FINAL

REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT FOR SITE FTMM-08

FORT MONMOUTH, OCEANPORT, MONMOUTH COUNTY, NEW JERSEY

BRAC 05 Facility
Contract W912DY-09-D-0062
Task Order: 0012, Project No. 369857

Submitted To:

U.S. Army Engineering and Support Center Huntsville, Alabama

and

U.S. Corps of Engineers, New York District



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Revision No. 0
April 2016

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Client Name:	**U.S. Army Engineering & Support Center (USAESCH)**
Contract Name:	**Remedial Investigation/Feasibility Study/Decision Documents, Fort Monmouth, Oceanport, Monmouth County, New Jersey**
Contract Number:	**W912DY-09-D-0062, Task Order 0012, Project No. 369857**
Contractor:	**Parsons Government Services, Inc.**
Period of Performance:	**30 September 2012 to 30 September 2017**
Date of Original:	**April 2016**
Revision:	**0**

April 2016

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TABLE OF CONTENTS

List of Tables v
List of Figures vi
List of Appendices vii
List of Acronyms viii
EXECUTIVE SUMMARY E-1
E.1 Site Description E-1
E.2 Geology and Hydrogeology E-1
E.3 Soil Sampling Results E-1
E.4 Groundwater Sampling Results E-2
E.5 Surface Water Sampling Results E-2
E.6 Sediment Sampling Results E-3
E.7 Contaminant Fate and Transport E-3
E.8 Risk Assessment E-3
E.9 Feasibility Study E-4
SECTION 1 INTRODUCTION 1-1
1.1 Project Authorization 1-1
1.2 Purpose and Scope 1-1
1.3 Site Background Information 1-1
1.3.1 Site Location and Description 1-1
1.3.2 Site History 1-2
1.4 Report Organization 1-5
SECTION 2 PREVIOUS INVESTIGATIONS AND INTERIM REMEDIAL ACTIONS 1-1
2.1 Geologic/Hydrogeologic Investigations 1-1
2.2 Soil and Vadose Zone Investigations 1-1
2.3 Groundwater Investigations AND INTERIM REMEDIAL ACTIONS 1-1
2.3.1 Groundwater Investigations 1-1
2.3.2 Groundwater Interim Remedial Actions 1-3
2.4 Surface Water Investigations 1-3
2.5 Sediment Investigations 1-3
2.6 Ecological Investigations 1-4

2.7 Previous Investigations of Background Soil and Groundwater Quality 1-4
2.7.1 Weston (1995) Background Investigation 1-4
2.7.2 Brinkerhoff (2011a) Background Evaluation 1-5
2.7.3 Base-Wide Glauconitic Soil Sampling Report 1-5
SECTION 3 PHYSICAL CHARACTERISTICS OF THE SITE 3-1
3.1 Surface Features 3-1
3.2 Surface-Water Hydrology 3-1
3.3 Geology and Hydrogeology 3-1
3.3.1 Regional Geology and Hydrogeology 3-1
3.3.2 Site-Specific Geology and Hydrogeology 3-2
3.4 Land Use 3-4
3.5 Ecology 3-4
SECTION 4 NATURE AND EXTENT OF CONTAMINATION 4-1
4.1 Soil Quality 4-1
4.1.1 Summary of Comparison Criteria Exceedances in Soil 4-2
4.1.2 COPCs in Soil 4-5
4.2 Groundwater Quality 4-5
4.2.1 Summary of Groundwater Sampling Results from 1997 to 2010 4-6
4.2.2 Summary of Results from Eight Most Recent Quarterly Sampling Events and the 2013/2014 Sampling Events. 4-7
4.3 Surface Water Quality 4-10
4.3.1 Summary of Surface Water Sampling Results From 1999 to 2010 4-11
4.3.2 Summary of Surface Water Results from Most Recent Eight Quarterly Sampling Events 4-11
4.4 Sediment 4-12
SECTION 5 CONTAMINANT FATE AND TRANSPORT 5-1
5.1 Potential Routes of Migration 5-1
5.2 Contaminant Persistence in Soil 5-1
5.2.1 Volatile Organic Compounds 5-1
5.2.2 Semi Volatile Organic Compounds 5-2
5.2.3 PCBs 5-2
5.2.4 Metals 5-2
5.3 Contaminant Persistence in Groundwater 5-3

5.3.1 Volatile Organic Compounds 5-3
5.3.2 Metals 5-3
5.4 Contaminant Migration in Soil 5-4
5.4.1 Volatile Organic Compounds 5-4
5.4.2 Semivolatile Organic Compounds 5-4
5.4.3 PCBs 5-4
5.4.4 Metals 5-4
5.5 Contaminant Migration in Groundwater 5-5
5.5.1 Volatile Organic Compounds 5-5
5.5.2 Metals 5-5
5.6 Summary 5-6
SECTION 6 BASELINE RISK ASSESSMENT 6-1
6.1 Risk Assessment Process 6-1
6.1.1 Summary of Available Data for FTMM-08 6-1
6.1.2 General HHRA Approach and Guidance Documents 6-1
6.1.3 Organization of the HHRA 6-4
6.2 Data EvaluatIon and Identification of Constituents of Potential Concern 6-4
6.2.1 Risk Ratio Approach 6-5
6.2.2 Soil Samples 6-7
6.2.3 Groundwater Samples 6-7
6.2.4 Sediment Samples 6-8
6.2.5 Surface Water Samples 6-8
6.3 Exposure Assessment 6-8
6.3.1 Conceptual Site Model 6-8
6.3.2 Potential Receptors 6-9
6.3.3 Exposure Pathways 6-11
6.4 Risk Ratio and Screening Criteria Assessment 6-12
6.4.1 Risk Ratio Assessment 6-12
6.4.2 Risk Ratio Equations 6-12
6.4.3 Screening Criteria 6-13
6.5 Risk Assessment Results and Uncertainties 6-14
6.5.1 Estimated Risks for Soil 6-14
6.5.2 Estimated Risks for Groundwater 6-15

6.5.3 Risk Assessment Uncertainties 6-15
6.5.4 Conclusions 6-18
SECTION 7 REMEDIAL INVESTIGATION SUMMARY AND CONCLUSIONS 7-1
7.1 Nature and Extent of Contamination 7-1
7.1.1 Soil 7-1
7.1.2 Groundwater 7-2
7.1.3 Surface Water 7-3
7.1.4 Sediment 7-3
7.2 Contaminant Fate and Transport 7-3
7.3 Risk Assessment 7-4
7.4 Conclusions and Recommendations 7-5
SECTION 8 REMEDIAL ACTION OBJECTIVES, CLEANUP GOALS, AND ARARS 8-1
8.1 Remedial Action Objectives 8-1
8.2 ARARs and TBC Criteria 8-1
8.2.1 PCB Cleanup Levels 8-2
SECTION 9 IDENTIFICATION AND SCREENING OF RESPONSE ACTIONS 9-1
9.1 General Response Actions 9-2
9.1.1 No Action 9-2
9.1.2 Risk and Hazard Management 9-2
9.1.3 Containment 9-3
9.1.4 Removal 9-4
9.2 Identification of Specific Response Actions 9-5
SECTION 10 DESCRIPTION OF REMEDIAL ALTERNATIVES 10-1
10.1 Alternative 1 – No Action 10-1
10.2 Alternative 2 – Institutional/Engineering Controls – Limited Removal of Isolated Areas with Concentrations of PCBs Exceeding 25 mg/kg, Vegetative Soil Cover or Functional Equivalent with Regrading 10-1
10.2.1 Description of Remedy Components 10-1
10.2.2 Common Elements and Distinguishing Features 10-2
10.2.3 Expected Outcome 10-3
SECTION 11 COMPARATIVE ANALYSIS OF ALTERNATIVES 11-1
11.1 Evaluation Criteria 11-1

11.1.1 Analysis of Remedial Alternatives Using NCP Criteria 11-1
11.2 Comparative Analysis of Remedial Alternatives 11-1
11.2.1 Threshold Criteria 11-1
11.2.2 Primary Balancing Criteria 11-1
SECTION 12 PREFERRED REMEDIAL ALTERNATIVE 12-1
12.1 Preferred Alternative 12-1
12.1.1 Description of Remedy Components 12-1
12.2 Remedy Costs 12-2
12.3 Expected Outcome 12-2
SECTION 13 REFERENCES 13-1

LIST OF TABLES

Table 1.1 Chronology of Events
Table 2.1 Well Construction Details
Table 2.2 Groundwater Sampling Events
Table 2.3 Surface Water Sampling Events
Table 4.1 Soil Sampling Summary Results - Comparison to NJDEP Standards
Table 4.2 Soil Sampling Summary Results - Comparison to USEPA Criteria
Table 4.3 Results of Supplemental Soil Sampling Around M8MW24 - NJDEP Comparison
Table 4.4 Results of Supplemental Soil Sampling Around M8MW24 – USEPA Comparison
Table 4.5 Soil Sampling Summary of Exceedances
Table 4.6 Groundwater Sampling Summary Results – March 2008 to August 2011
Table 4.7 Groundwater Sampling Summary Results – August 2013 and October 2014
Table 4.8 Groundwater Sampling Summary of Exceedances
Table 4.9 Surface Water Sampling Summary Results
Table 4.10 Surface Water Sampling Summary of Exceedances
Table 4.11 Sediment PCB Results
Table 6.1 Risk Ratio Calculations for Potential Exposure to Soil by a Current/Future Outdoor Worker
Table 6.2 Risk Ratio Calculations for Potential Exposure to Soil by a Future Utility Worker
Table 6.3 Risk Ratio Calculations for Potential Exposure to Soil by a Future Recreational User

Table 6.4 Risk Ratio Calculations for Potential Exposure to Groundwater by a Future Utility Worker
Table 8.1 Constituents of Concern and Cleanup Goals
Table 9.1 Screening of Specific Response Actions
Table 11.1 Criteria for Detailed Evaluation of Remedial Alternatives
Table 11.2 Evaluation of Remedial Alternatives

LIST OF FIGURES

Figure 1.1 Fort Monmouth Location
Figure 1.2 FTMM-08 Location
Figure 1.3 Layout of FTMM-08
Figure 2.1 FTMM-08 Soil Sample Locations
Figure 2.2 FTMM-08 Hydrogen Releasing Compound Treatment Areas
Figure 2.3 FTMM-08 Surface Water and Sediment Sample Locations
Figure 3.1 FTMM-08 Shallow Groundwater Contours – September 29, 2014
Figure 3.2 FTMM-08 Shallow Groundwater Contours – October 1, 2015
Figure 4.1 Summary of Method to Determine COPCs
Figure 6.1 Evaluation of Risk to Human Receptors
Figure 6.2 Human Health Conceptual Site Model
Figure 6.3 Potential Hotspots of Risk Drivers at FTMM-08
Figure 9.1 Areas of FTMM-08 with PCB-Contaminated Soil
Figure 9.2 PCBs in Soil – Detail Areas A and B
Figure 9.3 PCBs in Soil – Detail Area C

LIST OF APPENDICES

Appendix A Key Historical Reports and Background Information (also included electronically on CD)
Appendix B Recreational User Screening Level Equations and Calculations and ProUCL Output (only included electronically on CD)
Appendix C Feasibility Study Cost Estimate

