyl-phenylether	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	230 - 500	0 / 7	--	--	--	143	48.6	179	500	-- / --	--	--	1.00	0.29	--	--	NO	HQs equal to or less than one, not detected
4-Nitroaniline	460 - 1,000	0 / 7	--	--	--	284	98.1	356	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	460 - 1,000	0 / 7	--	--	--	284	98.1	356	7,000	-- / --	--	--	0.14	0.041	--	--	NO	HQs less than one, not detected
Acenaphthene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
Acenaphthylene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
Acetophenone	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
Atrazine	230 - 500	0 / 7	--	--	--	143	48.6	179	0.050	-- / --	--	--	10,000	2,857	--	--	NO	Not detected
Benzaldehyde	230 - 250	2 / 7	140	610	IR42-IS01-09C	193	184	328	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Benzo(a)anthracene	58.0 - 74.0	2 / 7	37.0	54.0	IR42-IS01-09C	35.4	8.91	41.9	1,100	0 / 7	--	--	0.049	0.032	--	--	NO	HQs less than one
Benzo(a)pyrene	6.20 - 7.90	2 / 7	16.0	24.0	IR42-IS08-09C	8.11	8.45	14.3	1,100	0 / 7	--	--	0.022	0.0074	--	--	NO	HQs less than one
Benzo(b)fluoranthene	58.0 - 63.0	3 / 7	10.0	25.0	IR42-IS01-09C	25.4	7.38	30.8	1,100	0 / 7	--	--	0.023	0.023	--	--	NO	HQs less than one
Benzo(g,h,i)perylene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,100	-- / --	--	--	0.45	0.13	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,100	-- / --	--	--	0.45	0.13	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	230 - 500	0 / 7	--	--	--	143	48.6	179	100	-- / --	--	--	5.00	1.43	--	--	NO	Not detected
Butylbenzylphthalate	230 - 500	0 / 7	--	--	--	143	48.6	179	100	-- / --	--	--	5.00	1.43	--	--	NO	Not detected
Caprolactam	-- - --	7 / 7	150	270	IR42-IS01-09C	219	43.4	250	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbazole	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,100	-- / --	--	--	0.45	0.13	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	14.0 - 35.0	0 / 7	--	--	--	9.50	3.67	12.2	1,100	-- / --	--	--	0.032	0.0086	--	--	NO	HQs less than one, not detected
Dibenzofuran	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	230 - 500	0 / 7	--	--	--	143	48.6	179	100,000	-- / --	--	--	0.0050	0.0014	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	230 - 500	0 / 7	--	--	--	143	48.6	179	200,000	-- / --	--	--	0.0025	7.14E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	230 - 500	1 / 7	54.0	54.0	IR42-IS08-09C	133	59.1	177	200,000	0 / 7	--	--	2.70E-04	6.67E-04	--	--	NO	HQs less than one
Di-n-octylphthalate	390 - 830	0 / 7	--	--	--	236	81.2	295	100	-- / --	--	--	8.30	2.36	--	--	NO	Not detected
Fluoranthene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,100	-- / --	--	--	0.45	0.13	--	--	NO	HQs less than one, not detected
Fluorene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	230 - 500	0 / 7	--	--	--	143	48.6	179	2.50	-- / --	--	--	200	57.1	--	--	NO	Not detected
Hexachlorobutadiene	230 - 500	0 / 7	--	--	--	143	48.6	179	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	230 - 500	0 / 7	--	--	--	143	48.6	179	10,000	-- / --	--	--	0.050	0.014	--	--	NO	HQs less than one, not detected
Hexachloroethane	230 - 500	0 / 7	--	--	--	143	48.6	179	100	-- / --	--	--	5.00	1.43	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	58.0 - 120	0 / 7	--	--	--	35.1	11.3	43.5	1,100	-- / --	--	--	0.11	0.032	--	--	NO	HQs less than one, not detected
Isophorone	58.0 - 120	0 / 7	--	--	--	35.1	11.3	43.5	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	29.0 - 63.0	2 / 7	13.0	33.0	IR42-TW-S03-09C	19.6	8.70	26.0	NSV	-- / --	544	Buchman, 2008	0.06	0.04	--	--	NO	HQs less than one
n-Nitrosodiphenylamine	230 - 500	0 / 7	--	--	--	143	48.6	179	20,000	-- / --	--	--	0.025	0.0071	--	--	NO	HQs less than one, not detected
Nitrobenzene	230 - 500	0 / 7	--	--	--	143	48.6	179	40,000	-- / --	--	--	0.013	0.0036	--	--	NO	HQs less than one, not detected
Pentachlorophenol	63.0 - 140	0 / 7	--	--	--	38.8	14.1	49.2	2,100	-- / --	--	--	0.067	0.018	--	--	NO	HQs less than one, not detected
Phenanthrene	230 - 500	0 / 7	--	--	--	143	48.6	179	29,000	-- / --	--	--	0.017	0.0049	--	--	NO	HQs less than one, not detected
Phenol	230 - 500	0 / 7	--	--	--	143	48.6	179	50.0	-- / --	--	--	10.0	2.86	--	--	NO	Not detected
Pyrene	230 - 500	0 / 7	--	--	--	143	48.6	179	1,100	-- / --	--	--	0.45	0.13	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																		
Aluminum	-- - --	7 / 7	3,520	12,100	IR42-IS01-09C	8,483	3,453	11,019	50.0	7 / 7	--	--	242	170	10369	YES	NO	Within background range
Arsenic	-- - --	7 / 7	1.00	4.60	IR42-IS01-09C	2.76	1.64	3.96	18.0	0 / 7	--	--	0.26	0.15	2.12	YES	NO	Within background range, HQs less than one
Barium	-- - --	7 / 7	10.9	53.3	IR42-TW-S03-09C	28.7	13.3	38.5	330	0 / 7	--	--	0.16	0.087	16.6	YES	NO	HQs less than one
Beryllium	0.37 - 0.37	6 / 7	0.085	0.22	IR42-IS01-09C	0.14	0.049	0.17	21.0	0 / 7	--	--	0.010	0.0064	0.165	YES	NO	Within background range, HQs less than one
Cadmium	-- - --	7 / 7	0.078	0.50	IR42-IS01-09C	0.15	0.15	0.27	0.36	1 / 7	--	--	1.39	0.43	0.023	YES	NO	Low magnitude of exceedance, mean HQ less than one
Calcium [3]	-- - --	7 / 7	818	10,000	IR42-IS01-09C	3,950	3,490	6,513	NSV	-- / --	--	--	NSV	NSV	441	YES	NO	Macronutrient
Chromium	-- - --	7 / 7	3.60	16.9	IR42-IS01-09C	10.7	5.33	14.6	26.0	0 / 7	--	--	0.65	0.41	14.5	YES	NO	Within background range, HQs less than one
Cobalt	0.91 - 1.10	5 / 7	0.32	0.74	IR42-IS01-09C	0.48	0.14	0.58	13.0	0 / 7	--	--	0.057	0.037	0.822	NO	NO	Consistent with background, HQs less than one
Copper	-- - --	7 / 7	1.20	6.60	IR42-IS01-09C	2.71	1.98	4.17	28.0	0 / 7	--	--	0.24	0.097	2.56	YES	NO	Within background range, HQs less than one
Iron	-- - --	7 / 7	2,330	13,300	IR42-IS01-09C	6,949	4,733	10,425	200	7 / 7	--	--	66.5	34.7	5439	YES	NO	Within background range
Lead	-- - --	7 / 7	5.60	18.7	IR42-IS01-09C	9.70	4.21	12.8	11.0	1 / 7	--	--	1.70	0.88	8.49	YES	NO	Low magnitude of exceedance, mean HQ less than one
Magnesium [3]	-- - --	7 / 7	242	2,130	IR42-IS01-09C	635	670	1,127	NSV	-- / --	--	--	NSV	NSV	363	YES	NO	Macronutrient
Manganese	-- - --	7 / 7	4.70	18.4	IR42-IS01-09C	9.53	5.47	13.5	220	0 / 7	--	--	0.084	0.043	9.25	YES	NO	HQs less than one
Mercury	0.042 - 0.042	6 / 7	0.025	0.070	IR42-IS01-09C	0.035	0.018	0.047	0.10	0 / 7	--	--	0.70	0.35	0.071	NO	NO	Consistent with background, HQs less than one
Nickel	-- - --	7 / 7	0.95	8.70	IR42-IS01-09C	2.32	2.82	4.39	38.0	0 / 7	--	--	0.23	0.061	2.27	YES	NO	HQs less than one
Potassium [3]	-- - --	7 / 7	111	944	IR42-IS01-09C	357	284	565	NSV	-- / --	--	--	NSV	NSV	361	YES	NO	Macronutrient
Selenium	-- - --	7 / 7	0.48	0.93	IR42-IS01-09C	0.65	0.16	0.77	0.52	6 / 7	--	--	1.79	1.26	0.505	YES	NO	Within background range
Silver	0.57 - 1.20	0 / 7	--	--	--	0.35	0.12	0.43	4.20	-- / --	--	--	0.29	0.083	0.129	--	NO	HQs less than one, not detected
Sodium [3]	286 - 369	5 / 7	98.4	5,030	IR42-IS01-09C	938	1,809	2,267	NSV	-- / --	--	--	NSV	NSV	68.3	YES	NO	Macronutrient
Thallium	0.46 - 0.98	0 / 7	--	--	--	0.28	0.095	0.35	1.00	-- / --	--	--	0.98	0.28	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	7 / 7	6.10	66.6	IR42-IS01-09C	22.2	20.9	37.6	7.80	5 / 7	--	--	8.54	2.85	17.2	YES	NO	See text discussion
Zinc	-- - --	7 / 7	4.10	18.0	IR42-IS01-09C	7.90	4.91	11.5	46.0	0 / 7	--	--	0.39	0.17	6.59	YES	NO	HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value

Appendix E, Table E-6
Site 42 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale

2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESV - Ecological Screening Value
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper Confidence Level
UG/KG - Micrograms per kilogram

Appendix E, Table E-7
Site 42 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,240	-- / --	--	--	4.46E-04	2.23E-04	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	19.7	-- / --	--	--	0.051	0.025	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,400	-- / --	--	--	4.17E-04	2.08E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	19.9	-- / --	--	--	0.050	0.025	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 3	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 2.50	1 / 3	12.0	12.0	IR42-TW03-09C	4.83	6.21	15.3	NSV	-- / --	282000	TCEQ, 2006	0.000043	0.000017	--	--	NO	HQs less than one
Benzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	109	-- / --	--	--	0.0092	0.0046	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	640	-- / --	--	--	0.0016	7.81E-04	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	120	-- / --	--	--	0.0083	0.0042	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	2 / 3	0.20	0.42	IR42-TW03-09C	0.37	0.16	0.64	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbon tetrachloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,500	-- / --	--	--	6.67E-04	3.33E-04	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	815	-- / --	--	--	0.0012	6.13E-04	--	--	NO	HQs less than one, not detected
Chloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	4.30	-- / --	--	--	0.23	0.12	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,560	-- / --	--	--	3.91E-04	1.95E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	37.0	-- / --	--	--	0.027	0.014	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dichlorophenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dimethylphenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	48.5	-- / --	--	--	0.52	0.25	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylnaphthalene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-7
Site 42 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chlorophenyl-phenylether	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	71.7	-- / --	--	--	0.35	0.17	--	--	NO	HQs less than one, not detected
Acenaphthene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	9.70	-- / --	--	--	1.03	0.51	--	--	NO	Not detected
Acenaphthylene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethoxy)methane	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	9.60 - 9.60	2 / 3	2.10	2.10	IR42-TW02-09C	3.00	1.56	5.63	NSV	-- / --	360	Buchman, 2008	0.01	0.01	--	--	NO	HQs less than one
Butylbenzylphthalate	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	29.4	-- / --	--	--	0.34	0.17	--	--	NO	HQs less than one, not detected
Caprolactam	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	HQs less than one, not detected
Diethylphthalate	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	759	-- / --	--	--	0.013	0.0065	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	580	-- / --	--	--	0.017	0.0084	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	3.40	-- / --	--	--	2.94	1.44	--	--	NO	Not detected
Di-n-octylphthalate	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluoranthene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	1.60	-- / --	--	--	6.25	3.06	--	--	NO	Not detected
Fluorene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobenzene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobutadiene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	0.32	-- / --	--	--	31.3	15.3	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	0.070	-- / --	--	--	143	70.0	--	--	NO	Not detected
Hexachloroethane	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	9.40	-- / --	--	--	1.06	0.52	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	129	-- / --	--	--	0.078	0.038	--	--	NO	HQs less than one, not detected
Naphthalene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	23.5	-- / --	--	--	0.43	0.21	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	33,000	-- / --	--	--	3.03E-04	1.48E-04	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	30.0	-- / --	--	--	0.33	0.16	--	--	NO	HQs less than one, not detected
Pentachlorophenol	24.0 - 25.0	0 / 3	--	--	--	12.2	0.29	12.7	7.90	-- / --	--	--	3.16	1.54	--	--	NO	Not detected
Phenanthrene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	58.0	-- / --	--	--	0.17	0.084	--	--	NO	HQs less than one, not detected
Pyrene	9.60 - 10.0	0 / 3	--	--	--	4.90	0.100	5.07	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (UG/L)																		
Aluminum	200 - 200	1 / 3	8,460	8,460	IR42-TW03-09C	2,887	4,827	11,024	NSV	-- / --	--	--	NSV	NSV	1886	YES	NO	Within background range in soils
Antimony	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	3.28	--	NO	No screening value, not detected
Arsenic	10.0 - 10.0	1 / 3	4.80	4.80	IR42-TW03-09C	4.93	0.12	5.13	36.0	0 / 3	--	--	0.13	0.14	5.77	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	3 / 3	19.8	84.6	IR42-TW01-09C	59.9	35.0	119	NSV	-- / --	25000	TCEQ, 2006	0.003	0.002	86.2	NO	NO	Consistent with background, HQs less than one
Beryllium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	0.308	--	NO	No screening value, not detected
Cadmium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	8.80	-- / --	--	--	0.57	0.28	0.358	--	NO	HQs less than one, not detected
Calcium [3]	-- - --	3 / 3	54,900	275,000	IR42-TW01-09C	133,233	122,999	340,592	NSV	-- / --	--	--	NSV	NSV	69078	YES	NO	Macronutrient
Chromium	10.0 - 10.0	1 / 3	10.9	10.9	IR42-TW03-09C	6.97	3.41	12.7	50.0	0 / 3	--	--	0.22	0.14	3.13	YES	NO	HQs less than one
Cobalt	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	3.4	--	NO	Consistent with background in soils
Copper	10.0 - 10.0	1 / 3	5.20	5.20	IR42-TW03-09C	5.07	0.12	5.26	3.10	1 / 3	--	--	1.68	1.63	2.76	YES	NO	Low magnitude of exceedance
Iron	-- - --	3 / 3	477	31,500	IR42-TW03-09C	18,559	16,138	45,765	NSV	-- / --	50	Buchman, 2008	630	371	5999	YES	NO	Within background range
Lead	3.00 - 3.00	1 / 3	3.00	3.00	IR42-TW03-09C	2.00	0.87	3.46	8.10	0 / 3	--	--	0.37	0.25	2.8	YES	NO	HQs less than one
Magnesium [3]	-- - --	3 / 3	7,530	27,200	IR42-TW02-09C	14,730	10,842	33,009	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese	-- - --	3 / 3	39.6	1,280	IR42-TW01-09C	461	710	1,657	NSV	-- / --	100	Buchman, 2008	12.8	4.61	214	YES	NO	See text discussion
Mercury	0.20 - 0.20	0 / 3	--	--	--	0.10	1.70E-17	0.10	0.94	-- / --	--	--	0.21	0.11	0.1	--	NO	HQs less than one, not detected
Nickel	-- - --	3 / 3	3.80	11.2	IR42-TW03-09C	6.40	4.16	13.4	8.20	1 / 3	--	--	1.37	0.78	7.97	YES	NO	Within background range, mean HQ less than one
Potassium [3]	-- - --	3 / 3	2,620	8,860	IR42-TW02-09C	5,527	3,142	10,823	NSV	-- / --	--	--	NSV	NSV	3277	YES	NO	Macronutrient
Selenium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	71.0	-- / --	--	--	0.070	0.035	3.14	--	NO	HQs less than one, not detected
Silver	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	0.23	-- / --	--	--	43.5	21.7	0.77	--	NO	Not detected
Sodium [3]	-- - --	3 / 3	194,000	226,000	IR42-TW01-09C	210,667	16,042	237,710	NSV	-- / --	--	--	NSV	NSV	22508	YES	NO	Macronutrient
Thallium	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	21.3	-- / --	--	--	0.094	0.047	3.78	--	NO	HQs less than one, not detected
Vanadium	15.0 - 15.0	1 / 3	12.6	12.6	IR42-TW03-09C	9.20	2.94	14.2	NSV	-- / --	50	Buchman, 2008	0.252	0.184	4.72	YES	NO	HQs less than one
Zinc	25.0 - 25.0	1 / 3	17.4	17.4	IR42-TW03-09C	14.1	2.83	18.9	81.0	0 / 3	--	--	0.21	0.17	42.1	NO	NO	Consistent with background, HQs less than one

NOTES

Appendix E, Table E-7
Site 42 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale

1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on marine values.
ESV - Ecological Screening Value
HQs - Hazard Quotients
NSV - No Screening Value
UCL - Upper Confidence Level
UG/L - Micrograms per liter
Generated by: Kelly Taylor