LIST OF ACRONYMS

ACRONYM	DEFINITION
95% UCL	95 percent upper confidence limit
µg/dL	micrograms per deciliter
µg/L	micrograms per liter
ALM	Adult Lead Model
API	American Petroleum Institute
ARARs	Applicable or Relevant and Appropriate Requirements
ARRCS	Administrative Requirements for the Remediation of Contaminated Sites
ATC	ATC Associates, Inc.
BEE	baseline ecological evaluation
bgs	below ground surface
BRAC	Base Realignment and Closure
Brinkerhoff	Brinkerhoff Environmental Services, Inc.
CEA	Classification Exception Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cis-1,2-DCE	*cis*-1,2-dichloroethene
COPC	constituent of potential concern
COPEC	constituent of potential ecological concern
CSM	conceptual site model
CWA	Charles Wood Area
DD	Decision Document
DER	Document of Environmental Restriction
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DPW	Directorate of Public Works
EA	Evans Area
EC	engineering controls
ECP	Environmental Condition of Property
EPC	exposure point concentration
ESC	ecological screening concentrations
Fe^{+3}	ferric iron
FMETL	Fort Monmouth Environmental Testing Laboratory
FMERPA	Fort Monmouth Economic Redevelopment Planning Authority
FS	feasibility study
ft/day	feet per day
ft/ft	foot per foot
FTMM	Fort Monmouth
FTMM-08	Fort Monmouth Landfill 8
GES	Groundwater & Environmental Services, Inc.
GIS	geographic information system

ACRONYM	DEFINITION
gpd/ft^2	gallons per day per square foot
gpm	gallons per minute
GRA	general response action
GWQS	Ground Water Quality Standard
HHRA	human health risk assessment
HQ	Hazard Quotient
HRC®	Hydrogen Release Compound
HSDB	Hazardous Substances Data Bank
HTRW	hazardous, toxic, and radiological waste
IC	institutional controls
IGW	Impact to Ground Water
IRP	Installation Restoration Program
K_d	soil/water distribution coefficient
K_{oc}	organic carbon/water partition coefficient
LUC	land use control
MCL	Maximum Contaminant Level
mg/day	milligrams per day
mg/kg	milligrams per kilogram
MP	Main Post
MTBE	methyl *tert*-butyl ether
NCP	National Contingency Plan
NHANES	National Health and Nutrition Examination Survey
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollutant Discharge Elimination System
NRDCSRS	Non-Residential Direct Contact Soil Remediation Standard
NRWQC	National Recommended Water Quality Criteria
O&M	operations and maintenance
PAHs	polynuclear aromatic hydrocarbons
Parsons	Parsons Government Services Inc.
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene
PDI	pre-design investigation
ppt	parts per thousand
PRG	preliminary remediation goal
RAGS	Risk Assessment Guidance for Superfund
RAOs	remedial action objectives
RAPR	Remedial Action Progress Report
RAWP	Remedial Action Work Plan
RBDA	risk-based disposal approval
RCRA	Resource Conservation and Recovery Act
RDCSRS	Residential Direct Contact Soil Remediation Standard
RDCSCC	Residential Direct Contact Soil Cleanup Criteria

ACRONYM	DEFINITION
RfD	reference dose
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RSL	regional screening level
SE	saline
SI	site investigation
SL	screening level
SRA	specific response action
SRP	Site Remediation Program
SVOC	semi volatile organic compound
SWQS	surface water quality standard
TAL	target analyte list
TBC	to be considered
TCE	trichloroethene
THQ	target hazard quotient
TICs	tentatively identified compounds
TMV	toxicity, mobility, and volume
TO	task order
TPV	total present value
TR	target cancer risk
TRSR	Technical Requirements for Site Remediation
TSCA	Toxic Substances Control Act
UCL	Upper Confidence Limit
USACE	U.S. Army Corps of Engineers
USAEHA	U.S. Army Environmental Hygiene Agency
USAESCH	U.S. Army Engineering and Support Center, Huntsville
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VC	vinyl chloride
VOCs	volatile organic compounds
WERS	Worldwide Environmental Restoration Services

EXECUTIVE SUMMARY

E.1 SITE DESCRIPTION

Fort Monmouth (FTMM) Landfill 8 (FTMM-08) is located in the northern portion of the Main Post (MP) north of buildings T-692 and S-697 near where Lafetra Creek becomes Parkers Creek. The approximately 7.2 acre landfill site is bounded by Parkers Creek to the north, west, and east, and by Sherrill Avenue to the south. FTMM-08's southwestern boundary coincides with the northern boundary of FTMM-05. The southern portion of FTMM-08 is hydraulically downgradient of the northern portion of FTMM-05; therefore, groundwater migrating beneath the northern portion of FTMM-05 may flow beneath FTMM-08 prior to discharging to Parkers Creek. FTMM-08 was used from 1962 to 1981 as a landfill for domestic and industrial waste, and has been inactive since 1981. Since that time a stable vegetative cover has developed on the surface of the landfill. The FTMM Reuse and Redevelopment Plan indicates that the anticipated future land use at FTMM-08 is passive open space. FTMM (MP and Charles Wood Area) was selected for closure by the Base Realignment and Closure Commission in 2005, and officially closed on September 15, 2011.

E.2 GEOLOGY AND HYDROGEOLOGY

Landfill cover material thicknesses range from 0 to 4 feet and average 2.4 feet. The soil cover is composed primarily of sand and silty sand. The fill material encountered during intrusive investigation activities has consisted of ash, metal, bottles, cans, ceramic pieces, concrete, asphalt, wood, plastic, glass, metal pipes, and wire fragments. Native soil encountered below the fill to a depth of 16 feet below ground surface (bgs) consisted of brown silty sand underlain by gray/brown sandy silt. Deeper soil to a depth of 40 feet bgs is composed of orange/brown to dark green, poorly graded sand with silt. The depth to groundwater at FTMM-08 ranges from 1 to 12 feet bgs. Groundwater at FTMM-08 migrates in a northerly direction toward Parkers Creek; the calculated average advective groundwater seepage velocity ranges from 0.08 to 0.14 foot/day (29 to 51 feet per year).

E.3 SOIL SAMPLING RESULTS

A total of 614 near-surface soil samples were collected from 291 borings at FTMM-08 from November 1998 through June 1999 as part of a Remedial Investigation (RI) for near-surface soils (Versar, 2004a, provided in **Appendix A**). Samples collected at approximately 2 feet bgs were analyzed for volatile organic compounds (VOCs), and samples collected between 0.5 and 1foot bgs were analyzed for metals, semi volatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyl (PCBs). Additional soil samples were collected for PCB analysis near well M8MW24 later in 1999. Detected analyte concentrations were compared to Federal and State residential, nonresidential, and impact to groundwater (IGW) screening levels (SLs) as well as MP-specific background concentrations for metals. Residential criteria were used to support identification of constituents of potential concern (COPCs) in near-surface soil (0-2 feet bgs), but were not used to evaluate risk (Section E.8).

Concentrations of one VOC, 18 SVOCs, eight pesticides, three PCBs, and 17 metals exceeded their current New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standard (RDCSRS) and/or U.S. Environmental Protection Agency (USEPA) Residential Soil Regional Screening Level (RSL) in at least one

near-surface soil sample (0-2 feet bgs). Concentrations of 14 SVOCs, six pesticides, three PCBs, and eight metals exceeded their NJDEP Non-Residential Direct Contact Soil Remediation Standard (NRDCSRS) and/or USEPA Industrial Soil RSL in at least one near-surface soil sample. Concentrations of 11 VOCs, 30 SVOCs, 10 pesticides, four PCBs, and 18 metals exceeded their NJDEP Impact to Ground Water (IGW) Screening Level and/or USEPA Protection of Groundwater RSL in at least one near-surface soil sample. The maximum-detected concentrations of all of the metals targeted for analysis exceeded their maximum background concentrations for the MP. PCB concentrations exceeding NJDEP and USEPA screening criteria were also detected to a depth of 15.5 feet bgs in deeper borings advanced near well M8MW24.

There was a pesticide application program in use throughout FTMM for many decades, including and subsequent to when the FTMM-08 landfill was active. Pesticides in near-surface soil were not evaluated as COPCs because the widespread presence of low concentrations in near-surface soil at FTMM-08 (i.e., surfical fill material covering the landfill) is indicative of proper application of pesticides for their intended purpose and not of a landfill-related release.

E.4 GROUNDWATER SAMPLING RESULTS

Quarterly groundwater monitoring occurred at FTMM-08 from June 1997 to August 2011, using a network of up to 15 monitoring wells. Eight quarters of groundwater monitoring data (December 2009 to August 2011), the August 2013 baseline sampling event, and the 2014 annual sampling event were evaluated as being representative of recent conditions. Annual sampling for select constituents and select monitoring wells began in 2014 following the 2013 baseline sampling event, with the concurrence of the NJDEP as stated in an approval letter "Re: November 26, 2014 Response to Comments – on the Final Baseline Ground Water Sampling Report (August 2013)" dated February 5, 2015. Detected analyte concentrations were compared to Federal and State screening criteria for potable water, as well as MP-specific background concentrations for metals to identify COPCs (Section E.8). During this period, concentrations of 11 VOCs, one pesticide, and 19 metals exceeded their NJDEP Ground Water Quality Standard (GWQS) and/or the USEPA Tapwater RSL in at least one sample. Concentrations of 13 of these 19 metals also exceeded the maximum background concentration for the MP.

E.5 SURFACE WATER SAMPLING RESULTS

Surface water samples were collected at four to five locations in Mill Creek, Lafetra Creek, and Parkers Creek from October 1996 to September 2010. These sampling stations have historically been associated with FTMM-08 and are located upstream, adjacent to, and downstream of FTMM-08.

The most recent eight quarters of surface water monitoring data (December 2008 to September 2010) were evaluated as being representative of recent conditions. Two VOCs and four metals were detected at concentrations exceeding the NJDEP Surface Water Quality Standard and/or USEPA human health criterion. Concentrations of the two VOCs (tetrachloroethene [PCE] and cis-1,2-dicloroethene [cis-1,2-DCE]) and three of the four metals (arsenic, mercury, thallium) detected downstream of FTMM-08 were similar to or less than concentrations detected upstream of the site. The single exceedance of the USEPA criterion for the fourth metal (lead) in downstream surface water was anomalous and unrepresentative.

E.6 SEDIMENT SAMPLING RESULTS

Sediment sampling was conducted in April 2000 in Parkers Creek to evaluate potential PCB-related impacts to stream sediments associated with FTMM-08. In the absence of sediment-specific screening criteria, soil criteria were used for screening purposes. One PCB (Aroclor 1254) was detected in two of 21 samples at concentrations that exceed the NJDEP RDCSRS, NRDCSRS, and the USEPA residential and non-residential soil RSLs. These sediment samples were collected very close to an outlet of a storm drain that crosses FTMM-08, and while it is possible that impacted soil from FTMM-08 may have been transported into Parkers Creek via the storm drain, there are likely one or more additional sources. Although PCBs were detected in near-surface soils at isolated locations at FTMM-08, Aroclor 1254 was not detected in the soil samples. Therefore, it is likely that one or more sources upstream or otherwise outside of FTMM-08 have contributed PCBs to the sediments in Parkers Creek.

E.7 CONTAMINANT FATE AND TRANSPORT

Primary constituents of interest in terms of contaminant fate and transport at FTMM-08 include VOCs, SVOCs, PCBs, and metals in soil, and VOCs and manganese in groundwater. VOCs in vadose zone soil are expected to have a low persistence and moderate to high mobility. In contrast, SVOCs, PCBs, and metals in near-surface soil at FTMM-08 are expected to be persistent and immobile, limiting their impact on groundwater quality.

VOCs that dissolve into groundwater are expected to be moderately to highly mobile and transported laterally with advective groundwater flow, although varying degrees of sorption to aquifer matrix materials will occur. VOCs will be subject to both destructive (e.g., biodegradation) and non-destructive (i.e., diffusion, dilution, dispersion, and volatilization) attenuation processes in the saturated zone and, therefore, will decrease in concentration over time.

Metals in groundwater will likely be moderately to highly sorbed to aquifer matrix materials and thus have more limited mobility than VOCs, but their mobility in groundwater is dependent on too many metal- and site-specific factors to predict with confidence. The presence of abundant iron in soil may enhance sorption of metals to the soil matrix in the saturated zone. As the mass of bioavailable organic carbon (e.g., landfilled organic waste) in the reaction zone becomes depleted, the groundwater system will likely become more oxidizing, and concentrations of manganese in groundwater should decrease.

E.8 RISK ASSESSMENT

According to the Baseline Ecological Evaluation (BEE), exceedances of ecological screening criteria have been sufficiently evaluated and addressed for ecological consideration, and no additional ecological evaluation is necessary. Therefore, further ecological risk evaluation was not performed at FTMM-08.

An evaluation of the potential risk resulting from human exposure to contaminants in soil, surface water, sediment, and groundwater was conducted as part of this remedial investigation (RI). No COPCs were identified in surface water or sediment. Therefore, further evaluation of surface water and sediment in the baseline risk assessment was not conducted and no unacceptable risk associated with exposure to surface water or sediment is expected. The human health risk assessment (HHRA) evaluates exposure of current/future outdoor workers, future

utility workers, and future recreational users to COPCs in soil through dermal contact, incidental ingestion, and inhalation of particulates and the future utility worker exposure to groundwater encountered during routine activities (e.g. installation of utility lines) through dermal contact, incidental ingestion, and inhalation of volatiles in groundwater. The HHRA used an exposure point concentration based on the maximum detected concentration or the 95 percent upper confidence limit on the mean (95% UCL) for soil, and the maximum detected concentration from any well on the site for groundwater. In accordance with USEPA guidance on the evaluation of lead, lead in soil was evaluated separately from the other constituents.

For outdoor workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 9×10^{-4} exceeds 1×10^{-4}, above which a remedial action may be required. The cumulative non-carcinogenic hazard is 2, which is greater than the cumulative target hazard index of 1. For outdoor workers exposed to lead in soil at FTMM-08, the ratio of the lead concentration to screening level is 0.3, which is less than the target hazard quotient of 1. These results indicate that there is an unacceptable carcinogenic risk and an unacceptable non-carcinogenic hazard from exposure to soil at FTMM-08. However, no effects are expected for exposure to lead in soil.

For utility workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 1×10^{-5} is less than 1×10^{-4}, above which a remedial action may be required. The cumulative non-carcinogenic hazard is 0.6, which is less than the cumulative target hazard index of 1. For utility workers exposed to lead in soil at FTMM-08, the ratio of the concentration of the lead concentration to the screening level is 0.2, which is less than the target hazard quotient of 1. These results indicate that unacceptable carcinogenic risk, as well as non-carcinogenic effects or effects due to lead in soil are unlikely for future utility workers.

For recreational users exposed to soil at FTMM-08, the cumulative carcinogenic risk of 3×10^{-4} exceeds 1×10^{-4}, above which a remedial action may be required. The cumulative non-carcinogenic hazard is 0.3, which is less than the cumulative target hazard index of 1. For recreational users exposed to lead in soil at FTMM-08, the ratio of the concentration of lead in soil to the screening level is 0.1, which is less than the target hazard quotient of 1. These results indicate that there is an unacceptable carcinogenic risk from exposure to soil at FTMM-08. However, no non-carcinogenic effects or effects due to lead in soil are expected.

For future utility workers exposed to groundwater, the cumulative carcinogenic risk of 7×10^{-10} is less than 1×10^{-4}, above which remedial action may be required. The cumulative non-carcinogenic hazard for all wells is 0.04, which is less than the target hazard quotient of 1. These results indicate that unacceptable carcinogenic risk, as well as non-carcinogenic effects are unlikely for future utility workers.

E.9 FEASIBILITY STUDY

The feasibility study (FS) presented in Sections 8 through 11 of this RI/FS report concluded that the preferred alternative for FTMM-08 is Alternative 2, the presumptive remedy of a vegetative soil cover or functional equivalent, removal of isolated areas with concentrations of PCBs exceeding 25 mg/kg in soil, and Institutional Controls (IC) and Engineering Controls (EC) to control exposure to COPCs where unacceptable risk or hazard is possible.

In Alternative 2, three isolated areas with PCB concentrations greater than 25 mg/kg would be excavated. Since NJDEP Site Remediation Program (SRP) policy allows for contaminants

with appropriate institutional and engineering controls to be non-permanently remediated as long as the remedy is found to be protective of human health and the environment, and Toxic Substance Control Act (TSCA) considers sites such as FTMM-08 to be remediated if PCB concentrations do not exceed 25 mg/kg, removal of PCBs greater than 25 mg/kg is the threshold for PCBs at Site FTMM-08. A pre-design investigation (PDI) would be conducted prior to excavation to further delineate and better determine the lateral and vertical extent of PCB contamination greater than 25 mg/kg. Soil with total PCB concentrations less than 50 mg/kg would be transported to an off-site municipal disposal facility; soil with concentrations greater than 50 mg/kg would be transported to a hazardous waste disposal facility.

Because shallow soil at the site presents an unacceptable risk to future human receptors, a vegetative soil cover or functional equivalent would be placed over the landfill area after the landfill is re-graded to prevent exposure to COPCs in soil and improve drainage. The vegetative soil cover or functional equivalent would be placed consistent with the NJDEP Solid Waste regulations (N.J.A.C. 7:26-2A). Additional soil would be added to the existing soil cover to provide a minimum of two feet of soil between the ground surface and landfilled debris.

Land Use Controls (LUCs) to maintain the vegetative soil cover or functional equivalent and to prevent residential land use would also be implemented at FTMM-08. The Army would prepare a LUC Implementation Plan during the remedial design phase to document the ICs, location of the engineering control and identify procedural responsibilities including landfill cover inspections, monitoring and reporting, and long-term management requirements. The Army would be responsible for documenting and implementing the LUCs and will also be responsible to conduct regular reviews to ensure that the LUCs remain protective of human health and the environment. It is expected that the LUCs will take the form of a deed notice. When the property is transferred out of federal control, the LUCs would be incorporated into the title and the new owner will be responsible for complying with the LUCs. Although the Army may later transfer its procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for remedy integrity.

In addition, as part of the LUCs, a Classification Exception Area (CEA) would be established to address benzene and PCE, which exceed the NJDEP GWQS pursuant to NJDEP's TRSR (N.J.A.C. 7:26E) and Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C). The CEA is a groundwater use restriction to protect a hypothetical residential user from potential risk associated with groundwater as a potable water source. The CEA would remain in place until NJDEP GWQS are achieved at the Site.

The total present value (TPV) of this alternative is approximately $2,858,000. Costs associated with the limited PCB soil removal action is $894,000 and include a PDI to further delineate and determine the vertical and lateral extent of PCB-impacted soils, and excavation and off-site removal of PCBs greater than 25 mg/kg. Costs associated with ICs is $415,000, and include preparation of a LUC Implementation Plan, long term monitoring of the groundwater as part of the CEA, and IC inspection and reporting for a 30-year duration. Costs associated with the vegetative cover is $1,549,000, and include advancement of two geotechnical borings, placement of 18 inches of a soil cover or functional equivalent, followed by six inches of a vegetative cover, grading for runoff, and seeding. The cost estimate is provided in **Appendix C**.

SECTION 1
INTRODUCTION

1.1 PROJECT AUTHORIZATION

Parsons Government Services, Inc. (Parsons) is serving as the prime contractor to the United States Army Corps of Engineers, New York District and the United States Army Engineering and Support Center, Huntsville (USAESCH) for preparation of Remedial Investigation/Feasibility Study (RI/FS) as part of the Army's CERCLA obligation at the Fort Monmouth (FTMM) site in Oceanport, Monmouth County, New Jersey. This project is being performed under task order (TO) 0012 issued under the Worldwide Environmental Restoration Services (WERS) contract number W912DY-09-D-0062.

This TO was issued to address a number of environmental sites at FTMM that are in various stages of hazardous, toxic, and radiological waste (HTRW) investigation and remediation. Specific activities that will be performed under this TO include:

1. Performance of RIs and FSs and preparation of RI/FS reports in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300, and to the extent possible to meet the substantive remedial requirements of New Jersey Administrative Code (N.J.A.C.) Technical Requirements for Site Remediation (TRSR); and
2. Supporting the closure of environmental sites to facilitate the efficient transfer of real property to other parties.

1.2 PURPOSE AND SCOPE

Parsons has prepared this RI/FS report for landfill site FTMM-08 based on historical site characterization activities performed by others from 1993 to 2012 and by Parsons in 2013 and 2014. The RI/FS report provides relevant site background information, characterizes the nature and extent of site-related contamination, evaluates the potential risk to human health and the environment, evaluates remedial alternatives, and provides a comparative analysis of remedial alternatives. The overall goal of this process is to provide sufficient data to facilitate future remedial action or administrative closure. The U.S. Army is the lead agency for FTMM in accordance with CERCLA and Executive Order 12580. The New Jersey Department of Environmental Protection (NJDEP) is the state support agency under the NCP.

1.3 SITE BACKGROUND INFORMATION

The following sections describe the site background. Included is a description of the site location and history, background investigations, and previous technical reports.

1.3.1 Site Location and Description

FTMM is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City, New York, 70 miles northeast of Philadelphia, Pennsylvania, and 40 miles east of Trenton, New Jersey. The Atlantic Ocean is approximately three miles to the east. FTMM was comprised of three areas: the Main Post (MP), the Charles Wood Area (CWA), and the Evans Area (EA) (**Figure 1.1**). The areas of the MP and CWA are

637 acres and 489 acres, respectively. FTMM's MP and CWA were selected for closure by the Base Realignment and Closure (BRAC) Commission in 2005, and officially closed on September 15, 2011. The EA (not shown on **Figure 1.1**) was located approximately eight miles south of the MP and CWA, and was formerly used for administrative, research and development, and some training. The EA was closed under BRAC in 1998 and has been transferred from FTMM. FTMM falls within the Boroughs of Eatontown, Oceanport, and Tinton Falls. The MP is in the Eatontown and Oceanport Boroughs. The CWA is in the Eatontown and Tinton Falls Boroughs.

Figure 1.2 shows the location of FTMM-08, a landfill site on the MP. The landfill is located in the north-central portion of the MP near where Lafetra Creek and Mill Creek join to feed into Parkers Creek, adjacent to the west, north, and eastern boundaries of the landfill. The landfill's southern boundary approximately coincides with the northern boundary of FTMM-05. The approximate area of FTMM-08 is 7.2 acres. The site layout is depicted on **Figure 1.3**. FTMM-08 has also been referred to as Landfill 8 and Landfill M-8 in historical documents.

1.3.2 Site History

FTMM-08 contains domestic and industrial wastes similar to other MP landfills (Weston, 1995). FTMM-08 was in operation from approximately 1962 to 1981 (Versar, 2004a). A chronological summary of events related to the environmental characterization and remediation of FTMM-08 is provided in **Table 1.1** and detailed in this subsection.

Suspected hazardous waste sites were initially identified at FTMM in a report prepared in May 1980 by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA, 1980). The purpose of the report was to assess the environmental quality of FTMM with regard to the use, storage, treatment, and disposal of toxic and hazardous materials. Thirty-seven sites at the MP, CWA, and EA were identified as having known or suspected waste material, including FTMM-08. The report recommended that FTMM perform surface water and groundwater sampling at the installation's landfills and report the results to USATHAMA.

A study was conducted in 1980 at locations that were considered to be major landfill areas, including FTMM-08. Groundwater and surface water samples were collected and analyzed for compliance with National Interim Primary Drinking Water Standards and National Secondary Drinking Water Regulations. The study concluded that the targeted parameters were not found at sufficiently elevated concentrations to cause degradation to groundwater or surface water, but it was recommended that FTMM submit a landfill registration statement to the NJDEP (USATHAMA, 1988).