Appendix E, Table E-8
Site 53 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	10.0 - 14.0	1 / 5	0.64	0.64	IR53-IS01-4-5-09C	5.03	2.56	7.47	10.0	0 / 5	--	--	0.064	0.50	--	--	NO	HQs less than one
1,2-Dibromo-3-chloropropane	5.20 - 7.90	0 / 5	--	--	--	3.28	0.52	3.77	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	10.0	-- / --	--	--	1.60	0.65	--	--	NO	Not detected
1,2-Dichloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	400	-- / --	--	--	0.040	0.016	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	700,000	-- / --	--	--	2.29E-05	9.29E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	10.0	-- / --	--	--	1.60	0.65	--	--	NO	Not detected
1,4-Dichlorobenzene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	10.0	-- / --	--	--	1.60	0.65	--	--	NO	Not detected
2-Butanone	10.0 - 14.0	1 / 5	100	100	IR53-IS01-4-5-09C	24.9	42.0	64.9	NSV	-- / --	89600	Buchman, 2008	0.001	0.0003	--	--	NO	HQs less than one
2-Hexanone	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	12.0 - 70.0	1 / 5	340	340	IR53-IS01-4-5-09C	82.6	144	220	NSV	-- / --	2500	Buchman, 2008	0.14	0.03	--	--	NO	HQs less than one
Benzene	12.0 - 16.0	1 / 5	1.30	1.30	IR53-IS02-3_5-4_5-09C	5.76	2.60	8.24	50.0	0 / 5			0.026	0.12	--	--	NO	HQs less than one
Bromodichloromethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	12.0 - 16.0	1 / 5	5.50	5.50	IR53-IS02-3_5-4_5-09C	6.60	0.96	7.52	NSV	-- / --	94	Buchman, 2008	0.06	0.07	--	--	NO	HQs less than one
Carbon tetrachloride	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	1,000,000	-- / --	--	--	0.00002	0.00001	--	--	NO	HQs less than one, not detected
Chlorobenzene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	50.0	-- / --	--	--	0.32	0.13	--	--	NO	HQs less than one, not detected
Chloroethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
Chloroform	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	1.00	-- / --	--	--	16.0	6.50	--	--	NO	Not detected
Chloromethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	12.0 - 16.0	1 / 5	0.61	0.61	IR53-IS02-3_5-4_5-09C	5.62	2.90	8.38	100	0 / 5	--	--	0.0061	0.056	--	--	NO	HQs less than one
Dibromochloromethane	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	12.0 - 14.0	2 / 5	1.60	1.90	IR53-IS02-3_5-4_5-09C	4.60	2.63	7.11	50.0	0 / 5	--	--	0.038	0.092	--	--	NO	HQs less than one
Isopropylbenzene	10.0 - 14.0	1 / 5	12.0	12.0	IR53-IS01-4-5-09C	7.30	2.73	9.90	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Methyl acetate	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	12.0 - 16.0	1 / 5	0.73	0.73	IR53-IS02-3_5-4_5-09C	5.65	2.85	8.36	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Methylene chloride	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	2,000	-- / --	--	--	0.0080	0.0033	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
Tetrachloroethene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	10.0	-- / --	--	--	1.60	0.65	--	--	NO	Not detected
Toluene	12.0 - 14.0	2 / 5	1.70	2.20	IR53-IS01-4-5-09C	4.68	2.52	7.09	50.0	0 / 5	--	--	0.044	0.094	--	--	NO	HQs less than one
trans-1,2-Dichloroethene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	100	-- / --	--	--	0.16	0.065	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	1.00	-- / --	--	--	16.0	6.50	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	10.0	-- / --	--	--	1.60	0.65	--	--	NO	Not detected
Xylene, total	10.0 - 16.0	0 / 5	--	--	--	6.50	1.12	7.57	50.0	-- / --	--	--	0.32	0.13	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	220 - 280	0 / 5	--	--	--	123	13.5	136	60,000	-- / --	--	--	0.0047	0.0021	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	440 - 560	0 / 5	--	--	--	245	26.0	270	4,000	-- / --	--	--	0.14	0.061	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	220 - 280	0 / 5	--	--	--	123	13.5	136	10,000	-- / --	--	--	0.028	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	220 - 280	0 / 5	--	--	--	123	13.5	136	3.00	-- / --	--	--	93.3	41.0	--	--	NO	Not detected
2,4-Dimethylphenol	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	440 - 560	0 / 5	--	--	--	245	26.0	270	20,000	-- / --	--	--	0.028	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,000	-- / --	--	--	0.28	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	220 - 280	0 / 5	--	--	--	123	13.5	136	10.0	-- / --	--	--	28.0	12.3	--	--	NO	Not detected
2-Methylnaphthalene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
2-Methylphenol	220 - 280	0 / 5	--	--	--	123	13.5	136	500	-- / --	--	--	0.56	0.25	--	--	NO	HQs less than one, not detected
2-Nitroaniline	440 - 560	0 / 5	--	--	--	245	26.0	270	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	440 - 560	0 / 5	--	--	--	245	26.0	270	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-8
Site 53 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4,6-Dinitro-2-methylphenol	440 - 560	0 / 5	--	--	--	245	26.0	270	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	220 - 280	0 / 5	--	--	--	123	13.5	136	20,000	-- / --	--	--	0.014	0.0062	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	220 - 280	0 / 5	--	--	--	123	13.5	136	500	-- / --	--	--	0.56	0.25	--	--	NO	HQs less than one, not detected
4-Nitroaniline	440 - 560	0 / 5	--	--	--	245	26.0	270	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	440 - 560	0 / 5	--	--	--	245	26.0	270	7,000	-- / --	--	--	0.080	0.035	--	--	NO	HQs less than one, not detected
Acenaphthene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
Acenaphthylene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
Acetophenone	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
Atrazine	220 - 280	0 / 5	--	--	--	123	13.5	136	0.050	-- / --	--	--	5,600	2,460	--	--	NO	Not detected
Benzaldehyde	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	55.0 - 69.0	0 / 5	--	--	--	30.4	3.13	33.4	1,100	-- / --	--	--	0.063	0.028	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	-- - --	5 / 5	1.30	2.80	IR53-IS01-4-5-09C	1.88	0.62	2.47	1,100	0 / 5	--	--	0.0025	0.0017	--	--	NO	HQs less than one
Benzo(b)fluoranthene	57.0 - 57.0	4 / 5	2.20	3.90	IR53-IS01-4-5-09C	8.02	11.5	19.0	1,100	0 / 5	--	--	0.0035	0.0073	--	--	NO	HQs less than one
Benzo(g,h,i)perylene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,100	-- / --	--	--	0.25	0.11	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,100	-- / --	--	--	0.25	0.11	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	220 - 280	0 / 5	--	--	--	123	13.5	136	100	-- / --	--	--	2.80	1.23	--	--	NO	Not detected
Butylbenzylphthalate	220 - 280	0 / 5	--	--	--	123	13.5	136	100	-- / --	--	--	2.80	1.23	--	--	NO	Not detected
Caprolactam	220 - 270	1 / 5	220	220	IR53-IS01-4-5-09C	139	46.3	183	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbazole	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,100	-- / --	--	--	0.25	0.11	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	5.80 - 16.0	0 / 5	--	--	--	5.72	2.26	7.88	1,100	-- / --	--	--	0.015	0.0052	--	--	NO	HQs less than one, not detected
Dibenzofuran	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	220 - 280	0 / 5	--	--	--	123	13.5	136	100,000	-- / --	--	--	0.0028	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	220 - 280	0 / 5	--	--	--	123	13.5	136	200,000	-- / --	--	--	0.0014	6.15E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	220 - 280	0 / 5	--	--	--	123	13.5	136	200,000	-- / --	--	--	0.0014	6.15E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	360 - 460	0 / 5	--	--	--	202	21.7	223	100	-- / --	--	--	4.60	2.02	--	--	NO	Not detected
Fluoranthene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,100	-- / --	--	--	0.25	0.11	--	--	NO	HQs less than one, not detected
Fluorene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	220 - 280	0 / 5	--	--	--	123	13.5	136	2.50	-- / --	--	--	112	49.2	--	--	NO	Not detected
Hexachlorobutadiene	220 - 280	0 / 5	--	--	--	123	13.5	136	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	220 - 280	0 / 5	--	--	--	123	13.5	136	10,000	-- / --	--	--	0.028	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	220 - 280	0 / 5	--	--	--	123	13.5	136	100	-- / --	--	--	2.80	1.23	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	55.0 - 69.0	0 / 5	--	--	--	30.4	3.13	33.4	1,100	-- / --	--	--	0.063	0.028	--	--	NO	HQs less than one, not detected
Isophorone	55.0 - 69.0	0 / 5	--	--	--	30.4	3.13	33.4	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	28.0 - 35.0	0 / 5	--	--	--	15.5	1.62	17.0	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	220 - 280	0 / 5	--	--	--	123	13.5	136	20,000	-- / --	--	--	0.014	0.0062	--	--	NO	HQs less than one, not detected
Nitrobenzene	220 - 280	0 / 5	--	--	--	123	13.5	136	40,000	-- / --	--	--	0.0070	0.0031	--	--	NO	HQs less than one, not detected
Pentachlorophenol	58.0 - 74.0	0 / 5	--	--	--	32.4	3.44	35.7	2,100	-- / --	--	--	0.035	0.015	--	--	NO	HQs less than one, not detected
Phenanthrene	220 - 280	0 / 5	--	--	--	123	13.5	136	29,000	-- / --	--	--	0.0097	0.0042	--	--	NO	HQs less than one, not detected
Phenol	220 - 280	0 / 5	--	--	--	123	13.5	136	50.0	-- / --	--	--	5.60	2.46	--	--	NO	Not detected
Pyrene	220 - 280	0 / 5	--	--	--	123	13.5	136	1,100	-- / --	--	--	0.25	0.11	--	--	NO	HQs less than one, not detected
Pesticide/Polychlorinated Biphenyls (UG/KG)																		
Aroclor-1016	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1221	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1232	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1242	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1248	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1254	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Aroclor-1260	18.0 - 23.0	0 / 5	--	--	--	10.1	1.08	11.1	20.0	-- / --	--	--	1.15	0.51	--	--	NO	Not detected
Inorganics (MG/KG)																		
Aluminum	-- - --	5 / 5	1,840	15,400	IR53-IS05-2-3-09C	8,278	6,143	14,135	50.0	5 / 5	--	--	308	166	10369	YES	NO	Within background range
Arsenic	-- - --	5 / 5	0.31	2.40	IR53-IS05-2-3-09C	1.21	0.83	2.01	18.0	0 / 5	--	--	0.13	0.067	2.12	YES	NO	Within background range, HQs less than one
Barium	-- - --	5 / 5	4.90	34.9	IR53-IS07-1-2-09C	21.1	13.2	33.6	330	0 / 5	--	--	0.11	0.064	16.6	YES	NO	HQs less than one
Beryllium	0.27 - 0.28	3 / 5	0.14	0.15	IR53-IS07-1-2-09C	0.14	0.0067	0.15	21.0	0 / 5	--	--	0.0071	0.0068	0.165	NO	NO	Consistent with background, HQs less than one
Cadmium	0.28 - 0.34	2 / 5	0.061	0.13	IR53-IS02-3_5-4_5-09C	0.13	0.044	0.17	0.36	0 / 5	--	--	0.36	0.37	0.023	YES	NO	HQs less than one
Calcium [3]	-- - --	5 / 5	207	32,400	IR53-IS02-3_5-4_5-09C	8,165	13,873	21,392	NSV	-- / --	--	--	NSV	NSV	441	YES	NO	Macronutrient
Chromium	-- - --	5 / 5	2.70	15.6	IR53-IS07-1-2-09C	8.66	6.04	14.4	26.0	0 / 5	--	--	0.60	0.33	14.5	YES	NO	Within background range, HQs less than one
Cobalt	0.81 - 1.00	2 / 5	0.63	1.00	IR53-IS05-2-3-09C	0.59	0.25	0.82	13.0	0 / 5	--	--	0.077	0.045	0.822	YES	NO	Within background range, HQs less than one
Copper	0.55 - 0.55	4 / 5	0.69	2.40	IR53-IS07-1-2-09C	1.19	0.88	2.03	28.0	0 / 5	--	--	0.086	0.043	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	5 / 5	874	10,200	IR53-IS05-2-3-09C	4,149	3,568	7,551	200	5 / 5	--	--	51.0	20.7	5439	YES	NO	Within background range

Appendix E, Table E-8
Site 53 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Lead	-- - --	5 / 5	2.40	13.7	IR53-IS07-1-2-09C	7.46	4.04	11.3	11.0	1 / 5	--	--	1.25	0.68	8.49	YES	NO	Low magnitude and frequency of exceedance, mean HQ less than one
Magnesium [3]	-- - --	5 / 5	76.5	624	IR53-IS02-3_5-4_5-09C	386	227	602	NSV	-- / --	--	--	NSV	NSV	363	YES	NO	Macronutrient
Manganese	-- - --	5 / 5	2.30	17.1	IR53-IS01-4-5-09C	10.4	5.61	15.7	220	0 / 5	--	--	0.078	0.047	9.25	YES	NO	Within background range, HQs less than one
Mercury	0.038 - 0.038	4 / 5	0.022	0.058	IR53-IS07-1-2-09C	0.040	0.019	0.058	0.10	0 / 5	--	--	0.58	0.40	0.071	NO	NO	Consistent with background, HQs less than one
Nickel	-- - --	5 / 5	0.48	4.10	IR53-IS05-2-3-09C	1.83	1.47	3.24	38.0	0 / 5	--	--	0.11	0.048	2.27	YES	NO	Within background range, HQs less than one
Potassium [3]	-- - --	5 / 5	99.9	309	IR53-IS07-1-2-09C	195	99.8	290	NSV	-- / --	--	--	NSV	NSV	361	NO	NO	Consistent with background, macronutrient
Selenium	0.28 - 0.28	4 / 5	0.30	0.65	IR53-IS07-1-2-09C	0.42	0.21	0.62	0.52	2 / 5	--	--	1.25	0.80	0.505	YES	NO	Within background range, low magnitude of exceedance
Silver	0.54 - 0.69	0 / 5	--	--	--	0.30	0.036	0.33	4.20	-- / --	--	--	0.16	0.071	0.129	--	NO	HQs less than one, not detected
Sodium [3]	275 - 344	1 / 5	68.8	68.8	IR53-IS02-3_5-4_5-09C	136	40.9	175	NSV	-- / --	--	--	NSV	NSV	68.3	YES	NO	Macronutrient
Thallium	0.43 - 0.55	0 / 5	--	--	--	0.24	0.029	0.27	1.00	-- / --	--	--	0.55	0.24	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	5 / 5	3.10	23.9	IR53-IS05-2-3-09C	11.4	8.70	19.7	7.80	3 / 5	--	--	3.06	1.46	17.2	YES	NO	Within background range, low magnitude of exceedance
Zinc	1.40 - 1.40	4 / 5	3.10	7.60	IR53-IS05-2-3-09C	4.90	2.92	7.68	46.0	0 / 5	--	--	0.17	0.11	6.59	YES	NO	Within background range, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESV - Ecological Screening Value
HQs - hazard quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - upper confidence limit of the mean
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-9
Site 53 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	528	-- / --	--	--	0.0019	9.47E-04	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	240	-- / --	--	--	0.0042	0.0021	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	940	-- / --	--	--	0.0011	5.32E-04	--	--	NO	No screening value, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	303	-- / --	--	--	0.0033	0.0017	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	44.9	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	15.8	-- / --	--	--	0.063	0.032	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,000	-- / --	--	--	5.00E-04	2.50E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	525	-- / --	--	--	0.0019	9.52E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	50.2	-- / --	--	--	0.020	0.0100	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	11.2	-- / --	--	--	0.089	0.045	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 3	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 4.20	0 / 3	--	--	--	1.53	0.49	2.36	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	53.0	-- / --	--	--	0.019	0.0094	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	293	-- / --	--	--	0.0034	0.0017	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	110	-- / --	--	--	0.0091	0.0045	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	1 / 3	1.10	1.10	IR53-TW03-09C	0.70	0.35	1.28	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbon tetrachloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	352	-- / --	--	--	0.0028	0.0014	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	195	-- / --	--	--	0.0051	0.0026	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	289	-- / --	--	--	0.0035	0.0017	--	--	NO	HQs less than one, not detected
Chloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	5,500	-- / --	--	--	1.82E-04	9.09E-05	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	24.4	-- / --	--	--	0.041	0.020	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	453	-- / --	--	--	0.0022	0.0011	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,930	-- / --	--	--	5.18E-04	2.59E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	84.0	-- / --	--	--	0.012	0.0060	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	175	-- / --	--	--	0.0057	0.0029	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,350	-- / --	--	--	7.41E-04	3.70E-04	--	--	NO	No screening value, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	24.4	-- / --	--	--	0.041	0.020	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	3.20	-- / --	--	--	3.13	1.48	--	--	NO	No screening value, not detected
2,4-Dichlorophenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	36.5	-- / --	--	--	0.27	0.13	--	--	NO	No screening value, not detected
2,4-Dimethylphenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	21.2	-- / --	--	--	0.47	0.22	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	6.20	-- / --	--	--	4.03	1.91	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	43.8	-- / --	--	--	0.23	0.11	--	--	NO	No screening value, not detected
2-Methylnaphthalene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	3,500	-- / --	--	--	0.0029	0.0014	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	2.30	-- / --	--	--	10.9	5.14	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	12.2	-- / --	--	--	0.82	0.39	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	0.30	-- / --	--	--	33.3	15.8	--	--	NO	No screening value, not detected
4-Chloroaniline	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chlorophenyl-phenylether	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitroaniline	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	82.8	-- / --	--	--	0.30	0.14	--	--	NO	HQs less than one, not detected
Acenaphthene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	17.0	-- / --	--	--	0.59	0.28	--	--	NO	Not detected
Acenaphthylene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-9
Site 53 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
bis(2-Chloroethoxy)methane	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	2,380	-- / --	--	--	0.0042	0.0020	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	0.30	-- / --	--	--	33.3	15.8	--	--	NO	No screening value, not detected
Butylbenzylphthalate	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	22.0	-- / --	--	--	0.45	0.22	--	--	NO	HQs less than one, not detected
Caprolactam	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	521	-- / --	--	--	0.019	0.0091	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	330	-- / --	--	--	0.030	0.014	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.20 - 9.30	1 / 3	1.30	1.30	IR53-TW02-09C	3.52	1.92	6.75	9.40	0 / 3	--	--	0.14	0.37	--	--	NO	HQs less than one
Di-n-octylphthalate	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluoranthene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	39.8	-- / --	--	--	0.25	0.12	--	--	NO	Not detected
Fluorene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobenzene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobutadiene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	0.93	-- / --	--	--	10.8	5.11	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	0.070	-- / --	--	--	143	67.9	--	--	NO	Not detected
Hexachloroethane	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	9.80	-- / --	--	--	1.02	0.48	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	1,170	-- / --	--	--	0.0085	0.0041	--	--	NO	HQs less than one, not detected
Naphthalene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	62.0	-- / --	--	--	0.16	0.077	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	58.5	-- / --	--	--	0.17	0.081	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	270	-- / --	--	--	0.037	0.018	--	--	NO	HQs less than one, not detected
Pentachlorophenol	23.0 - 25.0	0 / 3	--	--	--	11.8	0.58	12.8	15.0	-- / --	--	--	1.67	0.79	--	--	NO	Not detected
Phenanthrene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	256	-- / --	--	--	0.039	0.019	--	--	NO	HQs less than one, not detected
Pyrene	9.20 - 10.0	0 / 3	--	--	--	4.75	0.22	5.12	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Pesticide/Polychlorinated Biphenyls (UG/L)																		
Aroclor-1016	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1221	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1232	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1242	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1248	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1254	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Aroclor-1260	0.46 - 0.52	0 / 3	--	--	--	0.25	0.015	0.27	0.014	-- / --	--	--	37.1	17.5	--	--	NO	Not detected
Inorganics (UG/L)																		
Aluminum	-- - --	3 / 3	2,200	50,300	IR53-TW03-09C	19,803	26,516	64,505	87.0	3 / 3	--	--	578	228	1886	YES	NO	Within background range in soils
Antimony	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	160	-- / --	--	--	0.094	0.047	3.28	--	NO	No screening value, not detected
Arsenic	1.50 - 1.50	2 / 3	3.60	5.00	IR53-TW01-09C	3.12	2.17	6.77	150	0 / 3	--	--	0.033	0.021	5.77	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	3 / 3	23.8	121	IR53-TW03-09C	63.0	51.2	149	NSV	-- / --	16000	TCEQ, 2006	0.008	0.004	86.2	YES	NO	Within background range, HQs less than one
Beryllium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	0.53	-- / --	--	--	9.43	4.72	0.308	--	NO	No screening value, not detected
Cadmium	5.00 - 5.00	1 / 3	1.30	1.30	IR53-TW03-09C	2.10	0.69	3.27	0.25	1 / 3	--	--	5.20	8.40	0.358	YES	NO	See text discussion
Calcium [3]	-- - --	3 / 3	1,310	6,610	IR53-TW01-09C	4,703	2,946	9,670	NSV	-- / --	--	--	NSV	NSV	69078	NO	NO	Consistent with background, macronutrient
Chromium	-- - --	3 / 3	2.60	71.2	IR53-TW03-09C	28.5	37.3	91.3	117	0 / 3	--	--	0.61	0.24	3.13	YES	NO	HQs less than one
Cobalt	15.0 - 15.0	1 / 3	28.9	28.9	IR53-TW03-09C	14.6	12.4	35.5	NSV	-- / --	1500	TCEQ, 2006	0.02	0.01	3.4	YES	NO	Consistent with background, HQs less than one
Copper	10.0 - 10.0	1 / 3	17.5	17.5	IR53-TW03-09C	9.17	7.22	21.3	9.00	1 / 3	--	--	1.94	1.02	2.76	YES	NO	ESV based on dissolved copper, low magnitude of exceedance
Iron	-- - --	3 / 3	4,660	93,900	IR53-TW03-09C	42,620	46,087	120,316	1,000	3 / 3	--	--	93.9	42.6	5999	YES	NO	Within background range in soils
Lead	3.00 - 3.00	2 / 3	1.90	28.8	IR53-TW03-09C	10.7	15.6	37.1	25.0	1 / 3	--	--	1.15	0.43	2.8	YES	NO	ESV based on dissolved lead, low magnitude of exceedance
Magnesium [3]	-- - --	3 / 3	1,440	3,280	IR53-TW03-09C	2,157	985	3,817	NSV	-- / --	--	--	NSV	NSV	6363	NO	NO	Consistent with background, macronutrient
Manganese	-- - --	3 / 3	23.0	95.1	IR53-TW03-09C	47.4	41.3	117	NSV	-- / --	120	TCEQ, 2006	0.79	0.40	214	NO	NO	Consistent with background, HQs less than one
Mercury	0.20 - 0.20	1 / 3	0.13	0.13	IR53-TW03-09C	0.11	0.017	0.14	0.77	0 / 3	--	--	0.17	0.14	0.1	YES	NO	HQs less than one
Nickel	-- - --	3 / 3	5.40	55.1	IR53-TW03-09C	22.8	28.0	70.0	52.0	1 / 3	--	--	1.06	0.44	7.97	YES	NO	ESV based on dissolved nickel, low magnitude of exceedance
Potassium [3]	5,000 - 5,000	2 / 3	1,180	3,070	IR53-TW03-09C	2,250	969	3,884	NSV	-- / --	--	--	NSV	NSV	3277	NO	NO	Consistent with background, macronutrient
Selenium	5.00 - 5.00	1 / 3	4.00	4.00	IR53-TW03-09C	3.00	0.87	4.46	5.00	0 / 3	--	--	0.80	0.60	3.14	YES	NO	HQs less than one
Silver	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	0.012	-- / --	--	--	833	417	0.77	--	NO	Not detected
Sodium [3]	9,930 - 9,930	2 / 3	3,240	5,840	IR53-TW02-09C	4,682	1,323	6,912	NSV	-- / --	--	--	NSV	NSV	22508	NO	NO	Consistent with background, macronutrient
Thallium	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	4.00	-- / --	--	--	0.50	0.25	3.78	--	NO	HQs less than one, not detected
Vanadium	15.0 - 15.0	2 / 3	12.1	80.2	IR53-TW03-09C	33.3	40.7	102	NSV	-- / --	19	Buchman, 2008	4.22	1.75	4.72	YES	NO	Within background range in soils
Zinc	25.0 - 25.0	2 / 3	11.7	68.4	IR53-TW03-09C	30.9	32.5	85.7	120	0 / 3	--	--	0.57	0.26	42.1	YES	NO	Within background range, HQs less than one
Dissolved Metals (UG/L)																		
Arsenic, Dissolved	1.50 - 1.50	0 / 1	--	--	--	0.75	--	--	150	-- / --	--	--	0.010	0.0050	5.77	--	NO	HQs less than one, not detected

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on freshwater values
ESV - ecological screening value
HQs - Hazard Quotients

Appendix E, Table E-10
Site 55 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	4.80 - 6.30	0 / 5	--	--	--	2.67	0.29	2.95	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
1,2-Dichloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	400	-- / --	--	--	0.033	0.013	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	700,000	-- / --	--	--	1.86E-05	7.64E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
1,4-Dichlorobenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
2-Butanone	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	12.0 - 65.0	1 / 5	36.0	36.0	IR55-IS07-3-4-09C	19.5	14.2	33.0	NSV	-- / --	2500	Buchman, 2006	0.0144	0.0078	--	--	NO	HQs less than one
Benzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	50.0	-- / --	--	--	0.26	0.11	--	--	NO	HQs less than one, not detected
Bromodichloromethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	1,000,000	-- / --	--	--	1.30E-05	5.35E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	50.0	-- / --	--	--	0.26	0.11	--	--	NO	HQs less than one, not detected
Chloroethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
Chloroform	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	1.00	-- / --	--	--	13.0	5.35	--	--	NO	Not detected
Chloromethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
Dibromochloromethane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	9.50 - 10.0	2 / 5	1.10	1.50	IR55-IS06-3-4-09C	3.47	1.99	5.37	50.0	0 / 5	--	--	0.030	0.069	--	--	NO	HQs less than one
Isopropylbenzene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	10.0 - 13.0	3 / 5	9.50	43.0	IR55-IS03-1-2-09C	14.8	15.9	29.9	2,000	0 / 5	--	--	0.022	0.0074	--	--	NO	HQs less than one
Methyl-tert-butyl ether (MTBE)	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
Tetrachloroethene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
Toluene	9.50 - 11.0	1 / 5	1.30	1.30	IR55-IS03-1-2-09C	4.31	1.70	5.94	50.0	0 / 5	--	--	0.026	0.086	--	--	NO	HQs less than one
trans-1,2-Dichloroethene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	100	-- / --	--	--	0.13	0.054	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	1.00	-- / --	--	--	13.0	5.35	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	10.0	-- / --	--	--	1.30	0.54	--	--	NO	Not detected
Xylene, total	9.50 - 13.0	0 / 5	--	--	--	5.35	0.70	6.02	50.0	-- / --	--	--	0.26	0.11	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	210 - 260	0 / 5	--	--	--	118	10.4	128	60,000	-- / --	--	--	0.0043	0.0020	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	420 - 510	0 / 5	--	--	--	236	18.5	254	4,000	-- / --	--	--	0.13	0.059	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	210 - 260	0 / 5	--	--	--	118	10.4	128	10,000	-- / --	--	--	0.026	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	210 - 260	0 / 5	--	--	--	118	10.4	128	3.00	-- / --	--	--	86.7	39.3	--	--	NO	Not detected
2,4-Dimethylphenol	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	420 - 510	0 / 5	--	--	--	236	18.5	254	20,000	-- / --	--	--	0.026	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,000	-- / --	--	--	0.26	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	210 - 260	0 / 5	--	--	--	118	10.4	128	10.0	-- / --	--	--	26.0	11.8	--	--	NO	Not detected
2-Methylnaphthalene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
2-Methylphenol	210 - 260	0 / 5	--	--	--	118	10.4	128	500	-- / --	--	--	0.52	0.24	--	--	NO	HQs less than one, not detected
2-Nitroaniline	420 - 510	0 / 5	--	--	--	236	18.5	254	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	420 - 510	0 / 5	--	--	--	236	18.5	254	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	420 - 510	0 / 5	--	--	--	236	18.5	254	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	210 - 260	0 / 5	--	--	--	118	10.4	128	20,000	-- / --	--	--	0.013	0.0059	--	--	NO	HQs less than one, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chlorophenyl-phenylether	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	210 - 260	0 / 5	--	--	--	118	10.4	128	500	-- / --	--	--	0.52	0.24	--	--	NO	HQs less than one, not detected
4-Nitroaniline	420 - 510	0 / 5	--	--	--	236	18.5	254	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	420 - 510	0 / 5	--	--	--	236	18.5	254	7,000	-- / --	--	--	0.073	0.034	--	--	NO	HQs less than one, not detected
Acenaphthene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
Acenaphthylene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
Acetophenone	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
Atrazine	210 - 260	0 / 5	--	--	--	118	10.4	128	0.050	-- / --	--	--	5,200	2,360	--	--	NO	Not detected
Benzaldehyde	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	52.0 - 52.0	4 / 5	7.30	8.40	IR55-IS04-4-5-09C	11.6	8.07	19.3	1,100	0 / 5	--	--	0.0076	0.011	--	--	NO	HQs less than one
Benzo(a)pyrene	5.60 - 6.80	1 / 5	1.30	1.30	IR55-IS04-4-5-09C	2.74	0.84	3.54	1,100	0 / 5	--	--	0.0012	0.0025	--	--	NO	HQs less than one
Benzo(b)fluoranthene	52.0 - 62.0	1 / 5	2.50	2.50	IR55-IS06-3-4-09C	23.5	11.9	34.8	1,100	0 / 5	--	--	0.0023	0.021	--	--	NO	HQs less than one
Benzo(g,h,i)perylene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,100	-- / --	--	--	0.24	0.11	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,100	-- / --	--	--	0.24	0.11	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	210 - 260	0 / 5	--	--	--	118	10.4	128	100	-- / --	--	--	2.60	1.18	--	--	NO	Not detected
Butylbenzylphthalate	210 - 260	0 / 5	--	--	--	118	10.4	128	100	-- / --	--	--	2.60	1.18	--	--	NO	Not detected
Caprolactam	210 - 250	2 / 5	87.0	160	IR55-IS06-3-4-09C	119	27.1	145	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbazole	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,100	-- / --	--	--	0.24	0.11	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	5.60 - 6.80	1 / 5	13.0	13.0	IR55-IS02-4-5-09C	5.14	4.40	9.33	1,100	0 / 5	--	--	0.012	0.0047	--	--	NO	HQs less than one
Dibenzofuran	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	210 - 260	0 / 5	--	--	--	118	10.4	128	100,000	-- / --	--	--	0.0026	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	210 - 260	0 / 5	--	--	--	118	10.4	128	200,000	-- / --	--	--	0.0013	5.90E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	210 - 260	0 / 5	--	--	--	118	10.4	128	200,000	-- / --	--	--	0.0013	5.90E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	210 - 420	0 / 5	--	--	--	182	44.2	224	100	-- / --	--	--	4.20	1.82	--	--	NO	Not detected
Fluoranthene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,100	-- / --	--	--	0.24	0.11	--	--	NO	HQs less than one, not detected
Fluorene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	210 - 260	0 / 5	--	--	--	118	10.4	128	2.50	-- / --	--	--	104	47.2	--	--	NO	Not detected
Hexachlorobutadiene	210 - 260	0 / 5	--	--	--	118	10.4	128	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	210 - 260	0 / 5	--	--	--	118	10.4	128	10,000	-- / --	--	--	0.026	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	210 - 260	0 / 5	--	--	--	118	10.4	128	100	-- / --	--	--	2.60	1.18	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	52.0 - 64.0	0 / 5	--	--	--	29.4	2.41	31.7	1,100	-- / --	--	--	0.058	0.027	--	--	NO	HQs less than one, not detected
Isophorone	52.0 - 64.0	0 / 5	--	--	--	29.4	2.41	31.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	26.0 - 32.0	0 / 5	--	--	--	14.8	1.30	16.0	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	210 - 260	0 / 5	--	--	--	118	10.4	128	20,000	-- / --	--	--	0.013	0.0059	--	--	NO	HQs less than one, not detected
Nitrobenzene	210 - 260	0 / 5	--	--	--	118	10.4	128	40,000	-- / --	--	--	0.0065	0.0030	--	--	NO	HQs less than one, not detected
Pentachlorophenol	17.0 - 66.0	1 / 5	61.0	61.0	IR55-IS02-4-5-09C	28.9	21.3	49.2	2,100	0 / 5	--	--	0.029	0.014	--	--	NO	HQs less than one
Phenanthrene	210 - 260	0 / 5	--	--	--	118	10.4	128	29,000	-- / --	--	--	0.0090	0.0041	--	--	NO	HQs less than one, not detected
Phenol	210 - 260	0 / 5	--	--	--	118	10.4	128	50.0	-- / --	--	--	5.20	2.36	--	--	NO	Not detected
Pyrene	210 - 260	0 / 5	--	--	--	118	10.4	128	1,100	-- / --	--	--	0.24	0.11	--	--	NO	HQs less than one, not detected
Pesticide/Polychlorinated Biphenyls (UG/KG)																		
4,4'-DDD	0.75 - 0.75	4 / 5	0.36	4.60	IR55-IS06-3-4-09C	1.93	1.98	3.82	21.0	0 / 5	--	--	0.22	0.092	--	--	NO	HQs less than one
4,4'-DDE	0.75 - 0.75	4 / 5	0.28	3.90	IR55-IS03-1-2-09C	1.42	1.53	2.88	21.0	0 / 5	--	--	0.19	0.068	--	--	NO	HQs less than one
4,4'-DDT	0.75 - 0.80	3 / 5	0.65	1.80	IR55-IS06-3-4-09C	0.82	0.58	1.37	21.0	0 / 5	--	--	0.086	0.039	--	--	NO	HQs less than one
Aldrin	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	2.50	-- / --	--	--	0.17	0.078	--	--	NO	HQs less than one, not detected
alpha-BHC	0.35 - 0.42	1 / 5	0.29	0.29	IR55-IS07-3-4-09C	0.21	0.045	0.26	2.50	0 / 5	--	--	0.12	0.086	--	--	NO	HQs less than one
alpha-Chlordane	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected
Aroclor-1016	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1221	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1232	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1242	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1248	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1254	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
Aroclor-1260	17.0 - 21.0	0 / 5	--	--	--	9.80	0.84	10.6	20.0	-- / --	--	--	1.05	0.49	--	--	NO	Not detected
beta-BHC	0.35 - 0.42	1 / 5	0.26	0.26	IR55-IS07-3-4-09C	0.21	0.033	0.24	1.00	0 / 5	--	--	0.26	0.21	--	--	NO	HQs less than one
delta-BHC	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected
Dieldrin	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	4.90	-- / --	--	--	0.17	0.080	--	--	NO	HQs less than one, not detected
Endosulfan I	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected
Endosulfan II	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	100	-- / --	--	--	0.0085	0.0039	--	--	NO	HQs less than one, not detected
Endosulfan sulfate	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	100	-- / --	--	--	0.0085	0.0039	--	--	NO	HQs less than one, not detected
Endrin	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	1.00	-- / --	--	--	0.85	0.39	--	--	NO	HQs less than one, not detected
Endrin aldehyde	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	100	-- / --	--	--	0.0085	0.0039	--	--	NO	HQs less than one, not detected
Endrin ketone	0.70 - 0.85	0 / 5	--	--	--	0.39	0.031	0.42	100	-- / --	--	--	0.0085	0.0039	--	--	NO	HQs less than one, not detected
gamma-BHC (Lindane)	0.35 - 0.42	1 / 5	0.17	0.17	IR55-IS07-3-4-09C	0.19	0.019	0.21	0.050	1 / 5	--	--	3.40	3.80	--	--	NO	Low magnitude and frequency of exceedance
gamma-Chlordane	0.35 - 1.30	0 / 5	--	--	--	0.30	0.20	0.49	100	-- / --	--	--	0.013	0.0030	--	--	NO	HQs less than one, not detected
Heptachlor	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Heptachlor epoxide	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected
Methoxychlor	0.35 - 0.42	0 / 5	--	--	--	0.20	0.016	0.21	100	-- / --	--	--	0.0042	0.0020	--	--	NO	HQs less than one, not detected
Toxaphene	35.0 - 42.0	0 / 5	--	--	--	19.6	1.56	21.1	100	-- / --	--	--	0.42	0.20	--	--	NO	HQs less than one, not detected
Herbicides (UG/KG)											--	--						
2,4,5-T	5.20 - 6.40	0 / 5	--	--	--	2.94	0.24	3.17	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-TP (Silvex)	5.20 - 6.40	0 / 5	--	--	--	2.94	0.24	3.17	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-D	52.0 - 64.0	0 / 5	--	--	--	29.4	2.41	31.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DB	52.0 - 64.0	0 / 5	--	--	--	29.4	2.41	31.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DP (Dichloroprop)	52.0 - 64.0	0 / 5	--	--	--	29.4	2.41	31.7	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dalapon	130 - 160	0 / 5	--	--	--	74.0	6.52	80.2	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dicamba	5.20 - 6.40	0 / 5	--	--	--	2.94	0.24	3.17	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dinoseb	26.0 - 32.0	0 / 5	--	--	--	14.7	1.20	15.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
MCPA	5,200 - 6,400	0 / 5	--	--	--	2,940	241	3,170	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
MCPP	5,200 - 6,400	0 / 5	--	--	--	2,940	241	3,170	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (MG/KG)																		
Aluminum	-- - --	5 / 5	3,160	17,500	IR55-IS06-3-4-09C	8,616	5,809	14,155	50.0	5 / 5	--	--	350	172	10369	YES	NO	Only slightly exceeds background range
Antimony	0.78 - 1.90	0 / 5	--	--	--	0.53	0.23	0.76	0.27	-- / --	--	--	7.04	1.97	0.36	--	NO	Not detected
Arsenic	-- - --	5 / 5	1.00	5.10	IR55-IS06-3-4-09C	3.52	1.58	5.03	18.0	0 / 5	--	--	0.28	0.20	2.12	YES	NO	HQs less than one
Barium	-- - --	5 / 5	8.80	24.9	IR55-IS06-3-4-09C	13.1	6.72	19.5	330	0 / 5	--	--	0.075	0.040	16.6	YES	NO	HQs less than one
Beryllium	0.26 - 0.28	3 / 5	0.14	0.23	IR55-IS06-3-4-09C	0.16	0.042	0.20	21.0	0 / 5	--	--	0.011	0.0074	0.165	YES	NO	HQs less than one
Cadmium	0.26 - 0.63	0 / 5	--	--	--	0.18	0.077	0.25	0.36	-- / --	--	--	1.75	0.49	0.023	--	NO	Not detected
Calcium [3]	2,250 - 2,250	4 / 5	100	406	IR55-IS02-4-5-09C	375	438	793	NSV	-- / --	--	--	NSV	NSV	441	NO	NO	Consistent with background, macronutrient
Chromium	-- - --	5 / 5	3.70	21.8	IR55-IS06-3-4-09C	13.8	6.64	20.1	26.0	0 / 5	--	--	0.84	0.53	14.5	YES	NO	HQs less than one
Cobalt	0.78 - 0.84	3 / 5	0.38	0.98	IR55-IS06-3-4-09C	0.54	0.25	0.79	13.0	0 / 5	--	--	0.075	0.042	0.822	YES	NO	HQs less than one
Copper	-- - --	5 / 5	0.61	7.80	IR55-IS06-3-4-09C	2.92	2.85	5.64	28.0	0 / 5	--	--	0.28	0.10	2.56	YES	NO	HQs less than one
Iron	-- - --	5 / 5	2,050	9,010	IR55-IS06-3-4-09C	5,776	3,410	9,028	200	5 / 5	--	--	45.1	28.9	5439	YES	NO	Within background range
Lead	-- - --	5 / 5	4.10	11.2	IR55-IS06-3-4-09C	6.30	2.94	9.10	11.0	1 / 5	--	--	1.02	0.57	8.49	YES	NO	Within background range of background, low magnitude and frequency of exceedance
Magnesium [3]	-- - --	5 / 5	127	621	IR55-IS06-3-4-09C	368	211	569	NSV	-- / --	--	--	NSV	NSV	363	YES	NO	Macronutrient
Manganese	-- - --	5 / 5	4.10	14.6	IR55-IS06-3-4-09C	8.12	4.35	12.3	220	0 / 5	--	--	0.066	0.037	9.25	YES	NO	HQs less than one
Mercury	0.037 - 0.037	4 / 5	0.017	0.027	IR55-IS03-1-2-09C	0.021	0.0038	0.024	0.10	0 / 5	--	--	0.27	0.21	0.071	NO	NO	Consistent with background, HQs less than one
Nickel	-- - --	5 / 5	0.64	4.60	IR55-IS06-3-4-09C	2.03	1.57	3.52	38.0	0 / 5	--	--	0.12	0.053	2.27	YES	NO	Within background range, HQs less than one
Potassium [3]	-- - --	5 / 5	109	604	IR55-IS06-3-4-09C	367	206	563	NSV	-- / --	--	--	NSV	NSV	361	YES	NO	Macronutrient
Selenium	0.26 - 0.26	4 / 5	0.33	0.53	IR55-IS07-3-4-09C	0.36	0.16	0.51	0.52	1 / 5	--	--	1.02	0.70	0.505	YES	NO	Low magnitude and frequency of exceedance, mean HQ less than one
Silver	0.52 - 1.30	1 / 5	0.060	0.060	IR55-IS07-3-4-09C	0.31	0.21	0.51	4.20	0 / 5	--	--	0.014	0.074	0.129	NO	NO	Consistent with background, HQs less than one
Sodium [3]	260 - 632	0 / 5	--	--	--	177	78.0	252	NSV	-- / --	--	--	NSV	NSV	68.3	--	NO	Macronutrient
Thallium	0.42 - 1.00	0 / 5	--	--	--	0.28	0.12	0.40	1.00	-- / --	--	--	1.00	0.28	0.38	--	NO	HQs equal to or less than one, not detected
Vanadium	-- - --	5 / 5	5.20	28.3	IR55-IS06-3-4-09C	17.0	8.70	25.3	7.80	4 / 5	--	--	3.63	2.18	17.2	YES	NO	Within background range
Zinc	2.70 - 9.80	3 / 5	3.30	5.90	IR55-IS04-4-5-09C	4.11	1.81	5.83	46.0	0 / 5	--	--	0.13	0.089	6.59	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESV = Ecological Screening Value
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper Confidence Level
UG/KG - Micrograms per kilogram

Appendix E, Table E-11
Site 55 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,240	-- / --	--	--	4.46E-04	2.23E-04	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	19.7	-- / --	--	--	0.051	0.025	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,400	-- / --	--	--	4.17E-04	2.08E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	19.9	-- / --	--	--	0.050	0.025	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 2	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 6.50	0 / 3	--	--	--	2.47	1.07	4.27	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	109	-- / --	--	--	0.0092	0.0046	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	640	-- / --	--	--	0.0016	7.81E-04	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	120	-- / --	--	--	0.0083	0.0042	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	2 / 3	0.28	0.61	IR55-TW02-09C	0.46	0.17	0.75	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbon tetrachloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	1,500	-- / --	--	--	6.67E-04	3.33E-04	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	815	-- / --	--	--	0.0012	6.13E-04	--	--	NO	HQs less than one, not detected
Chloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	4.30	-- / --	--	--	0.23	0.12	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,560	-- / --	--	--	3.91E-04	1.95E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	37.0	-- / --	--	--	0.027	0.014	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dichlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dimethylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	48.5	-- / --	--	--	0.52	0.25	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylnaphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