A U.S. Army Environmental Hygiene Agency (USAEHA) water quality engineering study was conducted around the major landfills at FTMM in 1984 to determine if landfill leachate was forming and entering streams. Surface water samples were collected in Parkers Creek adjacent to FTMM-08.The sampling results indicated no significant degradation of stream water quality as a result of landfill leachate (USATHAMA, 1988). It was recommended that the results be presented to the NJDEP in compliance with the New Jersey Pollutant Discharge Elimination System (NJPDES).

A SI was performed at FTMM-08 which included the installation of four shallow groundwater monitoring wells in 1994 and 1995, and performance of two rounds of groundwater sampling in February and March 1995. An additional well was installed in 1994 at the

southeastern edge of FTMM-08 during an underground storage tank (UST) closure activities at Building 697. The results of the groundwater sampling were presented in the SI report (Weston, 1995; provided in **Appendix A**). The SI was used as the basis of subsequent remedial actions, including the remediation program at FTMM-08. The SI presented a proposal for long-term groundwater and surface water monitoring that utilized the existing groundwater monitoring wells and surface water sampling locations to monitor and document surface water and groundwater quality conditions over time.

An expanded SI was requested by the NJDEP. As part of the expanded SI, nine additional groundwater monitoring wells were installed in 1998 and 1999 (summarized in ATC Associates, Inc. [ATC], 2000a). Monitoring well 697MW01, which was installed during the closure of the UST at Building 697, was incorporated into the long-term monitoring program at FTMM-08. The expanded SI resulted in the performance of a RI including soil and groundwater characterization to determine the extent of tetrachloroethene (PCE), benzene, and chlorobenzene at the site.

Groundwater sampling was performed at FTMM-08 from 1997 to 2011 utilizing a network of three to 15 monitoring wells. The results of groundwater sampling have been documented in a SI Report (Weston, 1995), a remedial action work plan (RAWP) (ATC, 2000a), and six remedial action progress reports (RAPRs) (Versar 2004b, 2005a; VEETech, P.C. [VEETech], 2009, 2010a, 2010b; and U.S. Army, 2012). **Figure 1.3** shows the locations of the 15 groundwater monitoring wells associated with FTMM-08, as well as monitoring well 697MW01, which was installed during the UST closure activities at former Building 697 in August 1997, and has been incorporated into this RI/FS at FTMM-08.

In conjunction with the RAWP (ATC, 2000a), ATC prepared a Proposed Classification Exception Area (CEA) Designation report (ATC, 2001) for benzene, chlorobenzene, and PCE. The proposed CEA was submitted to the NJDEP in August 2001. A CEA for FTMM-08 has not been approved by the NJDEP.

Surface water sampling was performed in Mill Creek, Lafetra Creek, and Parkers Creek at and upstream of FTMM-08 from October 1996 to September 2010. Surface water sampling was performed in Parkers Creek downstream from FTMM-08 from June 2000 to September 2010. Surface water sampling results were documented in a RAWP (ATC, 2000a) and six RAPRs (Versar 2004b, 2005a; VEETech, 2009, 2010a, 2010b; and U.S. Army, 2012).

Near-surface soils were characterized from February 1998 to June 1999 by analyzing soil samples collected on a grid pattern within the boundaries of FTMM-08. The results of soil sampling were documented in an RI Report (Versar, 2004a; provided in **Appendix A**).

In April 1999, groundwater studies conducted at FTMM-08 detected concentrations of polychlorinated biphenyls (PCBs) exceeding NJDEP Ground Water Quality Standards (GWQS) in well M8MW24. As a result, a PCB soil delineation investigation was conducted in the area surrounding this well from August through October 1999. The results of this sampling were documented in a RAWP (ATC, 2000a provided in **Appendix A**).

In March 2000, the NJDEP approved a sediment sampling plan for nine landfills (including FTMM-08). In April 2000, a sediment sampling investigation was performed to evaluate potential impacts to stream sediments (ATC, 2000a provided in **Appendix A**).

A Hydrogen Release Compound (HRC®) injection program was initiated at and near FTMM-08 and adjacent site (to the south) FTMM-05 to enhance reductive dechlorination of chlorinated solvents in groundwater. More information regarding these injections is provided in Section 2.3.2.

A draft CEA report for FTMM-08 was prepared by Versar (2008) due to detected concentrations of benzene, PCE, and degradation products of PCE (i.e., trichloroethene [TCE], *cis*-1,2-dichloroethene [*cis*-1,2-DCE], and vinyl chloride [VC]) that exceeded the NJDEP GWQS. The draft CEA was reviewed by the U.S. Army's Directorate of Public Works (DPW) at FTMM in February 2009, and Versar was requested to revise the CEA report and resubmit it to the DPW. The CEA report/application for FTMM-08 was subsequently withdrawn by FTMM and was never reviewed or approved by NJDEP.

The FTMM-08 landfill boundaries were initially determined through review of aerial photographs of the MP from 1940 to 1974, and an investigation in 2009 and 2010 that consisted of excavating test pits to determine the presence or absence of landfill debris. The test pit investigation (U.S. Army, 2012) was undertaken in order to more precisely delineate the perimeter of the landfill, and involved excavating test pits at 14 locations near the southern boundary of the known landfill, and auguring one boring near the southeastern corner of the landfill. The test pits excavated in the southwestern portion/corner of the landfill identified debris and, therefore, did not define the boundary in that location. It should be noted that the southwestern portion of FTMM-08 is adjacent to the northern boundary of FTMM-05. The northwestern and northeastern boundaries of FTMM-08 is Parkers Creek; therefore, test pits were not excavated along these boundaries (Brinkerhoff, 2011a). The locations of the 14 landfill delineation test pits and one delineation auger boring are shown on **Figure 2.1** (Section 2) and logs are provided in **Appendix A**.

The landfill boundaries were reexamined by Parsons in 2015 using the available test pit and soil boring data, as well as historical aerial photographs (**Appendix A**). Following the reexamination in 2015, the boundaries of FTMM-08 remain generally similar to how they were defined in 2010; however, the boundaries were refined in a few areas. At FTMM-08, the most significant refinement was made to the southwestern boundary of the landfill near FTMM-05. Test pits 1, 2, and 3, near the southwestern end of FTMM-08, all contained solid waste (e.g., debris), as did all the test pits along the northern boundary of FTMM-05. Therefore, the 2010 revised boundary of FTMM-08 was moved slightly to the south in this area, and was aligned with the northern boundary of FTMM-05, which is consistent with observations of the landfill boundary made during the 2015 review of a series of aerial photographs dated 1931, 1940, 1947, 1957, 1963, 1969, 1970, 1979, 1995, and 2002. These photographs depict the progression of suspected filling activities that occurred to produce the FTMM-08 landfill (**Appendix A**). The 2015 revised boundary is shown on **Figure 1.3**. A data gap exists in the landfill boundary between FTMM-08 Test Pit 4 and FTMM-05 Test Pit 7. Field work to address data gaps and refinement of the landfill boundaries was conducted in September 2015, and results provided under separate cover were submitted to the NJDEP in January 2016. A third CEA report for FTMM-08 was prepared by Brinkerhoff (2011b) to address concentrations of PCE, TCE, and VC detected in groundwater above the NJDEP GWQS. This CEA report/application for FTMM-08 was subsequently withdrawn by FTMM and was never reviewed or approved by NJDEP.

Additional groundwater samples were collected from select monitoring wells at FTMM-08 in August 2013 (Parsons, 2014) and October 2014 (Parsons, 2015).

Environmental investigations performed at FTMM-08 are summarized in greater detail in Section 2, and the nature and extent of contamination detected during the environmental investigations are summarized in Section 4.

1.4 REPORT ORGANIZATION

This RI/FS report is organized to be compliant with relevant portions of the outline presented in the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (U.S. Environmental Protection Agency [USEPA], 1988).

- Introduction: Section 1 details the overall scope and objective of the project, presents the organization of the report, and presents an overview of the site and its history, including previous investigations;
- Previous Investigations and Interim Remedial Actions: Section 2 details the site characterization field activities and interim remedial actions that have been performed;
- Physical Characteristics of the Site: Section 3 describes the physical setting of the site, including surface features, surface water hydrology, geology and hydrogeology, land use, and ecological setting;
- Nature and Extent of Contamination: Section 4 summarizes the degree to which sampled media (i.e., soil, groundwater, surface water, and sediment) have been impacted by site-related contamination, and identifies those constituents that were detected above applicable cleanup criteria but are believed to be representative of natural background concentrations;
- Contaminant Fate and Transport: Section 5 describes the migration and fate of selected constituents detected in the subsurface based upon site-specific data, the geologic and hydrogeologic characteristics of the site, and the physicochemical properties of the constituents;
- Baseline Risk Assessment: Section 6 provides a quantitative assessment of the risk posed by site-related constituents of potential concern (COPCs) to potential human receptors;
- Remedial Investigation Summary and Conclusions: Section 7 summarizes the main findings of the RI and provides recommendations regarding the adequacy of the data and the need for additional site characterization;
- Remedial Action Objectives, Cleanup Goals, and Applicable or Relevant and Appropriate Requirements (ARARs): Section 8 presents the remedial action objectives (RAOs) developed to mitigate the risks and hazards identified in the baseline risk assessment and identifies ARARs;
- Identification and Screening of Response Actions: Section 9 summarizes the remedial technologies and approaches that were identified to meet the RAOs;

- Description of Remedial Alternatives: Section 10 presents the remedial technologies that were recommended for further evaluation in Section 9;
- Comparative Analysis of Alternatives: Section 11 summarizes information necessary to evaluate the remedial alternatives in accordance with CERCLA and NCP requirements and, to the extent possible, the substantive requirements of N.J.A.C. 7:26E;
- Preferred Remedial Alternative: Section 12 describes the preferred alternative based on the comparative analysis presented in Section 11; and
- References: Section 13 includes a list of references used in the preparation of this report.

Additional information is included in this report as appendices:

- **Appendix A** – Key Historical Reports and Background Information (also included electronically on CD);
- **Appendix B –** Recreational User Screening Level Equations and Calculations and ProUCL Output (only included electronically on CD); and
- **Appendix C** – Feasibility Study Cost Estimate.

SECTION 2
PREVIOUS INVESTIGATIONS AND INTERIM REMEDIAL ACTIONS

2.1 GEOLOGIC/HYDROGEOLOGIC INVESTIGATIONS

The geologic and hydrogeologic characteristics of FTMM have been investigated during numerous historical installation-wide and site-specific environmental studies. The primary methods of geologic/hydrogeologic investigation at FTMM-08 have consisted of describing soils encountered during monitoring well drilling, measuring water levels in site monitoring wells, and constructing potentiometric surface (i.e., groundwater surface elevation contour) maps indicating the direction and magnitude of the horizontal hydraulic gradient. In addition, a slug test was performed in 1999 in one site monitoring well to estimate the hydraulic conductivity of the shallow water-bearing zone.

2.2 SOIL AND VADOSE ZONE INVESTIGATIONS

The Army characterized near-surface soils using borings installed throughout the site. The *Remedial Investigation Report for Near-Surface Soils* (Versar, 2004a) presents the results of the soil investigation. The Army advanced 291 soil borings (B01-B41, B43-B250, and B1A-B42PP) and collected soil samples from each boring between November 1998 and June 1999. Two soil samples were collected from each boring at depths of 0.5-1 ft bgs and 2 ft bgs. The shallow samples (0.5-1 ft bgs) were analyzed for SVOCs, pesticides, PCBs, and target analyte list (TAL) metals. The deeper samples (2 ft bgs) were analyzed for volatile organic compounds (VOCs). The samples for VOC analysis were collected from a deeper interval because surface soils were not expected to retain volatile constituents over time. Overall, a total of 614 soil samples (i.e., 582 primary and 32 field duplicates) were collected from the 291 soil borings. Laboratory analyses were conducted at the FTMM Environmental Testing Laboratory (FMETL), a New Jersey-certified laboratory (Certification No. 13461). **Figure 2.1** depicts the current understanding of the FTMM-08 landfill boundary, the soil boring locations, and the locations of test pits and an auger boring used for the delineation of the landfill.