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MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4-Chlorophenyl-phenylether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitroaniline	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	71.7	-- / --	--	--	0.35	0.17	--	--	NO	HQs less than one, not detected
Acenaphthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	9.70	-- / --	--	--	1.03	0.51	--	--	NO	Not detected
Acenaphthylene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethoxy)methane	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Butylbenzylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	29.4	-- / --	--	--	0.34	0.17	--	--	NO	HQs less than one, not detected
Caprolactam	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	759	-- / --	--	--	0.013	0.0065	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	580	-- / --	--	--	0.017	0.0086	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	10.0 - 10.0	1 / 3	1.50	1.50	IR55-TW02-09C	3.83	2.02	7.24	3.40	0 / 3	--	--	0.44	1.13	--	--	NO	Maximum HQ less than one
Di-n-octylphthalate	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluoranthene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	1.60	-- / --	--	--	6.25	3.10	--	--	NO	Not detected
Fluorene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobenzene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobutadiene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	0.32	-- / --	--	--	31.3	15.5	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	0.070	-- / --	--	--	143	71.0	--	--	NO	Not detected
Hexachloroethane	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	9.40	-- / --	--	--	1.06	0.53	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	129	-- / --	--	--	0.078	0.039	--	--	NO	HQs less than one, not detected
Naphthalene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	23.5	-- / --	--	--	0.43	0.21	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	33,000	-- / --	--	--	3.03E-04	1.51E-04	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	30.0	-- / --	--	--	0.33	0.17	--	--	NO	HQs less than one, not detected
Pentachlorophenol	24.0 - 25.0	0 / 3	--	--	--	12.3	0.29	12.8	7.90	-- / --	--	--	3.16	1.56	--	--	NO	Not detected
Phenanthrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	58.0	-- / --	--	--	0.17	0.086	--	--	NO	HQs less than one, not detected
Pyrene	9.80 - 10.0	0 / 3	--	--	--	4.97	0.058	5.06	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Pesticide/Polychlorinated Biphenyls (UG/L)																		
4,4'-DDD	0.019 - 0.019	1 / 3	0.0080	0.0080	IR55-TW03-09C	0.0090	8.66E-04	0.010	0.025	0 / 3	--	--	0.32	0.36	--	--	NO	HQs less than one
4,4'-DDE	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	0.14	-- / --	--	--	0.14	0.069	--	--	NO	HQs less than one, not detected
4,4'-DDT	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	0.0010	-- / --	--	--	20.0	9.67	--	--	NO	Not detected
Aldrin	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.13	-- / --	--	--	0.075	0.037	--	--	NO	HQs less than one, not detected
alpha-BHC	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	1,400	-- / --	--	--	7.00E-06	3.43E-06	--	--	NO	HQs less than one, not detected
alpha-Chlordane	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.0040	-- / --	--	--	2.45	1.20	--	--	NO	Not detected
Aroclor-1016	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1221	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1232	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1242	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1248	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1254	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
Aroclor-1260	0.47 - 0.49	0 / 3	--	--	--	0.24	0.0050	0.25	0.030	-- / --	--	--	16.3	8.00	--	--	NO	Not detected
beta-BHC	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
delta-BHC	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dieldrin	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	0.0019	-- / --	--	--	10.5	5.09	--	--	NO	Not detected
Endosulfan I	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.0087	-- / --	--	--	1.13	0.55	--	--	NO	Not detected
Endosulfan II	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	0.0087	-- / --	--	--	2.30	1.11	--	--	NO	Not detected
Endosulfan sulfate	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Endrin	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	0.0023	-- / --	--	--	8.70	4.20	--	--	NO	Not detected
Endrin aldehyde	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Endrin ketone	0.019 - 0.020	0 / 3	--	--	--	0.0097	2.89E-04	0.010	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
gamma-BHC (Lindane)	0.0094 - 0.0098	1 / 3	0.0040	0.0040	IR55-TW02-09C	0.0045	4.73E-04	0.0053	0.016	0 / 3	--	--	0.25	0.28	--	--	NO	HQs less than one
gamma-Chlordane	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.0040	-- / --	--	--	2.45	1.20	--	--	NO	Not detected
Heptachlor	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.0036	-- / --	--	--	2.72	1.33	--	--	NO	Not detected
Heptachlor epoxide	0.0094 - 0.0098	0 / 3	--	--	--	0.0048	1.00E-04	0.0050	0.0036	-- / --	--	--	2.72	1.33	--	--	NO	Not detected

Appendix E, Table E-11
Site 55 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Methoxychlor	0.0094 - 0.0096	1 / 3	0.0037	0.0037	IR55-TW03-09C	0.0044	6.08E-04	0.0054	0.030	0 / 3	--	--	0.12	0.15	--	--	NO	HQs less than one
Toxaphene	0.94 - 0.98	0 / 3	--	--	--	0.48	0.010	0.50	0.0020	-- / --	--	--	490	240	--	--	NO	Not detected
Herbicides (UG/L)																		
2,4,5-T	0.048 - 0.050	0 / 3	--	--	--	0.025	5.00E-04	0.025	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-TP (Silvex)	0.048 - 0.050	0 / 3	--	--	--	0.025	5.00E-04	0.025	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-D	0.48 - 0.50	0 / 3	--	--	--	0.25	0.0050	0.25	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DB	0.48 - 0.50	0 / 3	--	--	--	0.25	0.0050	0.25	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-DP (Dichloroprop)	0.48 - 0.50	0 / 3	--	--	--	0.25	0.0050	0.25	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dalapon	1.20 - 1.20	0 / 3	--	--	--	0.60	0.0	0.60	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dicamba	0.048 - 0.050	0 / 3	--	--	--	0.025	5.00E-04	0.025	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dinoseb	0.24 - 0.25	0 / 3	--	--	--	0.12	0.0029	0.13	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
MCPA	48.0 - 50.0	0 / 3	--	--	--	24.5	0.50	25.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
MCPP	48.0 - 50.0	0 / 3	--	--	--	24.5	0.50	25.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (UG/L)																		
Aluminum	200 - 200	2 / 3	10,600	29,900	IR55-TW03-09C	13,533	15,115	39,015	NSV	-- / --	--	--	NSV	NSV	1886	YES	NO	No screening value
Antimony	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	3.28	--	NO	No screening value, not detected
Arsenic	10.0 - 10.0	2 / 3	6.10	17.9	IR55-TW03-09C	9.67	7.15	21.7	36.0	0 / 3	--	--	0.50	0.27	5.77	YES	NO	HQs less than one
Barium	-- - --	3 / 3	35.4	117	IR55-TW03-09C	64.0	45.9	141	NSV	-- / --	25000	TCEQ, 2006	0.005	0.003	86.2	YES	NO	Within background range, HQs less than one
Beryllium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	0.308	--	NO	No screening value, not detected
Cadmium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	8.80	-- / --	--	--	0.57	0.28	0.358	--	NO	HQs less than one, not detected
Calcium [3]	5,000 - 53,800	1 / 3	3,580	3,580	IR55-TW02-09C	10,993	13,786	34,235	NSV	-- / --	--	--	NSV	NSV	69,078	NO	NO	Consistent with background, macronutrient
Chromium	10.0 - 10.0	2 / 3	14.2	44.3	IR55-TW03-09C	21.2	20.6	55.8	50.0	0 / 3	--	--	0.89	0.42	3.13	YES	NO	HQs less than one
Cobalt	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	NSV	-- / --	--	--	NSV	NSV	3.4	--	NO	No screening value, not detected
Copper	10.0 - 10.0	2 / 3	7.90	10.7	IR55-TW01-09C	7.87	2.85	12.7	3.10	2 / 3	--	--	3.45	2.54	2.76	YES	NO	ESV based on dissolved copper, low magnitude of exceedance
Iron	-- - --	3 / 3	4,650	59,700	IR55-TW03-09C	26,617	29,160	75,776	NSV	-- / --	50	Buchman, 2008	1194	532	5999	YES	NO	See text discussion
Lead	3.00 - 3.00	2 / 3	2.20	13.5	IR55-TW03-09C	5.73	6.74	17.1	8.10	1 / 3	--	--	1.67	0.71	2.8	YES	NO	ESV based on dissolved lead, low magnitude of exceedance, mean HQ less than one
Magnesium [3]	-- - --	3 / 3	2,260	15,800	IR55-TW03-09C	7,660	7,174	19,754	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese	-- - --	3 / 3	41.6	353	IR55-TW03-09C	161	168	444	NSV	-- / --	100	Buchman, 2008	3.53	1.61	214	YES	NO	Within background range
Mercury	0.20 - 0.20	0 / 3	--	--	--	0.10	1.70E-17	0.10	0.94	-- / --	--	--	0.21	0.11	0.1	--	NO	HQs less than one, not detected
Nickel	-- - --	3 / 3	10.4	56.3	IR55-TW03-09C	27.7	25.0	69.8	8.20	3 / 3	--	--	6.87	3.37	7.97	YES	NO	ESV based on dissolved nickel, low magnitude of exceedance based on mean
Potassium [3]	-- - --	3 / 3	1,160	16,000	IR55-TW03-09C	8,073	7,472	20,670	NSV	-- / --	--	--	NSV	NSV	3277	YES	NO	Macronutrient
Selenium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	71.0	-- / --	--	--	0.070	0.035	3.14	--	NO	HQs less than one, not detected
Silver	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	0.23	-- / --	--	--	43.5	21.7	0.77	--	NO	Not detected
Sodium [3]	-- - --	3 / 3	8,560	47,300	IR55-TW03-09C	31,087	20,127	65,018	NSV	-- / --	--	--	NSV	NSV	22508	YES	NO	Macronutrient
Thallium	2.00 - 2.00	0 / 3	--	--	--	1.00	0.0	1.00	21.3	-- / --	--	--	0.094	0.047	3.78	--	NO	HQs less than one, not detected
Vanadium	15.0 - 15.0	2 / 3	15.8	45.3	IR55-TW03-09C	22.9	19.9	56.4	NSV	-- / --	50	Buchman, 2008	0.91	0.46	4.72	YES	NO	HQs less than one
Zinc	30.9 - 50.8	1 / 3	9.40	9.40	IR55-TW02-09C	16.8	8.08	30.4	81.0	0 / 3	--	--	0.12	0.21	42.1	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on marine values.
ESV - ecological screening level
HQs - Hazard Quotients
NSV - No Screening Value
UCL - Upper Confidence Limit of the mean
UG/L - Micrograms per liter

Appendix E, Table E-12
Site 61 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	4.20 - 5.80	0 / 8	--	--	--	2.44	0.26	2.62	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
1,2-Dichloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	400	-- / --	0.030	0.012	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	700,000	-- / --	1.71E-05	7.04E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
1,4-Dichlorobenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
2-Butanone	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	9.10 - 24.0	0 / 8	--	--	--	6.71	2.38	8.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	50.0	-- / --	0.24	0.099	--	--	NO	HQs less than one, not detected
Bromodichloromethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	1,000,000	-- / --	1.20E-05	4.93E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	50.0	-- / --	0.24	0.099	--	--	NO	HQs less than one, not detected
Chloroethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
Chloroform	9.10 - 12.0	1 / 8	1.50	1.50	IR61-IS08-09C	4.59	1.34	5.49	1.00	1 / 8	1.50	4.59	--	--	NO	Low magnitude and frequency of exceedance
Chloromethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
Dibromochloromethane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	9.10 - 9.50	6 / 8	0.70	1.00	IR61-IS06-09C	1.77	1.78	2.96	50.0	0 / 8	0.020	0.035	--	--	NO	HQs less than one
Isopropylbenzene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	8.40 - 11.0	3 / 8	1.70	86.0	IR61-IS07-09C	15.1	28.7	34.4	2,000	0 / 8	0.043	0.0076	--	--	NO	HQs less than one
Methyl-tert-butyl ether (MTBE)	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
Tetrachloroethene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
Toluene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	50.0	-- / --	0.24	0.099	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	100	-- / --	0.12	0.049	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	1.00	-- / --	12.0	4.93	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	10.0	-- / --	1.20	0.49	--	--	NO	Not detected
Xylene, total	8.40 - 12.0	0 / 8	--	--	--	4.93	0.57	5.31	50.0	-- / --	0.24	0.099	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	220 - 260	0 / 8	--	--	--	116	6.94	121	60,000	-- / --	0.0043	0.0019	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	440 - 520	0 / 8	--	--	--	234	12.5	242	4,000	-- / --	0.13	0.058	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	220 - 260	0 / 8	--	--	--	116	6.94	121	10,000	-- / --	0.026	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	220 - 260	0 / 8	--	--	--	116	6.94	121	3.00	-- / --	86.7	38.8	--	--	NO	Not detected
2,4-Dimethylphenol	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	440 - 520	0 / 8	--	--	--	234	12.5	242	20,000	-- / --	0.026	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-12
Site 61 Subsurface Soil Screen
Confirmatory Sampling Report
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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
2,6-Dinitrotoluene	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,000	-- / --	0.26	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	220 - 260	0 / 8	--	--	--	116	6.94	121	10.0	-- / --	26.0	11.6	--	--	NO	Not detected
2-Methylnaphthalene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
2-Methylphenol	220 - 260	0 / 8	--	--	--	116	6.94	121	500	-- / --	0.52	0.23	--	--	NO	HQs less than one, not detected
2-Nitroaniline	440 - 520	0 / 8	--	--	--	234	12.5	242	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	440 - 520	0 / 8	--	--	--	234	12.5	242	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	440 - 520	0 / 8	--	--	--	234	12.5	242	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	220 - 260	0 / 8	--	--	--	116	6.94	121	20,000	-- / --	0.013	0.0058	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	220 - 260	0 / 8	--	--	--	116	6.94	121	500	-- / --	0.52	0.23	--	--	NO	HQs less than one, not detected
4-Nitroaniline	440 - 520	0 / 8	--	--	--	234	12.5	242	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	440 - 520	0 / 8	--	--	--	234	12.5	242	7,000	-- / --	0.074	0.033	--	--	NO	HQs less than one, not detected
Acenaphthene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
Acenaphthylene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
Acetophenone	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
Atrazine	220 - 260	0 / 8	--	--	--	116	6.94	121	0.050	-- / --	5,200	2,325	--	--	NO	Not detected
Benzaldehyde	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	56.0 - 65.0	0 / 8	--	--	--	29.2	1.53	30.2	1,100	-- / --	0.059	0.027	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	6.00 - 7.00	3 / 8	1.30	1.40	IR61-IS06-09C	2.47	0.93	3.09	1,100	0 / 8	0.0013	0.0022	--	--	NO	HQs less than one
Benzo(b)fluoranthene	56.0 - 65.0	0 / 8	--	--	--	29.2	1.53	30.2	1,100	-- / --	0.059	0.027	--	--	NO	HQs less than one, not detected
Benzo(g,h,i)perylene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,100	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,100	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	220 - 260	0 / 8	--	--	--	116	6.94	121	100	-- / --	2.60	1.16	--	--	NO	Not detected
Butylbenzylphthalate	220 - 260	0 / 8	--	--	--	116	6.94	121	100	-- / --	2.60	1.16	--	--	NO	Not detected
Caprolactam	220 - 260	3 / 8	80.0	120	IR61-IS08-09C	108	16.9	120	NSV	-- / --	NSV	NSV	--	--	NO	No screening value
Carbazole	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,100	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	6.00 - 14.0	0 / 8	--	--	--	4.52	1.93	5.81	1,100	-- / --	0.013	0.0041	--	--	NO	HQs less than one, not detected
Dibenzofuran	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	220 - 260	0 / 8	--	--	--	116	6.94	121	100,000	-- / --	0.0026	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	220 - 260	0 / 8	--	--	--	116	6.94	121	200,000	-- / --	0.0013	5.81E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	220 - 260	0 / 8	--	--	--	116	6.94	121	200,000	-- / --	0.0013	5.81E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	370 - 440	0 / 8	--	--	--	195	11.3	203	100	-- / --	4.40	1.95	--	--	NO	Not detected
Fluoranthene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,100	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Fluorene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	220 - 260	0 / 8	--	--	--	116	6.94	121	2.50	-- / --	104	46.5	--	--	NO	Not detected
Hexachlorobutadiene	220 - 260	0 / 8	--	--	--	116	6.94	121	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	220 - 260	0 / 8	--	--	--	116	6.94	121	10,000	-- / --	0.026	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	220 - 260	0 / 8	--	--	--	116	6.94	121	100	-- / --	2.60	1.16	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	56.0 - 65.0	0 / 8	--	--	--	29.2	1.53	30.2	1,100	-- / --	0.059	0.027	--	--	NO	HQs less than one, not detected
Isophorone	56.0 - 65.0	0 / 8	--	--	--	29.2	1.53	30.2	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	28.0 - 33.0	0 / 8	--	--	--	14.8	0.85	15.3	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	220 - 260	0 / 8	--	--	--	116	6.94	121	20,000	-- / --	0.013	0.0058	--	--	NO	HQs less than one, not detected
Nitrobenzene	220 - 260	0 / 8	--	--	--	116	6.94	121	40,000	-- / --	0.0065	0.0029	--	--	NO	HQs less than one, not detected
Pentachlorophenol	18.0 - 22.0	0 / 8	--	--	--	9.75	0.60	10.2	2,100	-- / --	0.010	0.0046	--	--	NO	HQs less than one, not detected
Phenanthrene	220 - 260	0 / 8	--	--	--	116	6.94	121	29,000	-- / --	0.0090	0.0040	--	--	NO	HQs less than one, not detected
Phenol	220 - 260	0 / 8	--	--	--	116	6.94	121	50.0	-- / --	5.20	2.33	--	--	NO	Not detected
Pyrene	220 - 260	0 / 8	--	--	--	116	6.94	121	1,100	-- / --	0.24	0.11	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																