Supplemental soil samples were collected from 22 soil borings around well M8MW24 (refer to inset box on **Figure 2.1**). Groundwater samples collected from well M8MW24 in April 1999 exhibited concentrations of Aroclor 1242 above the NJDEP GWQS. As a result, PCB soil delineation was completed in August and October 1999 to confirm that site soil was the source of this groundwater contamination. A total of 293 samples were collected from 22 Geoprobe® points advanced around M8MW24. The samples were collected from the 0-0.5 feet bgs interval and then at alternating half foot intervals (1-1.5 feet, 2-2.5 feet, etc.) to depths of 7.5 to 16.5 feet bgs. The PCB sampling results are summarized in Section 4.1.1.5 and are provided in Table 18 of ATC (2000a), which is included in **Appendix A** of this document. Based on the results of this localized PCB soil delineation in the vicinity of M8MW24, the U.S. Army established a Declaration of Environmental Restriction and incorporated it into the installation master plan to address PCBs in soil at FTMM-08.

2.3 GROUNDWATER INVESTIGATIONS AND INTERIM REMEDIAL ACTIONS

2.3.1 Groundwater Investigations

Groundwater monitoring wells were initially installed at and near FTMM-08 to determine if leachate from the landfill was impacting groundwater quality. Well construction details are

provided in **Table 2.1**, and the scope of the quarterly groundwater monitoring program and annual sampling events from 1997 to 2014 is summarized in **Table 2.2**. Well locations are shown on **Figure 1.3**.

In 1994 and 1995, as part of an SI, four shallow wells (M8MW12, M8MW13, M8MW14, and M8MW15) were installed and two rounds of groundwater sampling were conducted in February and March 1995 (Weston, 1995). Groundwater samples were analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, sulfate, and cyanide. The results of the groundwater sampling were presented in the SI report (Weston, 1995; provided in **Appendix A**). Based on the findings of the SI, the Army implemented a long-term groundwater monitoring program consisting of quarterly sampling events in June 1997.

An additional well (697MW01) was installed southeast of FTMM-08 during the UST closure activities at Building 697 in September 1994. Building 697 was formerly located along the southern boundary of the FTMM-08 Landfill and housed an incinerator as well as a warehouse area; it was demolished in 2001. The new monitoring well was sampled for TAL metals, VOCs and tentatively identified compounds (TICs), SVOCs and TICs, and pesticides/PCBs (**Table 2.2**).

Seven additional monitoring wells (M8MW16, M8MW17, M8MW18, M8MW19, M8MW20, M8MW21, and M8MW22) were installed in 1998 and two additional wells (M8MW23 and M8MW24) were installed in 1999. In November 1999, M8MW24 was sealed due to a lack of water and a new well (RM8MW24) was installed at a nearby location and was included in the groundwater monitoring program beginning in March 2000. The location of RM8MW24 is shown on **Figure 1.3**. Wells were sampled as part of the RAWP (ATC, 2000a), and samples were analyzed for TAL metals, VOCs and TICs, SVOCs and TICs, and pesticides/PCBs. Thirteen of the 15 wells installed from 1994 to 1999 were completed to depths ranging from 13 to 20 feet bgs (**Table 2.1**). RM8MW24 was installed to a depth of approximately 40 feet bgs. Sampling results indicated that shallow groundwater contained PCE at M8MW23 and TCE at M8MW12 at concentrations in excess of the NJDEP GWQS. FTMM-08 is adjacent to the northern boundary of FTMM-05, where PCE concentrations in groundwater also exceeded the GWQS.

From June 1997 to March 2004, the quarterly groundwater samples were analyzed for VOCs, SVOCs, TAL metals, and pesticides/PCBs (**Table 2.2**). From June 2004 to December 2009 samples were analyzed only for VOCs except for some pesticide/PCB analyses performed on select samples from M8MW12 and M8MW24 in 2009. From March 2010 through August 2011, sampling was conducted at 14 monitoring wells and samples were analyzed for VOCs and metals. In March and August 2011, M8MW11 was also sampled for VOCs and metals. The results of quarterly groundwater monitoring through September 2010 are presented in a series of RAPRs, and are summarized in Section 4.

In August 2013, groundwater samples were collected from 10 wells at FTMM-08 and analyzed for VOCs, TAL metals, and pesticides/PCBs to re-establish baseline conditions following the temporary suspension of the sampling program in 2011. The August 2013 Baseline Sampling Report (Parsons, 2014) recommended continued sampling of selected wells for VOCs and lead. In addition, the report recommended locating well 697MW01, which could not be located during the August 2013 sampling event, and sampling it for VOCs, pesticides, and lead. NJDEP accepted these recommendations in a letter dated July 3, 2014 (NJDEP, 2014). In

October 2014, groundwater samples were collected from seven wells as part of an annual sampling event; samples were analyzed for VOCs, lead, and/or pesticides as shown in **Table 2.2**.

2.3.2 Groundwater Interim Remedial Actions

To reduce PCE concentrations detected in shallow groundwater at adjacent site FTMM-05, the RAWP for FTMM-05 (ATC, 2000b; provided in **Appendix A** of this report) proposed long-term groundwater monitoring augmented by injections of HRC®. The injection program was implemented in 2000, with additional applications in 2002, 2003, 2004, and 2005. HRC® is a proprietary slow-release compound that provides a steady hydrogen source to groundwater. Under anaerobic conditions, naturally occurring microorganisms use the hydrogen to progressively remove chlorine atoms from chlorinated hydrocarbons via reductive dechlorination, transforming them to non-toxic compounds. Two of the seven HRC® injection areas (HRC-1 and HRC-2) are located at or south (hydraulically upgradient) of the southern edge of FTMM-08 in the vicinity of monitoring wells M8MW12 and M8MW23 (**Figure 2.2**). No other engineered remedial actions for groundwater have been performed at FTMM-08.

2.4 SURFACE WATER INVESTIGATIONS

Surface water samples historically associated with FTMM-08 have been collected from two upstream sampling locations in Mill Creek (SS-5 and SS-15), one upstream sampling location in Lafetra Creek (SS-14), and two downstream sampling locations in Parkers Creek (SS-7 and SS-27 (**Figure 2.3**). The sampling locations were considered saline, except for SS-14, which is located in the fresh water reach of Lafetra Creek, upstream of the site. Analytical results for VOCs, SVOCs, pesticides, PCBs, and TAL metals in surface water have historically been compared to either fresh water or saline criteria, and in this report are compared to saline, based on the salinity of surface water in Parkers Creek adjacent to and downstream of FTMM-08. The surface water in Parkers Creek at FTMM-08 is tidally-influenced (see Section 3.2), and high tide salinity measurements in the Baseline Ecological Evaluation (BEE) Report (Shaw, 2012) indicate that the reach of Parkers Creek at FTMM-08 has an overall site average high tide salinity of 15.5 parts per thousand (ppt), which classifies it as saline. Samples were collected from October 1996 to September 2010 and analyzed at FMETL for various combinations of VOCs, pesticides and PCBs, and metals as summarized in **Table 2.3**. Sampling results have been reported by ATC (2000a), Versar (2004b, 2005a), VEETech (2009, 2010a, 2010b), and U.S. Army (2012).

2.5 SEDIMENT INVESTIGATIONS

Studies conducted at FTMM-08 found PCB-containing materials (e.g., electrical ballasts) disposed of in the landfill. In addition, PCBs were detected in soil and groundwater at this site, as described in Section 2.2. A sediment sampling program was established to evaluate potential impacts to stream sediments. Twenty-one sediment samples were collected from 10 borings (B-1 through B-10) in April 2000 to evaluate potential PCB-related impacts to stream sediments associated with the FTMM-08 landfill. The sediment sampling locations are shown on **Figure 2.3**. The samples from one boring (B-3) were collected at depths ranging from surface (0-0.5ft) to near-surface (0.5-1ft) and sub-surface (1.5-2ft). The samples from the remaining nine borings were collected at depths ranging from surface (0-0.5ft) to near-surface (0.5-11 ft). The sediment samples were collected along the reach of Parkers Creek that abuts the northwestern and

northeastern boundaries of FTMM-08. Samples were analyzed at FMETL for PCBs. Sediment sampling results are summarized in the RAWP prepared by ATC (2000a).

2.6 ECOLOGICAL INVESTIGATIONS

A BEE (Shaw, 2012) was performed at the MP and CWA to fulfill requirements set forth in NJDEP's TRSR (N.J.A.C. 7:26E-5.3, now an outdated citation). The BEE is Tier I of the ecological evaluation and ecological risk assessment process as developed by the Site Remediation Program, and is defined in the TRSR and Site Remediation News (NJDEP, 1997). The objective of the BEE at FTMM was to examine each of 23 identified sites (eight Environmental Condition of Property [ECP] parcels and 15 Installation Restoration Program [IRP] sites). The BEE was developed to be an efficient and cost-effective screening process. As such, the results of a BEE are used to determine whether potential ecological impacts are negligible or whether more site-specific ecological evaluation is warranted.

In an August 27, 2012 letter the NJDEP (2012) accepted the 2012 BEE report's recommendations and conclusions and concurred that no further evaluation of ecological risk is required. Therefore, based on the recommendation of the 2012 BEE report, no further ecological risk assessment was conducted for FTMM-08. Additional ecological information pertinent to this site was obtained from the BEE report and is summarized in Section 3.5.

2.7 PREVIOUS INVESTIGATIONS OF BACKGROUND SOIL AND GROUNDWATER QUALITY

2.7.1 Weston (1995) Background Investigation

Weston (1995) collected 10 soil and 10 groundwater samples on both the CWA and MP to determine concentrations of constituents that occur naturally or as a result of activities unrelated to FTMM. Background sampling locations were selected as specified in the document *Investigations of Suspected Hazardous Waste Sites at Fort Monmouth, New Jersey* (Weston, 1993), which was approved by NJDEP. The resulting background data set was found to be neither normally or log-normally distributed; therefore, the tolerance interval method for determining representative background concentrations described in the then-current version of the USEPA document *Statistical Analysis of Groundwater Monitoring Activities at RCRA Facilities* was not used. Weston (1995) states that nonparametric methods that are similar to the tolerance interval method involve selecting the data value that is at the 95th percentile of the data set. Because there were 10 data points, the equivalent method for the FTMM background data set was to use the maximum value. An outlier screening was conducted to identify background concentrations that were inconsistent with the rest of the data set. Based on the screening, outliers were identified for beryllium, chromium, cobalt, lead, vanadium, and zinc in MP groundwater, and manganese in CWA soil. These outliers were eliminated from the data set.

In addition, Weston (1995) identified maximum background values for Monmouth County based on published data. The Monmouth County background concentrations for soils were based on analyses of samples from the vicinity of Fort Monmouth.

Weston (1995) also provides results for two background surface water and sediment samples that were collected at the MP in areas not expected to be affected by base activities. These samples were collected from Mill and Lafetra Creeks at the western (upstream) edge of the MP.

2.7.2 Brinkerhoff (2011a) Background Evaluation

Brinkerhoff (2011a) performed an evaluation to achieve the following objectives:

- Document the presence of naturally occurring metals in groundwater;
- Identify various conditions which are likely to have resulted in exceedances of NJDEP GWQS by concentrations of various metals detected in groundwater at FTMM; and
- Develop a strategy for determining which sites contain metal concentrations in groundwater that represent site-related contamination.

For FTMM-08, Brinkerhoff (2011a) calculated the 90th percentile values for metals using groundwater quality data collected from March to September 2010, and determined that the 90th percentile values for barium, beryllium, cadmium, chromium, copper, lead, and nickel were less than the GWQS for these metals. Based on this calculation, Brinkerhoff (2011a) recommended no further sampling of groundwater for these metals. The laboratory could not meet data quality objectives for the low-range detection of selenium and thallium. Due to these laboratory inaccuracies, the 90th percentile analysis was not used to determine compliance with the GWQS for selenium and thallium.

2.7.3 Base-Wide Glauconitic Soil Sampling Report

Previous studies have documented the presence of elevated naturally-occurring metal concentrations (e.g., arsenic, beryllium, lead) in glauconitic soils such as those present within the New Jersey Coastal Plain physiographic province (Dooley, 2001; U.S. Geological Survey [USGS], 1984). In an effort to confirm and document that select metals detected in groundwater on the MP are naturally associated with glauconitic soils, the FTMM DPW (FTMM, 2011) conducted a soil and groundwater sampling investigation to determine whether naturally occurring metals in soil are causing metal concentrations in groundwater to exceed the NJDEP GWQS. According to Jablonski (1968) the Red Bank and Tinton Sands that outcrop at the MP contain glauconite. Minard (1969) states that glauconite may comprise 60 to 80 percent of the sand fraction in the upper portion of the Tinton Sand.

Six co-located soil and low-flow unfiltered groundwater samples were collected at three sites and analyzed for total TAL metals. (Groundwater samples were unfiltered and therefore represent total metal concentrations.) The study concluded that arsenic and lead co-exist as naturally occurring metals that are unrelated to any documented source at any of the sampled sites. The study also concluded that arsenic in groundwater, which was detected at concentrations exceeding the NJDEP GWQS of 3 micrograms per liter (µg/L) in three of the six samples, is due to natural conditions rather than man-made/anthropogenic sources (FTMM, 2011).

SECTION 3
PHYSICAL CHARACTERISTICS OF THE SITE

3.1 SURFACE FEATURES

FTMM-08 is located north of former Buildings T-692 and S-697 near a bend in Parkers Creek. The ground surface topography is flat, with ground surface elevations ranging from 5 to 13.5 feet above mean sea level. The site is bounded by Parkers Creek to the north, west, and east, and by Sherrill Avenue to the south. FTMM-08's southwestern boundary is approximately coincident with the northern boundary of FTMM-05 (**Figure 1.3**).

3.2 SURFACE-WATER HYDROLOGY

Three creeks (Parkers, Mill, and Lafetra) converge near the southwestern corner of FTMM-08. All three creeks originate off-post. Lafetra Creek initially forms the northern boundary of the MP and joins Mill Creek and the north branch of Parkers Creek near the southwestern corner of FTMM-08 to form Parkers Creek. Parkers Creek flows eastward along the northern boundary of the MP and forms the northern boundary of FTMM-08. Parkers Creek is tidally-influenced (Weston, 1995) and is classified as saline estuarine (Shaw, 2012). Surface water runoff from FTMM-08 drains into Parkers Creek (**Figure 1.3**).

3.3 GEOLOGY AND HYDROGEOLOGY

3.3.1 Regional Geology and Hydrogeology

The MP and CWA are situated on coastal plain deposits that thicken to the southeast. The regional geologic and hydrogeologic framework for the New Jersey coastal plain is described by Zapecza (1989), who identified 15 regional hydrogeologic units, including nine aquifers and six confining units. An early regional geologic cross-section for the FTMM vicinity based on the work of Zapecza (1989), and presented in Versar (2005b), is provided in **Appendix A**. This cross-section indicates that the depth to crystalline bedrock at FTMM is approximately 1,000 feet. In 2010, the understanding of the geology in the area around FTMM was refined by Stanford and Sugarman of the New Jersey Geological Survey. They describe the unconsolidated material in the coastal plain as consisting of sand, silt, clay, and glauconitic clay laid down in coastal, nearshore-marine, and continental shelf settings between 95 and 10 million years ago. The sediments are grouped into 19 formations and members.

The geology of the Long Branch Quadrangle (Stanford and Sugarman, 2010) indicates that the Hornerstown, Vincentown, and Tinton formations are the unconsolidated units that outcrop or occur close to the ground surface in the area of FTMM. There is a relatively thin veneer of surficial deposits that covers most of the unconsolidated material, according to the Surficial Geology of the Long Branch Quadrangle (Stanford, 2000). The 2010 bedrock geologic map provides a geologic cross-section (A-A') through FTMM that is more refined than the one developed by Zapecza (1989); this refined cross section is also included in **Appendix A**. Regressive, upward-coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations and the Cohansey Sand), while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, Navesink, and Hornerstown Formations). The individual thicknesses for these units varies greatly from several tens of feet to several hundred feet.

The Hornerstown Formation, which underlies much of the MP and the northern portion of the CWA, consists of glauconitic (>50%) clay and silty clay. This unstratified formation is olive, dark green, and black where unweathered; and olive-brown with brown to reddish-brown mottles where weathered (Stanford and Sugarman, 2010). The Hornerstown Formation is 25 to 30 feet thick. The Vincentown Formation, which unconformably overlies the Hornerstown Formation, consists of glauconitic (5-20%), silty, medium-to-coarse, quartz sand; some fine-to-medium sand; and some very coarse sand to very fine pebbles. This formation is yellow, reddish-yellow, olive-yellow, or olive-brown in color and has a total thickness of 180 feet.

The Tinton (Sand) Formation unconformably underlies the Hornerstown Formation and conformably overlies the Red Bank Sand and consists of glauconitic (5-30%), silty, medium-to-coarse and fine-to-medium, quartz sand. The color is reddish-brown, reddish-yellow, and yellowish-brown where weathered, and grayish-brown, brown, and olive-brown where unweathered. It is commonly iron-cemented into beds and masses as much as 15 feet thick. The uppermost 4 to 6 feet, just below the contact with the Hornerstown Formation, is a brown to olive-gray, glauconitic, clayey silt to sandy or silty clay (Stanford and Sugarman, 2010).

The water table aquifer in the MP and CWA areas is identified as part of the "Navesink-Hornerstown Confining Units," or minor aquifers. The minor aquifers include the Navesink Formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation. These geologic formations comprise a "Composite Confining Bed" for the underlying Wenonah Mount Laurel Aquifer (Zapecza, 1989 as reported by Versar, 2005b) (see regional geologic cross-section in **Appendix A**). The Composite Confining Bed is estimated to be approximately 125 feet thick at FTMM (Versar, 2005b). Wells installed in the Red Bank and Tinton Sands produce 2 to 25 gallons per minute (gpm) (Jablonski, 1968). The shallow water table conditions in the Tinton and Red Bank Sands, and the similar composition of these sands within the Kirkwood Formation, suggest that the Tinton-Red Bank-Kirkwood sequence forms a single, laterally continuous aquifer. Regionally, groundwater in this water table aquifer flows east towards the Atlantic Ocean. However, local topography tends to deflect the flow toward local depressions (Versar, 2005b).

A pumping test performed at FTMM in 1992 yielded a hydraulic conductivity of 32 gallons per day per square foot (gpd/ft^2) (4.3 ft/day) (Groundwater & Environmental Services, Inc. [GES] 1999). The location of the pumping test and the geologic unit tested are not known. Additional hydraulic conductivity information for the MP area is provided in Appendix IV of the *MODFLOW Groundwater Modeling Report* prepared by Brinkerhoff (2010). Twenty-one hydraulic conductivity values derived from slug tests performed in monitoring wells installed at various areas throughout FTMM ranged from 0.3 feet per day (ft/day) to 31.7 ft/day with a geometric mean value of 3.2 ft/day.

3.3.2 Site-Specific Geology and Hydrogeology

Landfill boundary delineation information presented in Appendix B of the *M-8 Landfill (FTMM-08) Remedial Action Progress Report (1st Quarter 2009 through 3rd Quarter 2010)* (U.S. Army, 2012) indicates landfill cover material thicknesses ranging from 0 to 4 feet and averaging 2.4 feet (see Table 5/Cover Material Summary for the Landfill Delineation Project in **Appendix A**). Fifteen of the 16 monitoring wells (including 697MW01) associated with FTMM-08 were installed to depths ranging from 13 to 20 feet bgs. Monitoring well RM8MW24 was completed

to a depth of 38 feet bgs (**Table 2.1**). Soil types to a depth of 8 feet bgs identified on test pit logs excavated in 2009 and 2010 indicate that soil cover is composed primarily of sand and silty sand. A review of test pit logs shows that solid waste (e.g., debris) encountered included ash, metal, bottles, cans, ceramic pieces, concrete, asphalt, wood, plastic, glass, metal pipes, and wire fragments. The borehole logs for the wells indicate that shallow soil to a depth of 16 feet bgs is composed of brown silty sand underlain by gray/brown sandy silt. Deeper soil to a depth of 40 feet bgs is composed of orange/brown to dark green, poorly graded sand with silt.

The depth to groundwater at the MP typically ranges from approximately 2 to 9 feet bgs (approximately 2 to 13 ft amsl). At FTMM-08, the groundwater depth ranges from 1 to 19 feet bgs (approximately 2 to 6 ft amsl), based on multiple years of water-level depth measurements (2006 – 2008) reported by VEETech (2010b) and more recent groundwater sampling in 2014 (Parsons, 2015). A groundwater contour map from the 2014 and 2015 groundwater sampling events are provided as Figures 3.1 and Figure 3.2. Historical groundwater contour maps generated as part of historical reports are provided in **Appendix A** including the RAWP (ATC, 2000a) and RAPRs (Versar, 2005a; VEETech, 2009; VEETech, 2010a; VEETech, 2010b). Groundwater migrates toward the northwest, north, and northeast (i.e., toward Parkers Creek) with a horizontal hydraulic gradient that ranges from approximately 0.005 foot per foot (ft/ft) to 0.009 ft/ft based on potentiometric surface maps for December 2007 and November 2008 contained in VEETech (2010b) (**Appendix A**).

Rising and falling head slug tests were performed in well M8MW13 in 1999. The average hydraulic conductivity derived from the slug tests was 0.85 ft/day (ATC, 2000a). This is near the low end of the range of the 21 hydraulic conductivity values derived from slug tests in various portions of FTMM (Section 3.3.1). The geometric mean value of 3.2 ft/day is used below to estimate a groundwater seepage velocity for FTMM-08 given that it is based on a larger number of hydraulic conductivity values that are more representative of the range of hydraulic conductivities associated with the shallow water-bearing zone.

An average advective groundwater seepage velocity for FTMM-08 was calculated using the following equation:

$$V = Ki/n_e$$

Where:

V = seepage velocity

K = hydraulic conductivity = 3.2 ft/day (the geometric mean value determined from slug tests at FTMM)

i = hydraulic gradient = 0.005 ft/ft to 0.009 ft/ft (measured from the site-specific potentiometric surface maps for December 28, 2007 and November 21, 2008 prepared by VEETech (2010b) [see **Appendix A** of this report])

n_e = effective porosity = 0.20 or 20% (estimated value for a fine to coarse sand with minor silt and clay)

The calculated average advective groundwater seepage velocity for the shallow water-bearing zone ranges from 0.08 ft/day to 0.14 ft/day (29 to 51 feet per year).

3.4 LAND USE

FTMM-08 has reportedly been inactive since 1981. Since then there has been steady growth and stabilization of vegetation (grass, trees, and bushes) at the site. The anticipated future land use at FTMM-08 is passive open space (EDAW, Inc., 2008; see Land Use Plan in **Appendix A**). Land planned for use as "open space" is expected to remain undeveloped, with only occasional maintenance activities (e.g., grounds keeping), utility work associated with underground or overhead utilities that may be present within the site boundary, and recreational activity (e.g., hiking and biking on established trails).