Appendix E, Table E-12
Site 61 Subsurface Soil Screen
Confirmatory Sampling Report
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North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Aluminum	-- - --	8 / 8	3,510	13,500	IR61-IS05-09C	9,009	3,185	11,142	50.0	8 / 8	270	180	10369	YES	NO	Within background range
Antimony	0.83 - 0.99	0 / 8	--	--	--	0.44	0.026	0.46	0.27	-- / --	3.67	1.63	0.36	--	NO	Not detected
Arsenic	-- - --	8 / 8	0.44	1.40	IR61-IS04-09C	0.94	0.33	1.17	18.0	0 / 8	0.078	0.052	2.12	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	8 / 8	7.30	27.5	IR61-IS05-09C	15.7	7.52	20.7	330	0 / 8	0.083	0.048	16.6	YES	NO	HQs less than one
Beryllium	0.28 - 0.33	6 / 8	0.080	0.24	IR61-IS05-09C	0.14	0.050	0.18	21.0	0 / 8	0.011	0.0069	0.165	YES	NO	Within background range, HQs less than one
Cadmium	0.28 - 0.33	0 / 8	--	--	--	0.15	0.0084	0.15	0.36	-- / --	0.92	0.41	0.023	--	NO	HQs less than one, not detected
Calcium [3]	282 - 331	4 / 8	78.0	911	IR61-IS01-09C	298	279	484	NSV	-- / --	NSV	NSV	441	YES	NO	Within background range, macronutrient
Chromium	-- - --	8 / 8	4.30	13.1	IR61-IS04-09C	9.93	2.98	11.9	26.0	0 / 8	0.50	0.38	14.5	NO	NO	Consistent with background, HQs less than one
Cobalt	0.84 - 0.99	6 / 8	0.46	0.91	IR61-IS05-09C	0.55	0.15	0.65	13.0	0 / 8	0.070	0.042	0.822	YES	NO	Within background range, HQs less than one
Copper	0.56 - 0.60	5 / 8	0.36	1.80	IR61-IS04-09C	0.61	0.55	0.98	28.0	0 / 8	0.064	0.022	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	8 / 8	2,040	10,200	IR61-TW-S01-09C	5,503	2,712	7,319	200	8 / 8	51.0	27.5	5439	YES	NO	Within background range, micronutrient
Lead	-- - --	8 / 8	3.30	6.50	IR61-IS08-09C	5.34	1.19	6.13	11.0	0 / 8	0.59	0.49	8.49	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	8 / 8	113	448	IR61-IS05-09C	325	126	409	NSV	-- / --	NSV	NSV	363	YES	NO	Within background range, macronutrient
Manganese	-- - --	8 / 8	3.70	10.5	IR61-IS01-09C	6.86	2.45	8.51	220	0 / 8	0.048	0.031	9.25	YES	NO	Within background range, HQs less than one
Mercury	0.033 - 0.041	2 / 8	0.017	0.017	IR61-IS01-09C	0.019	0.0016	0.020	0.10	0 / 8	0.17	0.19	0.071	NO	NO	Consistent with background, HQs less than one
Nickel	-- - --	8 / 8	1.10	4.30	IR61-IS05-09C	2.63	0.98	3.28	38.0	0 / 8	0.11	0.069	2.27	YES	NO	Within background range, HQs less than one
Potassium [3]	-- - --	8 / 8	87.8	275	IR61-IS08-09C	185	57.1	223	NSV	-- / --	NSV	NSV	361	NO	NO	Consistent with background, macronutrient
Selenium	0.28 - 0.30	4 / 8	0.23	0.36	IR61-IS04-09C	0.21	0.084	0.27	0.52	0 / 8	0.69	0.41	0.505	NO	NO	Consistent with background, HQs less than one
Silver	0.56 - 0.66	0 / 8	--	--	--	0.29	0.016	0.31	4.20	-- / --	0.16	0.070	0.129	--	NO	HQs less than one, not detected
Sodium [3]	278 - 331	1 / 8	65.0	65.0	IR61-IS01-09C	137	30.4	158	NSV	-- / --	NSV	NSV	68.3	NO	NO	Consistent with background, macronutrient
Thallium	0.45 - 0.53	0 / 8	--	--	--	0.24	0.013	0.24	1.00	-- / --	0.53	0.24	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	8 / 8	5.10	18.9	IR61-TW-S01-09C	13.0	4.70	16.1	7.80	7 / 8	2.42	1.66	17.2	YES	NO	Wtihin background range
Zinc	-- - --	8 / 8	1.90	6.00	IR61-TW-S01-09C	4.49	1.42	5.44	46.0	0 / 8	0.13	0.098	6.59	NO	NO	Consistent with background, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper Confidence Limit on the mean
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-13
Site 61 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	940	-- / --	--	--	0.0011	5.32E-04	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	303	-- / --	--	--	0.0033	0.0017	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	15.8	-- / --	--	--	0.063	0.032	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	525	-- / --	--	--	0.0019	9.52E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	11.2	-- / --	--	--	0.089	0.045	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 3	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 6.60	0 / 3	--	--	--	2.10	1.07	3.90	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	53.0	-- / --	--	--	0.019	0.0094	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	293	-- / --	--	--	0.0034	0.0017	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	110	-- / --	--	--	0.0091	0.0045	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	352	-- / --	--	--	0.0028	0.0014	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	1 / 3	2.00	2.00	IR61-TW03-09C	1.00	0.87	2.46	289	0 / 3	--	--	0.0069	0.0035	--	--	NO	HQs less than one
Chloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	1 / 3	0.14	0.14	IR61-TW01-09C	0.38	0.21	0.73	4.30	0 / 3	--	--	0.033	0.088	--	--	NO	HQs less than one
Isopropylbenzene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,930	-- / --	--	--	5.18E-04	2.59E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	37.0	-- / --	--	--	0.027	0.014	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	1,350	-- / --	--	--	7.41E-04	3.70E-04	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 3	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	3.20	-- / --	--	--	2.94	1.46	--	--	NO	Not detected
2,4-Dichlorophenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	36.5	-- / --	--	--	0.26	0.13	--	--	NO	HQs less than one, not detected
2,4-Dimethylphenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	21.2	-- / --	--	--	0.44	0.22	--	--	NO	HQs less than one, not detected
2,4-Dinitrophenol	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	6.20	-- / --	--	--	3.87	1.91	--	--	NO	Not detected
2,4-Dinitrotoluene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	43.8	-- / --	--	--	0.21	0.11	--	--	NO	HQs less than one, not detected
2-Methylnaphthalene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	3,500	-- / --	--	--	0.0027	0.0013	--	--	NO	HQs less than one, not detected
3,3'-Dichlorobenzidine	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-13
Site 61 Groundwater Screen
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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
4,6-Dinitro-2-methylphenol	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	2.30	-- / --	--	--	10.4	5.14	--	--	NO	Not detected
4-Bromophenyl-phenylether	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	12.2	-- / --	--	--	0.77	0.38	--	--	NO	HQs less than one, not detected
4-Chloro-3-methylphenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	0.30	-- / --	--	--	31.3	15.6	--	--	NO	Not detected
4-Chloroaniline	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chlorophenyl-phenylether	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitroaniline	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	71.7	-- / --	--	--	0.33	0.17	--	--	NO	HQs less than one, not detected
Acenaphthene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	9.70	-- / --	--	--	0.97	0.48	--	--	NO	HQs less than one, not detected
Acenaphthylene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethoxy)methane	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	2,380	-- / --	--	--	0.0039	0.0020	--	--	NO	HQs less than one, not detected
bis(2-Ethylhexyl)phthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	0.30	-- / --	--	--	31.3	15.6	--	--	NO	Not detected
Butylbenzylphthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	22.0	-- / --	--	--	0.43	0.21	--	--	NO	HQs less than one, not detected
Caprolactam	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	521	-- / --	--	--	0.018	0.0090	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	330	-- / --	--	--	0.028	0.014	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	3.40	-- / --	--	--	2.76	1.38	--	--	NO	Not detected
Di-n-octylphthalate	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluoranthene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	1.60	-- / --	--	--	5.88	2.93	--	--	NO	Not detected
Fluorene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobenzene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobutadiene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	0.32	-- / --	--	--	29.4	14.6	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	0.070	-- / --	--	--	134	66.9	--	--	NO	Not detected
Hexachloroethane	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	9.40	-- / --	--	--	1.00	0.50	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	129	-- / --	--	--	0.073	0.036	--	--	NO	HQs less than one, not detected
Naphthalene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	23.5	-- / --	--	--	0.40	0.20	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	58.5	-- / --	--	--	0.16	0.080	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	30.0	-- / --	--	--	0.31	0.16	--	--	NO	HQs less than one, not detected
Pentachlorophenol	23.0 - 24.0	0 / 3	--	--	--	11.8	0.29	12.3	7.90	-- / --	--	--	3.04	1.50	--	--	NO	Not detected
Phenanthrene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	58.0	-- / --	--	--	0.16	0.081	--	--	NO	HQs less than one, not detected
Pyrene	9.30 - 9.40	0 / 3	--	--	--	4.68	0.029	4.73	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (UG/L)																		
Aluminum	-- - --	3 / 3	274	109,000	IR61-TW01-09C	39,701	60,204	141,197	87.0	3 / 3	--	--	1,253	456	1886	YES	NO	Within background range in site soils
Antimony	15.0 - 15.0	0 / 3	--	--	--	7.50	0.0	7.50	160	-- / --	--	--	0.094	0.047	3.28	--	NO	HQs less than one, not detected
Arsenic	10.0 - 10.0	2 / 3	1.67	14.4	IR61-TW03-09C	7.02	6.60	18.2	36.0	0 / 3			0.40	0.20	5.77	YES	NO	HQs less than one
Barium	-- - --	3 / 3	14.1	229	IR61-TW01-09C	102	113	292	NSV	-- / --	16000	TCEQ, 2006	0.01	0.01	86.2	YES	NO	HQs less than one
Beryllium	5.00 - 5.00	1 / 3	3.50	3.50	IR61-TW01-09C	2.83	0.58	3.81	0.53	1 / 3	--	--	6.60	5.35	0.308	YES	NO	Within background range in site soils
Cadmium	5.00 - 5.00	1 / 3	2.20	2.20	IR61-TW01-09C	2.40	0.17	2.69	0.25	1 / 3	--	--	8.80	9.60	0.358	YES	NO	Not detected in site soils
Calcium [3]	-- - --	3 / 3	27,900	742,000	IR61-TW01-09C	295,967	388,894	951,586	NSV	-- / --	--	--	NSV	NSV	69078	YES	NO	Macronutrient
Chromium	10.0 - 10.0	2 / 3	30.2	150	IR61-TW01-09C	61.7	77.5	192	50.0	1 / 3	--	--	3.00	1.23	3.13	YES	NO	Low magnitude of exceedance
Cobalt	15.0 - 15.0	2 / 3	5.50	12.9	IR61-TW01-09C	8.63	3.83	15.1	NSV	-- / --	1500	TCEQ, 2006	0.01	0.01	3.4	YES	NO	HQs less than one
Copper	10.0 - 10.0	1 / 3	18.6	18.6	IR61-TW01-09C	9.53	7.85	22.8	3.10	1 / 3	--	--	6.00	3.08	2.76	YES	NO	Consistent with background in site soils
Iron	-- - --	3 / 3	1,100	147,000	IR61-TW01-09C	57,133	78,614	189,666	1,000	3 / 3	--	--	147	57.1	5999	YES	NO	Micronutrient
Lead	3.00 - 3.00	2 / 3	7.00	93.4	IR61-TW01-09C	34.0	51.5	121	8.10	1 / 3	--	--	11.5	4.19	2.8	YES	NO	Consistent with background in site soils
Magnesium [3]	-- - --	3 / 3	1,310	13,500	IR61-TW01-09C	6,460	6,311	17,099	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese	-- - --	3 / 3	138	643	IR61-TW01-09C	356	259	793	NSV	-- / --	120	TCEQ, 2006	5.36	2.97	214	YES	NO	Within background range in subsurface soils
Mercury	0.20 - 0.20	1 / 3	0.14	0.14	IR61-TW01-09C	0.11	0.023	0.15	0.77	0 / 3	--	--	0.18	0.15	0.1	YES	NO	HQs less than one
Nickel	-- - --	3 / 3	7.40	59.7	IR61-TW01-09C	27.0	28.5	75.0	8.20	2 / 3	--	--	7.28	3.30	7.97	YES	NO	Within background range in site soils, lower magnitude of exceedance based on FW ESV of 52 ug/L.

Appendix E, Table E-13
Site 61 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Potassium [3]	5,000 - 5,000	2 / 3	1,710	4,990	IR61-TW01-09C	3,067	1,712	5,953	NSV	-- / --	--	--	NSV	NSV	3277	YES	NO	Macronutrient
Selenium	5.00 - 5.00	0 / 3	--	--	--	2.50	0.0	2.50	5.00	-- / --	--	--	1.00	0.50	3.14	--	NO	HQs less than or equal to one, not detected
Silver	10.0 - 10.0	0 / 3	--	--	--	5.00	0.0	5.00	0.012	-- / --	--	--	833	417	0.77	--	NO	Not detected
Sodium [3]	-- - --	3 / 3	8,320	11,900	IR61-TW01-09C	10,173	1,793	13,197	NSV	-- / --	--	--	NSV	NSV	22508	NO	NO	Consistent with background, macronutrient
Thallium	2.00 - 8.00	0 / 3	--	--	--	2.00	1.73	4.92	4.00	-- / --	--	--	2.00	0.50	3.78	--	NO	Not detected
Vanadium	15.0 - 15.0	2 / 3	33.1	167	IR61-TW01-09C	69.2	85.7	214	NSV	-- / --	50	Buchman, 2008	3.34	1.38	4.72	YES	NO	Within background range in site soils
Zinc	25.0 - 25.0	2 / 3	27.6	201	IR61-TW01-09C	80.4	105	257	81.0	1 / 3	--	--	2.48	0.99	42.1	YES	NO	Consistent with background in site soils, low magnitude of exceedance
Dissolved Metals (UG/L)																		
Arsenic, Dissolved	1.50 - 1.50	0 / 1	--	--	--	0.75	--	--	36.0	-- / --	--	--	0.042	0.021	5.77	--	NO	HQ less than one, not detected

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on marine values
ESV - Ecological Screening Value
FW - Freshwater
HQs - Hazard Quotients
NSV - No Screening Value

Appendix E, Table E-14
Site 62 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	6.70 - 6.70	0 / 1	--	--	--	3.35	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
1,2-Dichloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	400	-- / --	0.033	0.016	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	700,000	-- / --	1.86E-05	9.29E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
1,4-Dichlorobenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
2-Butanone	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	50.0	-- / --	0.26	0.13	--	--	NO	HQs less than one, not detected
Bromodichloromethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	1,000,000	-- / --	1.30E-05	6.50E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	50.0	-- / --	0.26	0.13	--	--	NO	HQs less than one, not detected
Chloroethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
Chloroform	-- - --	1 / 1	1.00	1.00	IR62-IS08-3-4-09C	1.00	--	--	1.00	1 / 1	1.00	1.00	--	--	NO	HQs less than or equal to one
Chloromethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
Dibromochloromethane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	50.0	-- / --	0.26	0.13	--	--	NO	HQs less than one, not detected
Isopropylbenzene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	2,000	-- / --	0.0065	0.0033	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
Tetrachloroethene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
Toluene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	50.0	-- / --	0.26	0.13	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	100	-- / --	0.13	0.065	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	1.00	-- / --	13.0	6.50	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	10.0	-- / --	1.30	0.65	--	--	NO	Not detected
Xylene, total	13.0 - 13.0	0 / 1	--	--	--	6.50	--	--	50.0	-- / --	0.26	0.13	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	240 - 240	0 / 1	--	--	--	120	--	--	60,000	-- / --	0.0040	0.0020	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	490 - 490	0 / 1	--	--	--	245	--	--	4,000	-- / --	0.12	0.061	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	240 - 240	0 / 1	--	--	--	120	--	--	10,000	-- / --	0.024	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	240 - 240	0 / 1	--	--	--	120	--	--	3.00	-- / --	80.0	40.0	--	--	NO	Not detected
2,4-Dimethylphenol	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	490 - 490	0 / 1	--	--	--	245	--	--	20,000	-- / --	0.025	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	240 - 240	0 / 1	--	--	--	120	--	--	1,000	-- / --	0.24	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	240 - 240	0 / 1	--	--	--	120	--	--	10.0	-- / --	24.0	12.0	--	--	NO	Not detected

Appendix E, Table E-14
Site 62 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
2-Methylnaphthalene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
2-Methylphenol	240 - 240	0 / 1	--	--	--	120	--	--	500	-- / --	0.48	0.24	--	--	NO	HQs less than one, not detected
2-Nitroaniline	490 - 490	0 / 1	--	--	--	245	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
3-Nitroaniline	490 - 490	0 / 1	--	--	--	245	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	490 - 490	0 / 1	--	--	--	245	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	240 - 240	0 / 1	--	--	--	120	--	--	20,000	-- / --	0.012	0.0060	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	240 - 240	0 / 1	--	--	--	120	--	--	500	-- / --	0.48	0.24	--	--	NO	HQs less than one, not detected
4-Nitroaniline	490 - 490	0 / 1	--	--	--	245	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	490 - 490	0 / 1	--	--	--	245	--	--	7,000	-- / --	0.070	0.035	--	--	NO	HQs less than one, not detected
Acenaphthene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
Acenaphthylene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
Acetophenone	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
Atrazine	240 - 240	0 / 1	--	--	--	120	--	--	0.050	-- / --	4,800	2,400	--	--	NO	Not detected
Benzaldehyde	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	61.0 - 61.0	0 / 1	--	--	--	30.5	--	--	1,100	-- / --	0.055	0.028	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	6.50 - 6.50	0 / 1	--	--	--	3.25	--	--	1,100	-- / --	0.0059	0.0030	--	--	NO	HQs less than one, not detected
Benzo(b)fluoranthene	61.0 - 61.0	0 / 1	--	--	--	30.5	--	--	1,100	-- / --	0.055	0.028	--	--	NO	HQs less than one, not detected
Benzo(g,h,i)perylene	240 - 240	0 / 1	--	--	--	120	--	--	1,100	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	240 - 240	0 / 1	--	--	--	120	--	--	1,100	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	240 - 240	0 / 1	--	--	--	120	--	--	100	-- / --	2.40	1.20	--	--	NO	Not detected
Butylbenzylphthalate	240 - 240	0 / 1	--	--	--	120	--	--	100	-- / --	2.40	1.20	--	--	NO	Not detected
Caprolactam	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	240 - 240	0 / 1	--	--	--	120	--	--	1,100	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	6.50 - 6.50	0 / 1	--	--	--	3.25	--	--	1,100	-- / --	0.0059	0.0030	--	--	NO	HQs less than one, not detected
Dibenzofuran	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	240 - 240	0 / 1	--	--	--	120	--	--	100,000	-- / --	0.0024	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	240 - 240	0 / 1	--	--	--	120	--	--	200,000	-- / --	0.0012	6.00E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	240 - 240	0 / 1	--	--	--	120	--	--	200,000	-- / --	0.0012	6.00E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	240 - 240	0 / 1	--	--	--	120	--	--	100	-- / --	2.40	1.20	--	--	NO	Not detected
Fluoranthene	240 - 240	0 / 1	--	--	--	120	--	--	1,100	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
Fluorene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	240 - 240	0 / 1	--	--	--	120	--	--	2.50	-- / --	96.0	48.0	--	--	NO	Not detected
Hexachlorobutadiene	240 - 240	0 / 1	--	--	--	120	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	240 - 240	0 / 1	--	--	--	120	--	--	10,000	-- / --	0.024	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	240 - 240	0 / 1	--	--	--	120	--	--	100	-- / --	2.40	1.20	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	61.0 - 61.0	0 / 1	--	--	--	30.5	--	--	1,100	-- / --	0.055	0.028	--	--	NO	HQs less than one, not detected
Isophorone	61.0 - 61.0	0 / 1	--	--	--	30.5	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	31.0 - 31.0	0 / 1	--	--	--	15.5	--	--	NSV	-- / --	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	240 - 240	0 / 1	--	--	--	120	--	--	20,000	-- / --	0.012	0.0060	--	--	NO	HQs less than one, not detected
Nitrobenzene	240 - 240	0 / 1	--	--	--	120	--	--	40,000	-- / --	0.0060	0.0030	--	--	NO	HQs less than one, not detected
Pentachlorophenol	20.0 - 20.0	0 / 1	--	--	--	10.0	--	--	2,100	-- / --	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Phenanthrene	240 - 240	0 / 1	--	--	--	120	--	--	29,000	-- / --	0.0083	0.0041	--	--	NO	HQs less than one, not detected
Phenol	240 - 240	0 / 1	--	--	--	120	--	--	50.0	-- / --	4.80	2.40	--	--	NO	Not detected
Pyrene	240 - 240	0 / 1	--	--	--	120	--	--	1,100	-- / --	0.22	0.11	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																
Aluminum	-- - --	1 / 1	18,100	18,100	IR62-IS08-3-4-09C	18,100	--	--	50.0	1 / 1	362	362	10369	YES	NO	Only slightly above background range
Antimony	0.92 - 0.92	0 / 1	--	--	--	0.46	--	--	0.27	-- / --	3.41	1.70	0.36	--	NO	Not detected
Arsenic	-- - --	1 / 1	7.80	7.80	IR62-IS08-3-4-09C	7.80	--	--	18.0	0 / 1	0.43	0.43	2.12	YES	NO	Within background range, HQs less than one
Barium	-- - --	1 / 1	19.7	19.7	IR62-IS08-3-4-09C	19.7	--	--	330	0 / 1	0.060	0.060	16.6	YES	NO	Within background range, HQs less than one
Beryllium	-- - --	1 / 1	0.32	0.32	IR62-IS08-3-4-09C	0.32	--	--	21.0	0 / 1	0.015	0.015	0.165	YES	NO	Within background range, HQs less than one