3.5 ECOLOGY

Major vegetation zones at FTMM consist of landscaped areas, estuarine and fresh water wetlands, riparian areas, upland forests, and old field habitats. Much of the upland areas of the MP and CWA consist of extensive areas of regularly mowed lawns and landscaped areas (Shaw, 2012). FTMM-08 is heavily vegetated and tree covered. The stream bank of Parkers Creek has undergone stabilization and a service road is adjacent to the stabilization area along Parkers Creek. The site slopes sharply toward Parkers Creek and surface runoff is discharged to the Creek (Shaw, 2012). Since the closure of the landfill in 1981, there has been a steady growth and stabilization of vegetation. The BEE report (Shaw, 2012) indicates that no significant habitats exist in the vicinity of FTMM-08 according to the GIS digital data provided by NJDEP.

Except for occasional transient species, no federally-listed or proposed threatened or endangered flora or fauna are known to exist at FTMM. There was one observance in 1992 of a New Jersey-listed endangered species, the clustered sedge. No federal- or state-listed species were observed during the BEE site visit conducted on the MP and CWA in September 2009.

SECTION 4
NATURE AND EXTENT OF CONTAMINATION

Environmental sampling results for soil, groundwater, surface water, and sediment at FTMM-08 are described in this section.

4.1 SOIL QUALITY

Soil quality results obtained during the near-surface soil characterization performed in November 1998 (Versar, 2004a) are summarized in the following subsections. A total of 614 samples were collected (i.e., 582 primary samples and 32 field duplicates) from 291 soil borings. Additionally, as described in Section 2.2, a supplemental soil investigation was conducted in the vicinity of well M8MW24 to characterize PCB concentrations; 293 samples were collected from 22 Geoprobe® borings distributed around M8MW24. The samples were collected from the 0 to 0.5 feet bgs interval and then at alternating half foot intervals (1-1.5 feet, 2-2.5 feet, etc.) to depths of 7.5 to 16.5 feet bgs. Sample locations are shown on **Figure 2.1**. **Tables 4.1 through 4.4** present sampling results for detected analytes from the two soil investigations, and show selected NJDEP and USEPA comparison criteria, including:

- NJDEP Residential and Non-Residential Direct Contact Soil Remediation Standards (RDCSRS and NRDCSRS) and Impact to Ground Water (IGW) Soil Screening Levels (SLs), and
- USEPA Regional Screening Levels (RSLs) (target risk [TR] = 1 x 10^{-6} and target hazard quotient [THQ] = 0.1) for Residential and Industrial Soil and Protection of Groundwater (the latter being analogous to the NJDEP IGW Soil SLs).

Comparison of site concentrations to USEPA RSLs was used because the U.S Army is tasked with completing a CERCLA-compliant RI (including risk assessment). Therefore, RSLs are used to identify those chemicals that are present at a sufficient concentration to justify inclusion as COPC and consideration in the quantitative baseline risk assessment. Any analyte present at a concentration greater than both the Residential Soil RSL based on a TR of 1 x 10^{-6} or a THQ of 0.1 and the range of MP-specific background concentrations for metals (Weston, 1995) is considered a COPC (except for metals considered essential human nutrients) and included for further evaluation in the baseline risk assessment. Any analyte that is present at concentrations less than these residential criteria are not expected to pose a risk to human receptors under any future land use, and so are not included in the baseline risk assessment. A comparison to residential criteria is not meant to imply that residential land use is expected or planned at the site. Residential criteria are simply used as a tool to identify COPCs.

Site concentrations were also compared to NJDEP criteria. Both residential and non-residential criteria are used to provide context for NJDEP to evaluate potential future land use.

Table 4.5 summarizes the number of times detected analyte concentrations were greater than one or more NJDEP or USEPA comparison criteria, and the number of times that detected metal concentrations were greater than maximum background concentrations presented by Weston (1995).

4.1.1 Summary of Comparison Criteria Exceedances in Soil

Concentrations of VOCs, SVOCs, pesticides and PCBs, and metals were detected in soil that exceeded NJDEP and/or USEPA comparison criteria. Versar (2004a) reported that analysis of the soil sampling results did not define a source area or level of contamination that necessitated the identification and evaluation of potential remedial actions. For many of the analytical results that exceeded the then-current Residential Direct Contact Soil Cleanup Criteria (RDCSCC), the "compliance averaging" approach was used by Versar (2004a) to determine compliance with NJDEP technical requirements. Compliance averaging uses the average contaminant concentration in an area of concern rather than the contaminant concentration of individual samples for comparison to applicable soil cleanup criteria. In most cases, either the calculated compliance average was below the respective (then current) RDCSCC or the exceedance was considered marginal. For the analytes that were not eliminated based on compliance averaging, Versar (2004a) reported that a document equivalent to a Declaration of Environmental Restriction would be incorporated into the FTMM Master Plan for soils containing these exceedances, and recommended no further action for near-surface soil at FTMM-08. A Declaration of Environmental Restriction is similar to the current "Deed Notice" in the NJDEP regulations.

4.1.1.1 Summary of Exceedances of Residential Direct Contact Comparison Criteria

Concentrations of the following constituents exceeded the current NJDEP RDCSRS and/or USEPA Residential Soil RSL in at least one of the 307 soil samples analyzed for VOCs, SVOCs, pesticides and metals, and the 349 soil samples analyzed for PCBs (**Tables 4.1 through 4.5**):

- The VOC benzene;
- The SVOCs 1,4-dichlorobenzene, naphthalene, 2-methylnapthalene, acenaphthene, dibenzofuran, fluorene, hexachlorobenzene, anthracene, fluoranthene, benzidine, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;
- The pesticides heptachlor, heptachlor epoxide, 4,4'-DDE, dieldrin, 4,4'-DDD, 4,4'-DDT, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1242, and Aroclor 1260; and.
- The metals aluminum, antimony, arsenic, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

4.1.1.2 Summary of Exceedances of Non-Residential Direct Contact Comparison Criteria

No VOCs in soil samples exceeded current non-residential direct contact comparison criteria. Concentrations of the following constituents exceeded the current NJDEP NRDCSRS and/or USEPA Industrial Soil RSL in at least one of the 307 soil samples analyzed for SVOCs, pesticides, and metals, and the 349 soil samples analyzed for PCBs (**Tables 4.1 through 4.5**):

- The SVOCs naphthalene, 2-methylnaphthalene, dibenzofuran, hexachlorobenzene, fluoranthene, benzidine, pyrene, chrysene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;

- The pesticides heptachlor, heptachlor epoxide, dieldrin, 4,4'-DDD, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1242 and Aroclor 1260; and
- The metals antimony, arsenic, cobalt, iron, lead, mercury, nickel, and thallium.

4.1.1.3 Summary of Exceedances of Impact to Groundwater Comparison Criteria

Concentrations of the following constituents exceeded the current NJDEP IGW SL and/or USEPA Protection of Groundwater RSL in at least one of the 307 soil samples analyzed for VOCs, SVOCs, pesticides, and metals, and the 349 soil samples analyzed for PCBs (**Tables 4.1 through 4.5**):

- The VOCs methyl *tert*-butyl ether (MTBE), acetone, carbon disulfide, methylene chloride (a common laboratory contaminant), 2-butanone (a common laboratory contaminant), benzene, toluene, PCE, chlorobenzene, ethylbenzene, and m+p xylenes;
- The SVOCs aniline, 1,4-dichlorobenzene, benzyl alcohol, 4-methylphenol, nitrobenzene, 2-4-dimethylphenol, naphthalene, 4-chloroaniline, 2-methylnapthalene, acenaphthene, dibenzofuran, diethylphthalate, fluorene, azobenzene, hexachlorobenzene, anthracene, di-n-butylphthalate, fluoranthene, benzidine, pyrene, butylbenzylphthalate, chrysene, 3,3'-dichlorobenzidine, bis(2-ethylhexyl)phthalate, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoroanthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;
- The pesticides gamma-BHC, heptachlor, heptachlor epoxide, 4,4'-DDE, dieldrin, endrin, 4,4'-DDD, 4,4'-DDT, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1221, Aroclor 1242, and Aroclor 1260; and
- The metals aluminum, antimony, arsenic, barium, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

4.1.1.4 Identification of Background Constituents and Properly Applied Pesticides

Metals concentrations in soils were compared to maximum background concentrations for the MP presented by Weston (1995) (**Tables 4.1, 4.2, and 4.5**). The maximum-detected concentrations of all the metals targeted for analysis in soil samples exceeded the maximum background concentrations for the MP presented in Weston (1995). Therefore, none of the metals can be assumed to be representative of natural background conditions at every one of the 291 soil boring locations.

Pesticides were historically applied throughout the MP for pest control, and their widespread presence at relatively low concentrations in near-surface soil at FTMM-08 (i.e., surfical fill material covering the landfill) is indicative of proper application of pesticides for their intended purpose; no clear evidence of landfill-related releases of pesticides was found. To evaluate this conclusion, historical pesticide use at FTMM was evaluated and the pesticide data were reviewed with focus on the spatial distribution of detections, concentrations, and exceedances of comparison criteria. Based on this multiple lines of evidence analysis, concentrations of pesticides detected in near-surface soil at FTMM-08 that exceeded the USEPA

Residential RSL at a minimum of one location were eliminated from further consideration as COPCs in the risk assessment. The multiple lines of evidence for not identifying pesticides as COPCs are summarized below:

- There was a pesticide application program in use throughout FTMM for many decades, including and subsequent to when the FTMM-08 landfill was active. Pesticide storage and mixing facilities were present at FTMM (e.g., Building 498 built in 1939 and used as a pesticide control shop in the 1940s and 1950s, after which this function moved to Building T-65). The pesticide application program was active until 2011 when FTMM was closed.
- Pesticide concentrations are widespread and relatively uniform in shallow cover material across the entire landfill surface at FTMM-08. This relatively uniform distribution is indicative of pesticide application to the ground surface, and does not support a release of pesticides from a spill event. A spill event would have resulted in an isolated cluster of pesticide concentrations at the release area and likely steep concentration gradients with distance from the release area; these distribution features are not observed at FTMM-08.
- The vast majority of pesticide concentrations are low and do not exceed the comparison criteria (**Table 4.5**).
- The detected concentrations of pesticides in surface soil at FTMM-08 are similar to what have been detected in other areas of the MP where pesticides were applied.
- The setting of the landfill near Parkers Creek and nearby upland buildings is one that would have likely required pesticide control for water-borne insects.

4.1.1.5 Additional Soil Sampling for PCBs

In addition to the PCBs detected during the near-surface soil investigation (which included Aroclor 1016, Aroclor 1221, Aroclor 1242, and Aroclor 1260), surface and subsurface soil sampling was performed for PCBs by ATC (ATC, 2000a; provided in **Appendix A**) in an approximately 35- by 40-foot area around well M8MW24 from August to October 1999. Aroclor 1242, Aroclor 1254, and Aroclor 1260 were detected in the soil samples. Only Aroclor 1260 was detected in shallow soil samples collected at depths of 0 to 0.5 or 1 to 1.5 ft bgs (**Tables 4.3 and 4.4**); only these shallow samples were included in **Table 4.5**. Soil samples were collected to depths of 15 to 15.5 ft bgs. The additional (deeper) subsurface soil sample results are provided in **Appendix A**. PCBs were detected in 48 samples collected at depths ranging from 1.0 to 15.5 feet bgs. PCBs were not detected in the samples collected below the intervals that exhibited the highest concentrations. The potential for migration of PCBs in the subsurface was judged to be minimal due to their low solubility, and it was concluded that PCBs did not pose a threat to human health (ATC, 2000a).

In addition to the analysis performed to identify COPCs in soil, the current NJDEP Site Remediation Program (SRP) policy requires specific actions for PCBs detected in a non-residential or restricted use scenario such as at site FTMM-08 at concentrations greater than 0.2 mg/kg. The USEPA TSCA provides federal PCB remediation policy that must be coordinated with the NJDEP -SRP policy during PCB remediation projects. Toxic Substance Control Act (TSCA) does not regulate PCBs at concentrations less than 1 mg/kg. Under these policies, the site would require a deed notice for concentrations exceeding 0.2 mg/kg, and a cap for concentrations exceeding 1 mg/kg. At concentrations greater than 1 mg/kg PCBs, TSCA stipulates a range of self-implementing cleanup levels based upon future high and low occupancy

scenarios that are identified in 40 CFR 761.61(a)4. FTMM-08 is considered low occupancy under TSCA, which has a cleanup level of 25 mg/kg.