Appendix E, Table E-14
Site 62 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Cadmium	0.31 - 0.31	0 / 1	--	--	--	0.16	--	--	0.36	-- / --	0.86	0.43	0.023	--	NO	HQs less than one, not detected
Calcium [3]	-- - --	1 / 1	739	739	IR62-IS08-3-4-09C	739	--	--	NSV	-- / --	NSV	NSV	441	YES	NO	Macronutrient
Chromium	-- - --	1 / 1	25.8	25.8	IR62-IS08-3-4-09C	25.8	--	--	26.0	0 / 1	0.99	0.99	14.5	YES	NO	HQs less than one
Cobalt	-- - --	1 / 1	0.88	0.88	IR62-IS08-3-4-09C	0.88	--	--	13.0	0 / 1	0.068	0.068	0.822	YES	NO	Within background range, HQs less than one
Copper	-- - --	1 / 1	4.40	4.40	IR62-IS08-3-4-09C	4.40	--	--	28.0	0 / 1	0.16	0.16	2.56	YES	NO	HQs less than one
Iron	-- - --	1 / 1	20,300	20,300	IR62-IS08-3-4-09C	20,300	--	--	200	1 / 1	102	102	5439	YES	NO	Micronutrient
Lead	-- - --	1 / 1	5.40	5.40	IR62-IS08-3-4-09C	5.40	--	--	11.0	0 / 1	0.49	0.49	8.49	NO	NO	Consitent with background, HQs less than one
Magnesium [3]	-- - --	1 / 1	780	780	IR62-IS08-3-4-09C	780	--	--	NSV	-- / --	NSV	NSV	363	YES	NO	Macronutrient
Manganese	-- - --	1 / 1	11.6	11.6	IR62-IS08-3-4-09C	11.6	--	--	220	0 / 1	0.053	0.053	9.25	YES	NO	Within background range, HQs less than one
Mercury	-- - --	1 / 1	0.021	0.021	IR62-IS08-3-4-09C	0.021	--	--	0.10	0 / 1	0.21	0.21	0.071	NO	NO	Consistent with background, HQs less than one
Nickel	-- - --	1 / 1	4.20	4.20	IR62-IS08-3-4-09C	4.20	--	--	38.0	0 / 1	0.11	0.11	2.27	YES	NO	Within background range, HQs less than one
Potassium [3]	-- - --	1 / 1	831	831	IR62-IS08-3-4-09C	831	--	--	NSV	-- / --	NSV	NSV	361	YES	NO	Macronutrient
Selenium	-- - --	1 / 1	0.25	0.25	IR62-IS08-3-4-09C	0.25	--	--	0.52	0 / 1	0.48	0.48	0.505	NO	NO	Consistent with background, HQs less than one
Silver	-- - --	1 / 1	0.080	0.080	IR62-IS08-3-4-09C	0.080	--	--	4.20	0 / 1	0.019	0.019	0.129	NO	NO	Consistent with background, HQs less than one
Sodium [3]	306 - 306	0 / 1	--	--	--	153	--	--	NSV	-- / --	NSV	NSV	68.3	--	NO	Macronutrient
Thallium	0.49 - 0.49	0 / 1	--	--	--	0.25	--	--	1.00	-- / --	0.49	0.25	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	1 / 1	31.2	31.2	IR62-IS08-3-4-09C	31.2	--	--	7.80	1 / 1	4.00	4.00	17.2	YES	NO	Within background range
Zinc	-- - --	1 / 1	9.60	9.60	IR62-IS08-3-4-09C	9.60	--	--	46.0	0 / 1	0.21	0.21	6.59	YES	NO	Within background range, HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
NSV - No Screening Value
MG/KG - Milligrams per kilogram
UCL - Upper confidence limiit of the mean
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-15
Site 66 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
1,1-Dichloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
1,1-Dichloroethene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
1,2-Dibromo-3-chloropropane	5.80 - 5.80	0 / 1	--	--	--	2.90	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
1,2-Dichloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	400	-- / --	--	--	0.030	0.015	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	700,000	-- / --	--	--	1.71E-05	8.57E-06	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
1,4-Dichlorobenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
2-Butanone	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	50.0	-- / --	--	--	0.24	0.12	--	--	NO	HQs less than one, not detected
Bromodichloromethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromomethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon disulfide	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbon tetrachloride	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	1,000,000	-- / --	--	--	1.20E-05	6.00E-06	--	--	NO	HQs less than one, not detected
Chlorobenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	50.0	-- / --	--	--	0.24	0.12	--	--	NO	HQs less than one, not detected
Chloroethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
Chloroform	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	1.00	-- / --	--	--	12.0	6.00	--	--	NO	Not detected
Chloromethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,2-Dichloroethene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Cyclohexane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
Dibromochloromethane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	50.0	-- / --	--	--	0.24	0.12	--	--	NO	HQs less than one, not detected
Isopropylbenzene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	2,000	-- / --	--	--	0.0060	0.0030	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
Tetrachloroethene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
Toluene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	50.0	-- / --	--	--	0.24	0.12	--	--	NO	HQs less than one, not detected
trans-1,2-Dichloroethene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	100	-- / --	--	--	0.12	0.060	--	--	NO	HQs less than one, not detected
trans-1,3-Dichloropropene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichloroethene	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	1.00	-- / --	--	--	12.0	6.00	--	--	NO	Not detected
Trichlorofluoromethane(Freon-11)	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	10.0	-- / --	--	--	1.20	0.60	--	--	NO	Not detected
Xylene, total	12.0 - 12.0	0 / 1	--	--	--	6.00	--	--	50.0	-- / --	--	--	0.24	0.12	--	--	NO	HQs less than one, not detected
Semivolatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	230 - 230	0 / 1	--	--	--	115	--	--	60,000	-- / --	--	--	0.0038	0.0019	--	--	NO	HQs less than one, not detected
2,2'-Oxybis(1-chloropropane)	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	470 - 470	0 / 1	--	--	--	235	--	--	4,000	-- / --	--	--	0.12	0.059	--	--	NO	HQs less than one, not detected
2,4,6-Trichlorophenol	230 - 230	0 / 1	--	--	--	115	--	--	10,000	-- / --	--	--	0.023	0.012	--	--	NO	HQs less than one, not detected
2,4-Dichlorophenol	230 - 230	0 / 1	--	--	--	115	--	--	3.00	-- / --	--	--	76.7	38.3	--	--	NO	Not detected
2,4-Dimethylphenol	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	470 - 470	0 / 1	--	--	--	235	--	--	20,000	-- / --	--	--	0.024	0.012	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	230 - 230	0 / 1	--	--	--	115	--	--	1,000	-- / --	--	--	0.23	0.12	--	--	NO	HQs less than one, not detected
2-Chlorophenol	230 - 230	0 / 1	--	--	--	115	--	--	10.0	-- / --	--	--	23.0	11.5	--	--	NO	Not detected
2-Methylnaphthalene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
2-Methylphenol	230 - 230	0 / 1	--	--	--	115	--	--	500	-- / --	--	--	0.46	0.23	--	--	NO	HQs less than one, not detected
2-Nitroaniline	470 - 470	0 / 1	--	--	--	235	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

Appendix E, Table E-15
Site 66 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
3-Nitroaniline	470 - 470	0 / 1	--	--	--	235	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	470 - 470	0 / 1	--	--	--	235	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	230 - 230	0 / 1	--	--	--	115	--	--	20,000	-- / --	--	--	0.012	0.0058	--	--	NO	HQs less than one, not detected
4-Chlorophenyl-phenylether	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	230 - 230	0 / 1	--	--	--	115	--	--	500	-- / --	--	--	0.46	0.23	--	--	NO	HQs less than one, not detected
4-Nitroaniline	470 - 470	0 / 1	--	--	--	235	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	470 - 470	0 / 1	--	--	--	235	--	--	7,000	-- / --	--	--	0.067	0.034	--	--	NO	HQs less than one, not detected
Acenaphthene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
Acenaphthylene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
Acetophenone	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
Atrazine	230 - 230	0 / 1	--	--	--	115	--	--	0.050	-- / --	--	--	4,600	2,300	--	--	NO	Not detected
Benzaldehyde	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	58.0 - 58.0	0 / 1	--	--	--	29.0	--	--	1,100	-- / --	--	--	0.053	0.026	--	--	NO	HQs less than one, not detected
Benzo(a)pyrene	6.20 - 6.20	0 / 1	--	--	--	3.10	--	--	1,100	-- / --	--	--	0.0056	0.0028	--	--	NO	HQs less than one, not detected
Benzo(b)fluoranthene	58.0 - 58.0	0 / 1	--	--	--	29.0	--	--	1,100	-- / --	--	--	0.053	0.026	--	--	NO	HQs less than one, not detected
Benzo(g,h,i)perylene	230 - 230	0 / 1	--	--	--	115	--	--	1,100	-- / --	--	--	0.21	0.10	--	--	NO	HQs less than one, not detected
Benzo(k)fluoranthene	230 - 230	0 / 1	--	--	--	115	--	--	1,100	-- / --	--	--	0.21	0.10	--	--	NO	HQs less than one, not detected
bis(2-Chloroethoxy)methane	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	230 - 230	0 / 1	--	--	--	115	--	--	100	-- / --	--	--	2.30	1.15	--	--	NO	Not detected
Butylbenzylphthalate	230 - 230	0 / 1	--	--	--	115	--	--	100	-- / --	--	--	2.30	1.15	--	--	NO	Not detected
Caprolactam	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	230 - 230	0 / 1	--	--	--	115	--	--	1,100	-- / --	--	--	0.21	0.10	--	--	NO	HQs less than one, not detected
Dibenz(a,h)anthracene	14.0 - 14.0	0 / 1	--	--	--	7.00	--	--	1,100	-- / --	--	--	0.013	0.0064	--	--	NO	HQs less than one, not detected
Dibenzofuran	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	230 - 230	0 / 1	--	--	--	115	--	--	100,000	-- / --	--	--	0.0023	0.0012	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	230 - 230	0 / 1	--	--	--	115	--	--	200,000	-- / --	--	--	0.0012	5.75E-04	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	230 - 230	0 / 1	--	--	--	115	--	--	200,000	-- / --	--	--	0.0012	5.75E-04	--	--	NO	HQs less than one, not detected
Di-n-octylphthalate	390 - 390	0 / 1	--	--	--	195	--	--	100	-- / --	--	--	3.90	1.95	--	--	NO	Not detected
Fluoranthene	230 - 230	0 / 1	--	--	--	115	--	--	1,100	-- / --	--	--	0.21	0.10	--	--	NO	HQs less than one, not detected
Fluorene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
Hexachlorobenzene	230 - 230	0 / 1	--	--	--	115	--	--	2.50	-- / --	--	--	92.0	46.0	--	--	NO	Not detected
Hexachlorobutadiene	230 - 230	0 / 1	--	--	--	115	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorocyclopentadiene	230 - 230	0 / 1	--	--	--	115	--	--	10,000	-- / --	--	--	0.023	0.012	--	--	NO	HQs less than one, not detected
Hexachloroethane	230 - 230	0 / 1	--	--	--	115	--	--	100	-- / --	--	--	2.30	1.15	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	58.0 - 58.0	0 / 1	--	--	--	29.0	--	--	1,100	-- / --	--	--	0.053	0.026	--	--	NO	HQs less than one, not detected
Isophorone	58.0 - 58.0	0 / 1	--	--	--	29.0	--	--	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Naphthalene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	-- - --	1 / 1	9.10	9.10	IR66-IS01-09C	9.10	--	--	NSV	-- / --	544	Buchman, 2008	0.02	0.02	--	--	NO	HQs less than one
n-Nitrosodiphenylamine	230 - 230	0 / 1	--	--	--	115	--	--	20,000	-- / --	--	--	0.012	0.0058	--	--	NO	HQs less than one, not detected
Nitrobenzene	230 - 230	0 / 1	--	--	--	115	--	--	40,000	-- / --	--	--	0.0058	0.0029	--	--	NO	HQs less than one, not detected
Pentachlorophenol	63.0 - 63.0	0 / 1	--	--	--	31.5	--	--	2,100	-- / --	--	--	0.030	0.015	--	--	NO	HQs less than one, not detected
Phenanthrene	230 - 230	0 / 1	--	--	--	115	--	--	29,000	-- / --	--	--	0.0079	0.0040	--	--	NO	HQs less than one, not detected
Phenol	230 - 230	0 / 1	--	--	--	115	--	--	50.0	-- / --	--	--	4.60	2.30	--	--	NO	Not detected
Pyrene	230 - 230	0 / 1	--	--	--	115	--	--	1,100	-- / --	--	--	0.21	0.10	--	--	NO	HQs less than one, not detected
Inorganics (MG/KG)																		
Aluminum	-- - --	1 / 1	1,680	1,680	IR66-IS01-09C	1,680	--	--	50.0	1 / 1	--	--	33.6	33.6	10369	NO	NO	Consistent with background
Arsenic	-- - --	1 / 1	0.32	0.32	IR66-IS01-09C	0.32	--	--	18.0	0 / 1	--	--	0.018	0.018	0.36	NO	NO	Consistent with background, HQs less than one
Barium	-- - --	1 / 1	6.50	6.50	IR66-IS01-09C	6.50	--	--	330	0 / 1	--	--	0.020	0.020	2.12	YES	NO	Within range of background, HQs less than one
Beryllium	-- - --	1 / 1	0.077	0.077	IR66-IS01-09C	0.077	--	--	21.0	0 / 1	--	--	0.0037	0.0037	16.6	NO	NO	Consistent with background, HQs less than one
Cadmium	0.28 - 0.28	0 / 1	--	--	--	0.14	--	--	0.36	-- / --	--	--	0.78	0.39	0.165	--	NO	HQs less than one, not detected
Calcium [3]	279 - 279	0 / 1	--	--	--	140	--	--	NSV	-- / --	--	--	NSV	NSV	0.023	--	NO	Macronutrient, not detected
Chromium	-- - --	1 / 1	2.10	2.10	IR66-IS01-09C	2.10	--	--	26.0	0 / 1	--	--	0.081	0.081	14.5	NO	NO	Consistent with background, HQs less than one
Cobalt	0.84 - 0.84	0 / 1	--	--	--	0.42	--	--	13.0	-- / --	--	--	0.065	0.032	0.822	--	NO	HQs less than one, not detected
Copper	-- - --	1 / 1	0.41	0.41	IR66-IS01-09C	0.41	--	--	28.0	0 / 1	--	--	0.015	0.015	2.56	NO	NO	Consistent with background, HQs less than one
Iron	-- - --	1 / 1	709	709	IR66-IS01-09C	709	--	--	200	1 / 1	--	--	3.55	3.55	5439	NO	NO	Consistent with background
Lead	-- - --	1 / 1	2.90	2.90	IR66-IS01-09C	2.90	--	--	11.0	0 / 1	--	--	0.26	0.26	8.49	NO	NO	Consistent with background, HQs less than one
Magnesium [3]	-- - --	1 / 1	68.6	68.6	IR66-IS01-09C	68.6	--	--	NSV	-- / --	--	--	NSV	NSV	363	NO	NO	Consistent with background, macronutrient
Manganese	-- - --	1 / 1	3.80	3.80	IR66-IS01-09C	3.80	--	--	220	0 / 1	--	--	0.017	0.017	9.25	NO	NO	Consistent with background, HQs less than one
Mercury	0.040 - 0.040	0 / 1	--	--	--	0.020	--	--	0.10	-- / --	--	--	0.40	0.20	0.071	--	NO	HQs less than one, not detected
Nickel	-- - --	1 / 1	1.00	1.00	IR66-IS01-09C	1.00	--	--	38.0	0 / 1	--	--	0.026	0.026	2.27	NO	NO	Consistent with background, HQs less than one

Appendix E, Table E-15
Site 66 Subsurface Soil Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Potassium [3]	279 - 279	0 / 1	--	--	--	140	--	--	NSV	-- / --	--	--	NSV	NSV	361	--	NO	Macronutrient, not detected
Selenium	0.28 - 0.28	0 / 1	--	--	--	0.14	--	--	0.52	-- / --	--	--	0.54	0.27	0.505	--	NO	HQs less than one, not detected
Silver	0.56 - 0.56	0 / 1	--	--	--	0.28	--	--	4.20	-- / --	--	--	0.13	0.067	0.129	--	NO	HQs less than one, not detected
Sodium [3]	279 - 279	0 / 1	--	--	--	140	--	--	NSV	-- / --	--	--	NSV	NSV	68.3	--	NO	Macronutrient, not detected
Thallium	0.45 - 0.45	0 / 1	--	--	--	0.23	--	--	1.00	-- / --	--	--	0.45	0.23	0.38	--	NO	HQs less than one, not detected
Vanadium	-- - --	1 / 1	2.90	2.90	IR66-IS01-09C	2.90	--	--	7.80	0 / 1	--	--	0.37	0.37	17.2	NO	NO	Consistent with background
Zinc	2.10 - 2.10	0 / 1	--	--	--	1.05	--	--	46.0	-- / --	--	--	0.046	0.023	6.59	--	NO	HQs less than one, not detected

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard Quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper confidence limit of the mean
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor

Appendix E, Table E-16
Site 66 Groundwater Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Volatile Organic Compounds (UG/L)																		
1,1,1-Trichloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	--	--	NO	HQs less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	--	--	NO	HQs less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1,2-Trichloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,1-Dichloroethene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	2,240	-- / --	--	--	4.46E-04	2.23E-04	--	--	NO	HQs less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	--	--	NO	HQs less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dibromoethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
1,2-Dichlorobenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	19.7	-- / --	--	--	0.051	0.025	--	--	NO	HQs less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	--	--	NO	HQs less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	2,400	-- / --	--	--	4.17E-04	2.08E-04	--	--	NO	HQs less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	--	--	NO	HQs less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	19.9	-- / --	--	--	0.050	0.025	--	--	NO	HQs less than one, not detected
2-Butanone	3.00 - 3.00	0 / 12	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Hexanone	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methyl-2-pentanone	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetone	2.50 - 4.80	1 / 12	5.80	5.80	IR66-TW06-09C	1.87	1.29	2.54	NSV	-- / --	282000	Buchman, 2008	0.000021	0.000007	--	--	NO	HQs less than one
Benzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	109	-- / --	--	--	0.0092	0.0046	--	--	NO	HQs less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Bromoform	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	640	-- / --	--	--	0.0016	7.81E-04	--	--	NO	HQs less than one, not detected
Bromomethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	120	-- / --	--	--	0.0083	0.0042	--	--	NO	HQs less than one, not detected
Carbon disulfide	1.00 - 1.00	2 / 12	0.18	0.64	IR66-TW06-09C	0.49	0.10	0.54	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
Carbon tetrachloride	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	1,500	-- / --	--	--	6.67E-04	3.33E-04	--	--	NO	HQs less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	--	--	NO	HQs less than one, not detected
Chloroethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chloroform	1.00 - 1.00	2 / 12	0.11	1.70	IR66-TW01-09C	0.57	0.37	0.76	815	0 / 12	--	--	0.0021	6.96E-04	--	--	NO	HQs less than one
Chloromethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	--	--	NO	HQs less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibromochloromethane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Ethylbenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	4.30	-- / --	--	--	0.23	0.12	--	--	NO	HQs less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methyl acetate	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylcyclohexane	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Methylene chloride	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	2,560	-- / --	--	--	3.91E-04	1.95E-04	--	--	NO	HQs less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Styrene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Tetrachloroethene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	--	--	NO	HQs less than one, not detected
Toluene	1.00 - 1.00	1 / 12	0.12	0.12	IR66-TW12-09C	0.47	0.11	0.53	37.0	0 / 12	--	--	0.0032	0.013	--	--	NO	HQs less than one
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	--	--	NO	HQs less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Vinyl chloride	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Xylene, total	1.00 - 1.00	0 / 12	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/L)																		
1,1-Biphenyl	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,5-Trichlorophenol	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4,6-Trichlorophenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dichlorophenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dimethylphenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,4-Dinitrophenol	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	48.5	-- / --	--	--	0.49	0.24	--	--	NO	HQs less than one, not detected
2,4-Dinitrotoluene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2,6-Dinitrotoluene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chloronaphthalene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Chlorophenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylnaphthalene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Methylphenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitroaniline	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
2-Nitrophenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
3,3'-Dichlorobenzidine	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
3-Nitroaniline	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Bromophenyl-phenylether	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloro-3-methylphenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chloroaniline	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Chlorophenyl-phenylether	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Methylphenol	9.20 - 9.80	1 / 12	1.40	1.40	IR66-TW06-09C	4.40	0.95	4.89	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value
4-Nitroaniline	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
4-Nitrophenol	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	71.7	-- / --	--	--	0.33	0.16	--	--	NO	HQs less than one, not detected
Acenaphthene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	9.70	-- / --	--	--	1.01	0.48	--	--	NO	Not detected
Acenaphthylene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Acetophenone	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Anthracene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Atrazine	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzaldehyde	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)anthracene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(a)pyrene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(b)fluoranthene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(g,h,i)perylene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Benzo(k)fluoranthene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethoxy)methane	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Chloroethyl)ether	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Butylbenzylphthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	29.4	-- / --	--	--	0.33	0.16	--	--	NO	HQs less than one, not detected
Caprolactam	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Carbazole	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Chrysene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenz(a,h)anthracene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Dibenzofuran	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Diethylphthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	759	-- / --	--	--	0.013	0.0062	--	--	NO	HQs less than one, not detected
Dimethyl phthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	580	-- / --	--	--	0.017	0.0081	--	--	NO	HQs less than one, not detected
Di-n-butylphthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	3.40	-- / --	--	--	2.88	1.38	--	--	NO	Not detected
Di-n-octylphthalate	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Fluoranthene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	1.60	-- / --	--	--	6.13	2.92	--	--	NO	Not detected
Fluorene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobenzene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Hexachlorobutadiene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	0.32	-- / --	--	--	30.6	14.6	--	--	NO	Not detected
Hexachlorocyclopentadiene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	0.070	-- / --	--	--	140	66.8	--	--	NO	Not detected
Hexachloroethane	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	9.40	-- / --	--	--	1.04	0.50	--	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Isophorone	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	129	-- / --	--	--	0.076	0.036	--	--	NO	HQs less than one, not detected
Naphthalene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	23.5	-- / --	--	--	0.42	0.20	--	--	NO	HQs less than one, not detected
n-Nitroso-di-n-propylamine	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
n-Nitrosodiphenylamine	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	33,000	-- / --	--	--	2.97E-04	1.42E-04	--	--	NO	HQs less than one, not detected
Nitrobenzene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	30.0	-- / --	--	--	0.33	0.16	--	--	NO	HQs less than one, not detected
Pentachlorophenol	23.0 - 24.0	0 / 12	--	--	--	11.7	0.26	11.8	7.90	-- / --	--	--	3.04	1.48	--	--	NO	Not detected
Phenanthrene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Phenol	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	58.0	-- / --	--	--	0.17	0.081	--	--	NO	HQs less than one, not detected
Pyrene	9.20 - 9.80	0 / 12	--	--	--	4.68	0.094	4.72	NSV	-- / --	--	--	NSV	NSV	--	--	NO	No screening value, not detected
Inorganics (UG/L)																		
Aluminum	214 - 233	10 / 12	198	6,600	IR66-TW03-09C	1,783	1,965	2,802	NSV	-- / --	--	--	NSV	NSV	1886	YES	NO	No screening value
Antimony	15.0 - 15.0	0 / 12	--	--	--	7.50	0.0	7.50	160	-- / --	--	--	0.094	0.047	3.28	--	NO	HQs less than one, not detected
Arsenic	10.0 - 10.0	1 / 12	3.30	3.30	IR66-TW03-09C	4.86	0.49	5.11	36.0	0 / 12	--	--	0.092	0.13	5.77	NO	NO	Consistent with background
Barium	-- - --	12 / 12	9.30	87.9	IR66-TW09-09C	38.2	21.6	49.4	NSV	-- / --	25000	TCEQ, 2006	0.004	0.002	86.2	YES	NO	HQs less than one
Beryllium	5.00 - 5.00	0 / 12	--	--	--	2.50	0.0	2.50	NSV	-- / --	--	--	NSV	NSV	0.308	--	NO	No screening value, not detected
Cadmium	5.00 - 5.00	0 / 12	--	--	--	2.50	0.0	2.50	8.80	-- / --	--	--	0.57	0.28	0.358	--	NO	HQs less than one, not detected
Calcium [3]	-- - --	12 / 12	2,040	75,200	IR66-TW11-09C	31,516	29,777	46,953	NSV	-- / --	--	--	NSV	NSV	69078	YES	NO	Macronutrient
Chromium	10.0 - 10.0	9 / 12	2.00	30.2	IR66-TW06-09C	7.44	8.06	11.6	50.0	0 / 12	--	--	0.60	0.15	3.13	YES	NO	HQs less than one
Cobalt	15.0 - 15.0	3 / 12	5.40	17.2	IR66-TW10-09C	8.03	2.97	9.56	NSV	-- / --	1	Buchman, 2008	17.2	8.03	3.4	YES	NO	See text discussion
Copper	10.0 - 10.0	1 / 12	11.4	11.4	IR66-TW11-09C	5.53	1.85	6.49	3.10	1 / 12	--	--	3.68	1.78	2.76	YES	NO	Low magnitude and frequency of exceedance
Iron	-- - --	12 / 12	500	26,600	IR66-TW09-09C	7,313	7,368	11,132	NSV	-- / --	50	Buchman, 2008	532	146	5999	YES	NO	See text discussion
Lead	3.00 - 5.60	1 / 12	5.00	5.00	IR66-TW06-09C	1.90	1.05	2.44	8.10	0 / 12	--	--	0.62	0.23	2.8	YES	NO	HQs less than one
Magnesium [3]	5,000 - 5,000	10 / 12	1,160	9,110	IR66-TW09-09C	2,999	2,074	4,074	NSV	-- / --	--	--	NSV	NSV	6363	YES	NO	Macronutrient
Manganese	-- - --	12 / 12	17.8	2,710	IR66-TW10-09C	379	748	766	NSV	-- / --	100	Buchman, 2008	27.1	3.79	214	YES	NO	See text discussion
Mercury	0.20 - 0.20	0 / 12	--	--	--	0.10	1.45E-17	0.10	0.94	-- / --	--	--	0.21	0.11	0.1	--	NO	HQs less than one, not detected

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Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	2x Mean Background	Maximum Greater than Background?	Retain?	Rationale
Nickel	10.0 - 10.0	10 / 12	4.70	28.5	IR66-TW10-09C	10.5	7.28	14.3	8.20	6 / 12	--	--	3.48	1.29	7.97	YES	NO	Low magnitude of exceedance
Potassium [3]	5,000 - 5,000	10 / 12	1,010	2,840	IR66-TW09-09C	1,916	570	2,211	NSV	-- / --	--	--	NSV	NSV	3277	NO	NO	Consistent with background
Selenium	5.00 - 5.00	0 / 12	--	--	--	2.50	0.0	2.50	71.0	-- / --	--	--	0.070	0.035	3.14	--	NO	HQs less than one, not detected
Silver	10.0 - 10.0	0 / 12	--	--	--	5.00	0.0	5.00	0.23	-- / --	--	--	43.5	21.7	0.77	--	NO	Not detected
Sodium [3]	-- - --	12 / 12	6,870	51,100	IR66-TW01-09C	15,055	11,850	21,198	NSV	-- / --	--	--	NSV	NSV	22508	YES	NO	No screening value
Thallium	2.00 - 2.00	0 / 12	--	--	--	1.00	0.0	1.00	21.3	-- / --	--	--	0.094	0.047	3.78	--	NO	HQs less than one, not detected
Vanadium	15.0 - 15.0	2 / 12	7.70	8.80	IR66-TW06-09C	7.63	0.37	7.82	NSV	-- / --	50	Buchman, 2008	0.18	0.15	4.72	YES	NO	HQs less than one
Zinc	25.0 - 25.0	8 / 12	6.00	19.5	IR66-TW10-09C	11.2	4.08	13.3	81.0	0 / 12	--	--	0.24	0.14	42.1	NO	NO	Consistent with background

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on marine values.
HQs - Hazard Quotients
NSV - No Screening Value
UCL - Upper Confidence Limit on mean
UG/L - Micrograms per liter

Appendix E, Table E-17
Site 66 Surface Water Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
Volatile Organic Compounds (UG/L)																
1,1,1-Trichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	312	-- / --	--	--	0.0032	0.0016	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	90.2	-- / --	--	--	0.011	0.0055	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
1,1,2-Trichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
1,1-Dichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
1,1-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,240	-- / --	--	--	4.46E-04	2.23E-04	NO	HQ less than one, not detected
1,2,4-Trichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	4.50	-- / --	--	--	0.22	0.11	NO	HQ less than one, not detected
1,2-Dibromo-3-chloropropane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
1,2-Dibromoethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
1,2-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	19.7	-- / --	--	--	0.051	0.025	NO	HQ less than one, not detected
1,2-Dichloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	1,130	-- / --	--	--	8.85E-04	4.42E-04	NO	HQ less than one, not detected
1,2-Dichloropropane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,400	-- / --	--	--	4.17E-04	2.08E-04	NO	HQ less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	28.5	-- / --	--	--	0.035	0.018	NO	HQ less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	19.9	-- / --	--	--	0.050	0.025	NO	HQ less than one, not detected
2-Butanone	3.00 - 3.00	0 / 2	--	--	--	1.50	0.0	1.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Hexanone	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Methyl-2-pentanone	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Acetone	12.0 - 13.0	0 / 2	--	--	--	6.25	0.35	7.83	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	109	-- / --	--	--	0.0092	0.0046	NO	HQ less than one, not detected
Bromodichloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Bromoform	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	640	-- / --	--	--	0.0016	7.81E-04	NO	HQ less than one, not detected
Bromomethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	120	-- / --	--	--	0.0083	0.0042	NO	HQ less than one, not detected
Carbon disulfide	-- - --	2 / 2	0.30	0.89	IR66-SW02-09C	0.60	0.42	2.46	NSV	-- / --	--	--	NSV	NSV	NO	No screening level
Carbon tetrachloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	1,500	-- / --	--	--	6.67E-04	3.33E-04	NO	HQ less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	105	-- / --	--	--	0.0095	0.0048	NO	HQ less than one, not detected
Chloroethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Chloroform	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	815	-- / --	--	--	0.0012	6.13E-04	NO	HQ less than one, not detected
Chloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,700	-- / --	--	--	3.70E-04	1.85E-04	NO	HQ less than one, not detected
cis-1,2-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
cis-1,3-Dichloropropene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	NO	HQ less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Dibromochloromethane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Ethylbenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	4.30	-- / --	--	--	0.23	0.12	NO	HQ less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Methyl acetate	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Methylcyclohexane	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Methylene chloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	2,560	-- / --	--	--	3.91E-04	1.95E-04	NO	HQ less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Styrene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Tetrachloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	45.0	-- / --	--	--	0.022	0.011	NO	HQ less than one, not detected
Toluene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	37.0	-- / --	--	--	0.027	0.014	NO	HQ less than one, not detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
trans-1,3-Dichloropropene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	7.90	-- / --	--	--	0.13	0.063	NO	HQ less than one, not detected
Trichloroethene	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Trichlorofluoromethane(Freon-11)	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Vinyl chloride	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Xylene, total	1.00 - 1.00	0 / 2	--	--	--	0.50	0.0	0.50	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Semivolatile Organic Compounds (UG/L)																
1,1-Biphenyl	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,2'-Oxybis(1-chloropropane)	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,4,5-Trichlorophenol	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,4,6-Trichlorophenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,4-Dichlorophenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,4-Dimethylphenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,4-Dinitrophenol	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	48.5	-- / --	--	--	0.58	0.27	NO	HQ less than one, not detected
2,4-Dinitrotoluene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2,6-Dinitrotoluene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Chloronaphthalene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value

Appendix E, Table E-17
Site 66 Surface Water Screen
Confirmatory Sampling Report
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North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
2-Chlorophenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Methylnaphthalene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Methylphenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Nitroaniline	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
2-Nitrophenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
3,3'-Dichlorobenzidine	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
3-Nitroaniline	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4,6-Dinitro-2-methylphenol	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Bromophenyl-phenylether	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Chloro-3-methylphenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Chloroaniline	11.0 - 11.0	0 / 1	--	--	--	5.50	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Chlorophenyl-phenylether	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Methylphenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Nitroaniline	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
4-Nitrophenol	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	71.7	-- / --	--	--	0.39	0.18	NO	HQ less than one, not detected
Acenaphthene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	9.70	-- / --	--	--	1.13	0.53	NO	HQ less than one, not detected
Acenaphthylene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Acetophenone	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Anthracene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Atrazine	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzaldehyde	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzo(a)anthracene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzo(a)pyrene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzo(b)fluoranthene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzo(g,h,i)perylene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Benzo(k)fluoranthene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
bis(2-Chloroethoxy)methane	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
bis(2-Chloroethyl)ether	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
bis(2-Ethylhexyl)phthalate	9.60 - 15.0	0 / 2	--	--	--	6.15	1.91	14.7	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Butylbenzylphthalate	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	29.4	-- / --	--	--	0.37	0.18	NO	HQ less than one, not detected
Caprolactam	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Carbazole	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Chrysene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Dibenz(a,h)anthracene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Dibenzofuran	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Diethylphthalate	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	759	-- / --	--	--	0.014	0.0068	NO	HQ less than one, not detected
Dimethyl phthalate	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	580	-- / --	--	--	0.019	0.0089	NO	HQ less than one, not detected
Di-n-butylphthalate	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	3.40	-- / --	--	--	3.24	1.51	NO	Not detected
Di-n-octylphthalate	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Fluoranthene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	1.60	-- / --	--	--	6.88	3.22	NO	Not detected
Fluorene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Hexachlorobenzene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Hexachlorobutadiene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	0.32	-- / --	--	--	34.4	16.1	NO	Not detected
Hexachlorocyclopentadiene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	0.070	-- / --	--	--	157	73.6	NO	Not detected
Hexachloroethane	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	9.40	-- / --	--	--	1.17	0.55	NO	Not detected
Indeno(1,2,3-cd)pyrene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Isophorone	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	129	-- / --	--	--	0.085	0.040	NO	HQ less than one, not detected
Naphthalene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	23.5	-- / --	--	--	0.47	0.22	NO	HQ less than one, not detected
n-Nitroso-di-n-propylamine	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
n-Nitrosodiphenylamine	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	33,000	-- / --	--	--	3.33E-04	1.56E-04	NO	HQ less than one, not detected
Nitrobenzene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	66.8	-- / --	--	--	0.16	0.077	NO	HQ less than one, not detected
Pentachlorophenol	24.0 - 28.0	0 / 2	--	--	--	13.0	1.41	19.3	7.90	-- / --	--	--	3.54	1.65	NO	Not detected
Phenanthrene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Phenol	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	58.0	-- / --	--	--	0.19	0.089	NO	HQ less than one, not detected
Pyrene	9.60 - 11.0	0 / 2	--	--	--	5.15	0.49	7.36	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Inorganics (UG/L)																
Aluminum	-- - --	2 / 2	167	8,140	IR66-SW03-09C	4,154	5,638	29,323	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Antimony	3.75 - 15.0	0 / 2	--	--	--	4.69	3.98	22.4	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Arsenic	1.25 - 1.25	1 / 2	4.60	4.60	IR66-SW03-09C	2.61	2.81	15.2	36.0	0 / 2	--	--	0.13	0.073	NO	HQ less than one
Barium	-- - --	2 / 2	9.07	281	IR66-SW03-09C	145	192	1,003	NSV	-- / --	25000	TCEQ, 2006	0.011	0.006	NO	HQ less than one

Appendix E, Table E-17
Site 66 Surface Water Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
Beryllium	1.25 - 5.00	0 / 2	--	--	--	1.56	1.33	7.48	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Cadmium	1.25 - 25.0	0 / 2	--	--	--	6.56	8.40	44.1	8.80	-- / --	--	--	2.84	0.75	NO	Not detected
Calcium [3]	-- - --	2 / 2	1,950	248,000	IR66-SW03-09C	124,975	173,984	901,724	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Chromium	1.25 - 50.0	0 / 2	--	--	--	12.8	17.2	89.8	50.0	-- / --	--	--	1.00	0.26	NO	Not detected
Cobalt	3.12 - 15.0	0 / 2	--	--	--	4.53	4.20	23.3	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Copper	2.50 - 2.50	1 / 2	6.00	6.00	IR66-SW03-09C	3.63	3.36	18.6	3.10	1 / 2	--	--	1.94	1.17	NO	Low magnitude of exceedance
Iron	-- - --	2 / 2	98.3	17,800	IR66-SW03-09C	8,949	12,517	64,831	NSV	-- / --	50	Buchman, 2008	356	179	NO	Low magnitude of exceedance based on dissolved data
Lead	0.75 - 0.75	1 / 2	9.60	9.60	IR66-SW03-09C	4.99	6.52	34.1	8.10	1 / 2	--	--	1.19	0.62	NO	Low magnitude of exceedance, mean HQ less than one
Magnesium [3]	-- - --	2 / 2	4,420	685,000	IR66-SW03-09C	344,710	481,243	2,493,217	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Manganese	-- - --	2 / 2	1.70	213	IR66-SW03-09C	107	149	774	NSV	-- / --	100	Buchman, 2008	2.13	1.07	NO	HQs less than one based on dissolved data
Mercury	0.20 - 0.20	0 / 2	--	--	--	0.10	0.0	0.10	0.94	-- / --	--	--	0.21	0.11	NO	HQs less than one, not detected
Nickel	2.50 - 10.0	0 / 2	--	--	--	3.13	2.65	15.0	8.20	-- / --	--	--	1.22	0.38	NO	Not detected
Potassium [3]	-- - --	2 / 2	2,100	204,000	IR66-SW03-09C	103,050	142,765	740,423	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Selenium	1.50 - 5.00	0 / 2	--	--	--	1.63	1.24	7.15	71.0	-- / --	--	--	0.070	0.023	NO	HQs less than one, not detected
Silver	1.25 - 10.0	0 / 2	--	--	--	2.81	3.09	16.6	0.23	-- / --	--	--	43.5	12.2	NO	Not detected
Sodium [3]	-- - --	2 / 2	45,800	5,360,000	IR66-SW03-09C	2,702,900	3,757,707	19,479,169	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Thallium	2.00 - 10.0	0 / 2	--	--	--	3.00	2.83	15.6	21.3	-- / --	--	--	0.47	0.14	NO	HQs less than one, not detected
Vanadium	3.12 - 3.12	1 / 2	13.2	13.2	IR66-SW03-09C	7.38	8.23	44.1	NSV	-- / --	50	Buchman, 2008	0.26	0.15	NO	HQs less than one
Zinc	5.00 - 5.00	1 / 2	35.5	35.5	IR66-SW03-09C	19.0	23.3	123	81.0	0 / 2	--	--	0.44	0.23	NO	HQ less than one
Dissolved Metals (UG/L)																
Aluminum, Dissolved	-- - --	1 / 1	126	126	IR66-SW02-10A	126	--	--	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Antimony, Dissolved	3.75 - 3.75	0 / 1	--	--	--	1.88	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Arsenic, Dissolved	1.25 - 1.25	0 / 1	--	--	--	0.63	--	--	36.0	-- / --	--	--	0.035	0.017	NO	HQs less than one, not detected
Barium, Dissolved	-- - --	1 / 1	10.0	10.0	IR66-SW02-10A	10.0	--	--	NSV	-- / --	25000	TCEQ, 2006	0.0004	0.0004	NO	HQ less than one
Beryllium, Dissolved	1.25 - 1.25	0 / 1	--	--	--	0.63	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Cadmium, Dissolved	-- - --	1 / 1	0.35	0.35	IR66-SW02-10A	0.35	--	--	8.80	0 / 1	--	--	0.040	0.040	NO	HQ less than one
Calcium, Dissolved [3]	-- - --	1 / 1	1,730	1,730	IR66-SW02-10A	1,730	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Chromium, Dissolved	1.25 - 1.25	0 / 1	--	--	--	0.63	--	--	50.0	-- / --	--	--	0.025	0.013	NO	HQs less than one, not detected
Cobalt, Dissolved	3.12 - 3.12	0 / 1	--	--	--	1.56	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Copper, Dissolved	2.50 - 2.50	0 / 1	--	--	--	1.25	--	--	3.10	-- / --	--	--	0.81	0.40	NO	HQs less than one, not detected
Iron, Dissolved	-- - --	1 / 1	81.9	81.9	IR66-SW02-10A	81.9	--	--	NSV	-- / --	50	Buchman, 2008	1.64	1.64	NO	Low mangitude of exceedance
Lead, Dissolved	0.75 - 0.75	0 / 1	--	--	--	0.38	--	--	8.10	-- / --	--	--	0.093	0.046	NO	HQs less than one, not detected
Magnesium, Dissolved [3]	-- - --	1 / 1	4,100	4,100	IR66-SW02-10A	4,100	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Manganese, Dissolved	-- - --	1 / 1	1.69	1.69	IR66-SW02-10A	1.69	--	--	NSV	-- / --	100	Buchman, 2008	0.02	0.02	NO	HQs less than one
Mercury, Dissolved	0.20 - 0.20	0 / 1	--	--	--	0.10	--	--	0.94	-- / --	--	--	0.21	0.11	NO	HQs less than one, not detected
Nickel, Dissolved	2.50 - 2.50	0 / 1	--	--	--	1.25	--	--	8.20	-- / --	--	--	0.30	0.15	NO	HQs less than one, not detected
Potassium, Dissolved [3]	-- - --	1 / 1	1,770	1,770	IR66-SW02-10A	1,770	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Selenium, Dissolved	1.50 - 1.50	0 / 1	--	--	--	0.75	--	--	71.0	-- / --	--	--	0.021	0.011	NO	HQs less than one, not detected
Silver, Dissolved	1.25 - 1.25	0 / 1	--	--	--	0.63	--	--	0.23	-- / --	--	--	5.43	2.72	NO	Not detected
Sodium, Dissolved [3]	-- - --	1 / 1	43,700	43,700	IR66-SW02-10A	43,700	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Thallium, Dissolved	2.00 - 2.00	0 / 1	--	--	--	1.00	--	--	21.3	-- / --	--	--	0.094	0.047	NO	HQs less than one, not detected
Vanadium, Dissolved	3.12 - 3.12	0 / 1	--	--	--	1.56	--	--	NSV	-- / --	--	--	NSV	NSV	NO	Not detected, no screening value
Zinc, Dissolved	5.00 - 5.00	0 / 1	--	--	--	2.50	--	--	81.0	-- / --	--	--	0.062	0.031	NO	HQs less than one, not detected

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
ESVs based on marine values
HQs - Hazard Quotients
NSV - No Screening Value
UG/L - Micrograms per liter
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix E, Table E-18
Site 66 Sediment Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,1,2,2-Tetrachloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,1,2-Trichloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,1-Dichloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,1-Dichloroethene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2,4-Trichlorobenzene	19.0 - 23.0	0 / 3	--	--	--	10.3	1.04	12.1	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2-Dibromo-3-chloropropane	7.60 - 11.0	0 / 4	--	--	--	4.74	0.71	5.57	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2-Dibromoethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2-Dichlorobenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2-Dichloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,2-Dichloropropane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,3-Dichlorobenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
1,4-Dichlorobenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Butanone	19.0 - 23.0	0 / 4	--	--	--	10.3	0.87	11.3	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Hexanone	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Methyl-2-pentanone	19.0 - 20.0	2 / 4	1.40	1.50	IR66-SD01-09C	5.60	4.80	11.2	NSV	-- / --	45.3	TCEQ, 2006	0.03	0.12	NO	HQs less than one
Acetone	84.0 - 84.0	3 / 4	140	410	IR66-SD04-09C	193	156	376	NSV	-- / --	167	TCEQ, 2006	2.46	1.16	NO	Low magnitude of exceedance, lab contaminant
Benzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Bromodichloromethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Bromoform	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Bromomethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Carbon disulfide	19.0 - 23.0	2 / 4	5.00	38.0	IR66-SD02-09C	16.0	14.9	33.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Carbon tetrachloride	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Chlorobenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Chloroethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Chloroform	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Chloromethane	15.0 - 23.0	2 / 4	1.40	3.30	IR66-SD04-09C	5.93	4.51	11.2	NSV	-- / --	8.74	TCEQ, 2006	0.38	0.68	NO	HQs less than one
cis-1,2-Dichloroethene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
cis-1,3-Dichloropropene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Cyclohexane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Dibromochloromethane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Dichlorodifluoromethane (Freon-12)	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Ethylbenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Isopropylbenzene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Methyl acetate	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Methylcyclohexane	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Methylene chloride	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Methyl-tert-butyl ether (MTBE)	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Styrene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Tetrachloroethene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Toluene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
trans-1,2-Dichloroethene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
trans-1,3-Dichloropropene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Trichloroethene	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Trichlorofluoromethane(Freon-11)	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Vinyl chloride	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Xylene, total	15.0 - 23.0	0 / 4	--	--	--	9.63	1.65	11.6	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,2'-Oxybis(1-chloropropane)	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4,5-Trichlorophenol	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4,6-Trichlorophenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4-Dichlorophenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4-Dimethylphenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4-Dinitrophenol	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,4-Dinitrotoluene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2,6-Dinitrotoluene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Chloronaphthalene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Chlorophenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Methylnaphthalene	380 - 1,000	0 / 4	--	--	--	283	146	455	23.2	-- / --	--	--	43.0	12.2	NO	Not detected
2-Methylphenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
2-Nitroaniline	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected

Appendix E, Table E-18
Site 66 Sediment Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
2-Nitrophenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
3,3'-Dichlorobenzidine	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
3-Nitroaniline	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4,6-Dinitro-2-methylphenol	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Bromophenyl-phenylether	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Chloro-3-methylphenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Chloroaniline	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Chlorophenyl-phenylether	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Methylphenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Nitroaniline	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
4-Nitrophenol	770 - 2,100	0 / 4	--	--	--	576	318	950	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Acenaphthene	380 - 1,000	0 / 4	--	--	--	283	146	455	6.71	-- / --	--	--	149	42.1	NO	Not detected
Acenaphthylene	380 - 1,000	0 / 4	--	--	--	283	146	455	5.87	-- / --	--	--	170	48.1	NO	Not detected
Acetophenone	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Anthracene	380 - 1,000	0 / 4	--	--	--	283	146	455	46.9	-- / --	--	--	21.3	6.02	NO	Not detected
Atrazine	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Benzaldehyde	380 - 1,000	1 / 4	140	140	IR66-SD01-09C	266	161	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Benzo(a)anthracene	96.0 - 260	0 / 4	--	--	--	72.0	39.0	118	74.8	-- / --	--	--	3.48	0.96	NO	Not detected
Benzo(a)pyrene	10.0 - 10.0	3 / 4	2.80	8.00	IR66-SD02-09C	5.33	2.13	7.84	88.8	0 / 4	--	--	0.090	0.060	NO	HQs less than one
Benzo(b)fluoranthene	96.0 - 120	1 / 4	11.0	11.0	IR66-SD02-09C	42.3	21.5	67.5	655	0 / 4	--	--	0.017	0.065	NO	HQs less than one
Benzo(g,h,i)perylene	380 - 1,000	0 / 4	--	--	--	283	146	455	655	-- / --	--	--	1.53	0.43	NO	Not detected
Benzo(k)fluoranthene	380 - 1,000	0 / 4	--	--	--	283	146	455	655	-- / --	--	--	1.53	0.43	NO	Not detected
bis(2-Chloroethoxy)methane	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
bis(2-Chloroethyl)ether	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
bis(2-Ethylhexyl)phthalate	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Butylbenzylphthalate	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Caprolactam	380 - 1,000	1 / 4	260	260	IR66-SD01-09C	296	139	460	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Carbazole	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Chrysene	380 - 1,000	0 / 4	--	--	--	283	146	455	108	-- / --	--	--	9.26	2.62	NO	Not detected
Dibenz(a,h)anthracene	10.0 - 24.0	1 / 4	64.0	64.0	IR66-SD02-09C	21.8	28.3	55.1	6.22	1 / 4	--	--	10.3	3.50	NO	Low frequency of exceedance
Dibenzofuran	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Diethylphthalate	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Dimethyl phthalate	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Di-n-butylphthalate	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Di-n-octylphthalate	640 - 1,700	0 / 4	--	--	--	475	252	771	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Fluoranthene	380 - 1,000	0 / 4	--	--	--	283	146	455	113	-- / --	--	--	8.85	2.50	NO	Not detected
Fluorene	380 - 1,000	0 / 4	--	--	--	283	146	455	21.2	-- / --	--	--	47.2	13.3	NO	Not detected
Hexachlorobenzene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Hexachlorobutadiene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Hexachlorocyclopentadiene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Hexachloroethane	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Indeno(1,2,3-cd)pyrene	96.0 - 120	1 / 4	120	120	IR66-SD02-09C	69.5	34.1	110	655	0 / 4	--	--	0.18	0.11	NO	HQs less than one
Isophorone	96.0 - 260	0 / 4	--	--	--	72.0	39.0	118	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Naphthalene	380 - 1,000	0 / 4	--	--	--	283	146	455	34.6	-- / --	--	--	28.9	8.16	NO	Not detected
n-Nitroso-di-n-propylamine	49.0 - 130	0 / 4	--	--	--	36.3	19.3	58.9	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
n-Nitrosodiphenylamine	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Nitrobenzene	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Pentachlorophenol	32.0 - 87.0	0 / 4	--	--	--	24.0	13.1	39.4	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Phenanthrene	380 - 1,000	0 / 4	--	--	--	283	146	455	86.7	-- / --	--	--	11.5	3.26	NO	Not detected
Phenol	380 - 1,000	0 / 4	--	--	--	283	146	455	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Pyrene	380 - 1,000	0 / 4	--	--	--	283	146	455	153	-- / --	--	--	6.54	1.85	NO	Not detected
Inorganics (MG/KG)																
Aluminum	-- - --	4 / 4	2,170	7,840	IR66-SD04-09C	5,693	2,458	8,585	NSV	-- / --	18000	Buchman, 2008	0.44	0.32	NO	HQs less than one
Antimony	1.40 - 3.90	0 / 4	--	--	--	1.08	0.59	1.77	2.00	-- / --	--	--	1.95	0.54	NO	Not detected
Arsenic	-- - --	4 / 4	0.98	4.00	IR66-SD02-09C	2.32	1.25	3.79	7.24	0 / 4	--	--	0.55	0.32	NO	HQs less than one
Barium	-- - --	4 / 4	2.30	29.4	IR66-SD04-09C	15.5	12.7	30.5	NSV	-- / --	48	Buchman, 2008	0.61	0.32	NO	HQs less than one
Beryllium	-- - --	4 / 4	0.30	0.72	IR66-SD02-09C	0.43	0.20	0.66	NSV	-- / --	--	--	NSV	NSV	NO	No screening value
Cadmium	0.48 - 1.30	0 / 4	--	--	--	0.36	0.19	0.59	0.68	-- / --	--	--	1.92	0.53	NO	Not detected
Calcium [3]	-- - --	4 / 4	847	7,010	IR66-SD02-09C	2,712	2,925	6,154	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Chromium	-- - --	4 / 4	2.20	8.00	IR66-SD04-09C	5.68	2.52	8.64	52.3	0 / 4	--	--	0.15	0.11	NO	HQs less than one
Cobalt	1.50 - 3.90	2 / 4	0.70	0.73	IR66-SD04-09C	1.03	0.61	1.75	NSV	-- / --	10	Buchman, 2008	0.07	0.10	NO	HQs less than one
Copper	-- - --	4 / 4	1.30	5.80	IR66-SD02-09C	3.23	1.89	5.45	18.7	0 / 4	--	--	0.31	0.17	NO	HQs less than one
Iron	-- - --	4 / 4	1,310	7,360	IR66-SD02-09C	4,190	2,476	7,103	NSV	-- / --	22000	Buchman, 2008	0.33	0.19	NO	HQs less than one
Lead	-- - --	4 / 4	8.60	17.0	IR66-SD02-09C	11.3	3.90	15.9	30.2	0 / 4	--	--	0.56	0.37	NO	HQs less than one
Magnesium [3]	-- - --	4 / 4	1,350	9,370	IR66-SD02-09C	3,640	3,838	8,156	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient

Appendix E, Table E-18
Site 66 Sediment Screen
Confirmatory Sampling Report
MCB CamLej
North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Arithmetic Mean	Standard Deviation of Mean	95% UCL (Norm)	Screening Value	Frequency of Exceedance[1]	Supplemental ESV	Source	Maximum Hazard Quotient[2]	Mean Hazard Quotient	Retain?	Rationale
Manganese	-- - --	4 / 4	4.10	13.3	IR66-SD02-09C	8.43	3.79	12.9	NSV	-- / --	260	Buchman, 2008	0.05	0.03	NO	HQs less than one
Mercury	-- - --	4 / 4	0.043	0.10	IR66-SD02-09C	0.079	0.025	0.11	0.13	0 / 4	--	--	0.77	0.61	NO	HQs less than one
Nickel	-- - --	4 / 4	1.60	4.60	IR66-SD02-09C	2.93	1.25	4.39	15.9	0 / 4	--	--	0.29	0.18	NO	HQs less than one
Potassium [3]	-- - --	4 / 4	442	1,960	IR66-SD02-09C	865	732	1,726	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Selenium	0.48 - 0.48	3 / 4	0.49	1.40	IR66-SD02-09C	0.67	0.51	1.26	NSV	-- / --	1	Buchman, 2008	1.40	0.67	NO	Low magnitude of exceedance
Silver	0.96 - 2.60	0 / 4	--	--	--	0.72	0.39	1.18	0.73	-- / --	--	--	3.55	0.98	NO	Not detected
Sodium [3]	-- - --	4 / 4	5,680	41,900	IR66-SD02-09C	15,850	17,399	36,324	NSV	-- / --	--	--	NSV	NSV	NO	Macronutrient
Thallium	0.77 - 2.10	0 / 4	--	--	--	0.58	0.32	0.95	NSV	-- / --	--	--	NSV	NSV	NO	No screening value, not detected
Vanadium	-- - --	4 / 4	4.60	14.7	IR66-SD02-09C	9.85	4.16	14.7	NSV	-- / --	57	Buchman, 2008	0.26	0.17	NO	HQs less than one
Zinc	-- - --	4 / 4	5.80	20.9	IR66-SD02-09C	10.5	6.98	18.7	124	0 / 4	--	--	0.17	0.085	NO	HQs less than one

NOTES
1 - Count of detected samples exceeding or equaling Screening Value
2 - Shaded cells indicate hazard quotient based on reporting limits
3 - Macronutrient - Not considered to be a COPC
HQs - Hazard quotients
MG/KG - Milligrams per kilogram
NSV - No Screening Value
UCL - Upper confidence limit of the mean
UG/KG - Micrograms per kilogram
Generated by: Kelly Taylor
Checked by: Sara Kent

Appendix F
Surface Water and Sediment Analytical Data

Appendix F, Table F1
Site 66 Surface Water Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	**NC2B-SW-Human Health & Water Supply [1]**	**NRWQC-Human Health - Organisms & Water + Organisms [2]**	**Adjusted Tap Water RSL**	IR66-SW02		IR66-SW03	IR66-SW02
Sample ID				IR66-SW02-09C	IR66-SW02D-09C	IR66-SW03-09C	IR66-SW02-10A
Sample Date				07/14/09	07/14/09	07/14/09	02/25/10
Chemical Name							
Volatile Organic Compounds (µg/l)							
Carbon disulfide	--	--	100	0.89 J	0.79 J	0.3 J	NA
Semivolatile Organic Compounds (µg/l)							
No Detections							
Total Metals (µg/l)							
Aluminum	--	--	3,700	**35,800 J**	**138,000 J**	**8,140 J**	167
Arsenic	10	0.018	0.045	**27.4 J**	250 U	**4.6 J**	1.25 U
Barium	1,000	1,000	730	105 J	213 J	281	9.07 J
Cadmium	--	5	1.8	**8.5 J**	125 U	25 U	1.25 U
Calcium	--	--	--	379,000 J	540,000 J	248,000 J	1,950
Chromium	--	100	0.043	**20.5 J**	100 J	50 U	1.25 U
Copper	--	1,300	150	50.7 J	**197 J**	6 J	2.5 U
Iron	--	300	2,600	**40,700 J**	**169,000 J**	**17,800**	98.3
Lead	--	--	15	**104 J**	**397 J**	9.6 J	0.75 U
Magnesium	--	--	--	975,000	920,000	685,000	4,420 J
Manganese	200	50	88	**114**	**330 J**	**213**	1.7 J
Mercury	--	--	1.1	0.32	0.23	0.2 U	0.2 U
Nickel	25	610	73	25.9 J	**117 J**	10 U	2.5 U
Potassium	--	--	--	308,000	261,000	204,000	2,100 J
Sodium	--	--	--	8,090,000	6,930,000	5,360,000	45,800
Vanadium	--	--	18	**75.9 J**	**295 J**	13.2 J	3.12 U
Zinc	--	7,400	1,100	154 J	603 J	35.5 J	5 U

Notes:
Bold box indicates exceedance of NC2B-SW-Human Health + Water Supply
Shading indicates exceedance of NRWQC-Human Health - Water+ Organisms
Bold text indicates exceedance of Adjusted Tap Water RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple
1 - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show
2 - NRWQC-Human Health - Water+ Organisms and NRWQC-Human Health Organisms were combined to show the most conservative criteria
NA - Not analyzed
J - Analyte present, value may or may not be accurate or precise
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
µg/l - Micrograms per liter
Generated By: Jeff Albano
Checked By: Jeremy Diner

Appendix F, Table F2
Site 66 Sediment Analytical Data
Confirmatory Sampling Report
MCB CamLej
North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSLs (January 2010)	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL	IR66-SD01		IR66-SD02	IR66-SD03	IR66-SD04
Sample ID					IR66-SD01-09C	IR66-SD01D-09C	IR66-SD02-09C	IR66-SD03-09C	IR66-SD04-09C
Sample Date					07/14/09	07/14/09	07/14/09	07/14/09	07/14/09
Chemical Name									
Volatile Organic Compounds (µg/kg)									
4-Methyl-2-pentanone	--	--	3,400,000	530,000	21 U	1.5 J	1.4 J	20 U	19 U
Acetone	--	24,000	63,000,000	6,100,000	100	140	180	84 U	410
Carbon disulfide	--	3,800	370,000	82,000	21 U	23 U	38	5 J	19 U
Chloromethane	--	15	50,000	12,000	21 U	23 U	15 U	1.4 J	3.3 J
Semivolatile Organic Compounds (µg/kg)									
Benzaldehyde	--	--	1,200,000	780,000	140 J	410 U	1,000 U	380 U	470 U
Benzo(a)pyrene	--	59.0	210	15	2.8 J	11 U	8 J	10 U	5.5 J
Caprolactam	--	18,000	31,000,000	3,100,000	260 J	410 U	1,000 U	380 U	470 U
Dibenz(a,h)anthracene	--	190	210	15	10 U	24 U	64	10 U	12 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	98 U	100 U	120 J	96 U	120 U
Total Metals (mg/kg)									
Aluminum	10,369	--	99,000	7,700	1,850	2,170	6,100	6,660	7,840
Arsenic	2.12	5.8	1.6	0.39	0.98	0.94 J	**4**	**2.1**	**2.2**
Barium	16.6	580	19,000	1,500	2.3 J	2.3 J	7.5 J	22.8	29.4
Beryllium	0.165	--	200	16	0.23 J	0.3 J	0.72 J	0.32 J	0.38 J
Calcium	441	--	--	--	2,110	1,250	7,010	847	881
Chromium	14.5	3.8	5.6	0.29	2	2.2	5.6	**6.9**	**8**
Cobalt	0.822	--	30	2.3	1.5 U	1.5 U	3.9 U	0.7 J	0.73 J
Copper	2.56	700	4,100	310	1.3	1.3	5.8	2.6	3.2
Iron	5,439	150	72,000	5,500	1,310	1,030	7,360	4,090	4,000
Lead	8.49	270	800	400	8	8.6	17	9	10.5
Magnesium	363	--	--	--	2,230 J	1,660 J	9,370 J	1,350 J	1,610 J
Manganese	9.25	65.0	2,300	180	4.1	3.8	13.3	7.7	8.6
Mercury	0.071	1	31	2.3	0.039 J	0.043 J	0.1 J	0.09	0.082
Nickel	2.27	130	2,000	150	1.6	1.5	4.6	2.6	2.9
Potassium	361	--	--	--	442 J	408 J	1,960	483	575 J
Selenium	0.505	2.1	510	39	0.49	0.49 J	1.4	0.48 U	0.54 J
Sodium	68.3	--	--	--	8,140	8,070	41,900	5,680	7,680
Vanadium	17.2	--	520	39	4.5	4.6	14.7	9.4	10.7
Zinc	6.59	1,200	31,000	2,300	5.8	3.3	20.9	7.5	7.9

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

mg/kg - Milligrams per kilogram

µg/kg - Micrograms per kilogram

Generated By: Jeff Albano

Checked By: Jeremy Diner