There were detections of PCBs in soils at FTMM-08 that exceeded the NJDEP threshold of 0.2 mg/kg 19 times, and the TSCA threshold of 1 mg/kg was exceeded 11 times.

4.1.2 COPCS IN SOIL

Following USEPA (1989) guidance, data with J, E or ER, and D qualifiers were treated as detects and usable for COPC identification purposes. U and UJ qualified data were considered to be non-detects but usable for COPC identification. B and BJ qualified data were treated as non-detects because the analyte was detected in the associated blank and the estimated chemical concentration in the sample was not five or ten times greater than the concentration in the associated blank (USEPA, 1989). Detections flagged with a B and BJ are not otherwise usable for COPC identification purposes as the detections may be associated with laboratory contamination.

COPCs in soil were identified by comparing the maximum detected concentration of each analyte to the USEPA Residential RSL (TR = 1 x 10^{-6} and THQ = 0.1). If organic chemicals were detected at concentrations greater than USEPA residential RSLs in at least one sample, they were considered COPCs. Metals detected at concentrations exceeding the Residential Soil RSL were then compared to the maximum background concentration (Weston, 1995). If the maximum concentration of a metal was greater than both the USEPA Residential Soil RSL and the maximum background concentration in at least one sample, that metal was considered to be a COPC. If the maximum concentration was greater than the USEPA Residential Soil RSL but less than the maximum background concentration, it was not considered a COPC. However, metals that are considered to be essential human nutrients (calcium, iron, magnesium, potassium, and sodium) were not considered to be COPCs. In addition, pesticides were not considered to be COPCs based on rationale presented in Section 4.1.1.4. This decision logic is presented on **Figure 4.1.**

COPCs in soil (**Table 4.5**) include:

- The VOC benzene;
- The SVOCs (mostly polynuclear aromatic hydrocarbons [PAHs]) 1,4-dichlorobenzene, naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, hexachlorobenzene, anthracene, fluoranthene, benzidine, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;
- The PCBs Aroclor 1016, Aroclor 1242, and Aroclor 1260; and
- The metals aluminum, antimony, arsenic, beryllium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

4.2 GROUNDWATER QUALITY

The scope of the groundwater monitoring program implemented from June 1997 to October 2014 is summarized in **Table 2.2**. Annual sampling for select constituents began in 2014 following the 2013 baseline sampling event, with the concurrence of the NJDEP as stated in comment and approval letters dated July 3, 2014 (NJDEP, 2014) and February 5, 2015 (NJDEP,

2015). Copies of these letters are provided in **Appendix A**. Monitoring well locations are shown on **Figure 1.3**.

Quarterly groundwater sampling of site monitoring wells was conducted from 1997 into 2011. Groundwater sampling results obtained from March 2008 to August 2011 are presented in **Table 4.6**. Groundwater sampling results obtained during the baseline event in August 2013 and annual sampling event in October 2014 are presented in **Table 4.7**. More comprehensive summary tables that provide groundwater quality data from May 1997 through September 2010 are provided in **Appendix A**. **Tables 4.6 and 4.7** also show the NJDEP GWQS and USEPA Tapwater RSLs to facilitate comparison of sampling results to criteria developed to be protective of use of groundwater as a potable water source. Maximum background concentrations for metals in groundwater by Weston (1995) are also provided in **Tables 4.6 and 4.7**.

4.2.1 Summary of Groundwater Sampling Results from 1997 to 2010

Thirty-two rounds of groundwater samples were collected from June 1997 through March 2004; samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and TAL metals. Based on the results of groundwater sampling conducted from June 1997 through March 2004, benzene, PCE, TCE, and VC exceeded their GWQS. Following the March 2004 sampling event, target analytes were reduced to VOCs, as recommended by a RAPR prepared by Versar (2005a); provided in **Appendix A**).

As summarized by the U.S. Army (2012), the Army performed pesticide analyses of groundwater samples collected from select FTMM-08 monitoring wells during the 1st Quarter of 2009 to determine base-wide concentrations of pesticides in groundwater. Additionally, metals were reintroduced to the groundwater sampling program at FTMM-08 in 2010. During the reporting period of the 2012 RAPR (U.S. Army, 2012), February 2009 through September 2010, five VOCs (PCE, TCE, bromodichloromethane, benzene, and VC), three metals (antimony, arsenic, and cadmium), and seven pesticides (alpha-chlordane, gamma-Chlordane, 4,4'-DDT, 4,4’-DDD, dieldrin, endrin ketone and heptachlor) were detected in groundwater samples at concentrations exceeding their then-current NJDEP GWQS. The metals detected at concentrations greater than the GWQS were considered by the U.S. Army (2012) to be naturally occurring within native soils at FTMM. Metal detections in general were concluded to be the direct result of acid leaching of suspended solids in groundwater samples (U.S. Army, 2012). In addition, due to the extremely slow migration rates of metals in groundwater, they were deemed to pose little potential for migration.

As summarized in Section 2.7.2, metals in groundwater at FTMM-08 were further evaluated by Brinkerhoff (2011a). A 90th Percentile Analysis was performed on data collected from February 2005 to September 2010 to remove data outliers and obtain a more representative data set. The analysis determined that 90th percentile values for barium, cadmium, chromium, copper, and nickel were below their respective NJDEP GWQS. The mean concentrations for beryllium, selenium, and thallium were also below their respective NJDEP GWQS. Due to possible laboratory inaccuracies affecting selenium and thallium, the 90th percentile analysis was not used to determine compliance for these metals.

4.2.2 Summary of Results from Eight Most Recent Quarterly Sampling Events and the 2013/2014 Sampling Events.

The most recent eight quarters of groundwater monitoring data (December 2009 through August 2011), the 2013 baseline data, and the 2014 annual sampling data are evaluated in greater detail in this subsection as being representative of recent conditions. Both NJDEP and USEPA comparison criteria were used for the reasons described for soil in Section 4.1. USEPA Tapwater RSLs incorporate a TR of 1×10^{-6} and a THQ of 0.1. During the most recent 10 sampling events, detected concentrations of selected VOCs, pesticides, and metals exceeded NJDEP GWQS and/or USEPA Tapwater RSLs.

Table 4.8 summarizes the number of times concentrations of a detected analyte were greater than the NJDEP GWQS and/or USEPA Tapwater RSLs from December 2009 to October 2014, and the number of times detected metal concentrations exceeded the maximum background concentration presented by Weston (1995).

4.2.2.1 Summary of Exceedances of NJDEP and USEPA Comparison Criteria

Concentrations of the following constituents exceeded the current NJDEP GWQS and/or USEPA Tapwater RSL in at least one of the 147 samples collected for VOCs, 16 samples collected for pesticides, and 111 samples collected for metals:

- The VOCs benzene, chlorobenzene, bromodichloromethane, chloroform, dibromochloromethane, *cis*-1,2-DCE, 1,4-dichlorobenzene, naphthalene, PCE, TCE, and VC;
- The pesticide 4,4'-DDD, and
- The metals aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, sodium, vanadium and zinc.

4.2.2.2 Identification of Background Constituents

The metals detected at concentrations exceeding their NJDEP GWQS and/or USEPA Tapwater RSL and also the maximum background concentration for the MP established by Weston (1995) included antimony, barium, beryllium, cadmium, cobalt, copper, lead, manganese, mercury, selenium, silver, sodium, and zinc. Exceedances of background levels for these metals are further evaluated below, with the exception of sodium which is considered to be an essential human nutrient.

- The maximum background concentration for antimony (20.7 µg/L; Weston 1995), was exceeded six times. These exceedances occurred during the September 2010 sampling event in multiple wells, and were followed by multiple sampling events where antimony was not detected. Given the isolated occurrence in time, and the more recent lack of detections, data from the September 2010 event is anomalous and not representative of the data set as a whole, and antimony results are representative of background conditions.
- The maximum background concentration for barium (699 µg/L) reported by Weston (1995) was exceeded once during recent sampling events, at a concentration of 727 µg/L, which is only slightly above the maximum background. Given the isolated

nature of the exceedance, overall the barium results are representative of background conditions.

- The maximum background concentration for beryllium (2.1 µg/L) reported by Weston (1995) was exceeded once during recent sampling events, at a concentration of 2.4 µg/L, which is only slightly above the maximum background. Given the isolated nature of the exceedance, overall the beryllium results are representative of background conditions.
- The maximum background concentration for cadmium (9.5 µg/L) reported by Weston (1995) was exceeded twice during recent sampling events. The exceedances occurred in two different wells during two different sampling events, and cadmium concentrations in these wells were variable, and sometimes non-detect. The maximum concentration detected was 14.9 µg/L, which is slightly above the maximum background. Given the isolated nature of the exceedances, overall the cadmium results are representative of background conditions.
- The maximum background concentration for cobalt (18.3 µg/L; Weston, 1995) was exceeded once during the most recent sampling events at a concentration of 18.6 µg/L, which is similar to the maximum background concentration. Given the low magnitude and isolated nature of the exceedance, cobalt results are representative of background conditions.
- The maximum background concentration for copper (65.6 µg/L; Weston, 1995) was exceeded once during the most recent sampling events at a concentration of 81 µg/L, Given the isolated nature of the exceedance, copper results are representative of background conditions.
- The maximum background concentration for lead (22.7 µg/L; Weston, 1995) was exceeded four times during the most recent sampling events, once in M8MW11 (August 2011 at 49.8 µg/L), once in M8MW17 (December 2010 at 33.1 µg/L), and in the primary and duplicate sample collected in May 2011 at M8MW21 (65 and 24.9 µg/L, respectively). The variability of the lead concentration in the sample pair at M8MW21, with one concentration in the pair being similar to the maximum background concentration, indicates that turbidity in the sample impacted lead concentrations. Lead concentrations in other samples collected at these wells during other events were non-detect or considerably lower. Given the isolated nature of the exceedances, lead results are representative of background conditions.
- The maximum background concentration for mercury (0.26 µg/L; Weston, 1995) was exceeded five times during recent sampling events. The maximum detection was 0.71 µg/L in M8MW21 during the May 2011 event. The exceedances were mostly similar in magnitude to the maximum background concentration, and were isolated in time. Given the isolated nature of the exceedances, mercury results are representative of background conditions.
- The maximum background concentration for selenium (29.6 µg/L; Weston, 1995) was exceeded 13 times during the most recent sampling events. Exceedances occurred during the March 2010 sampling event at multiple wells, and were followed by multiple sampling events where selenium was not detected or was less than the

maximum background. Given the isolated occurrence in time, and the more recent lack of detections and exceedances, the March 2010 background exceedances are anomalous and not representative of the data set as a whole, and selenium results are representative of background conditions.

- The maximum background concentration for silver was not established by Weston in 1995 because silver was below detection limits. Therefore, any detection of silver would be over the maximum background concentration. The USEPA Tapwater RSLs (7.1 µg/L) was exceeded once during the most recent sampling events. This exceedance occurred in M8MW17 in March 2010 and was followed by six rounds of non-detect quarterly sampling data. Therefore, silver should not be considered as site related; and
- The maximum background concentration for zinc (233 µg/L; Weston, 1995) was exceeded 22 times during the most recent sampling events, and only exceeded the USEPA Tapwater RSL seven times. Exceedances of the USEPA Tapwater RSL were isolated in time and space, and are anomalous, and not representative of the data set as a whole.

The only metal that is not readily attributable to background conditions is manganese. This metal exceeded the maximum background concentration in multiple samples from 10 wells scattered across the site (total of 54 exceedances).

4.2.2.3 COPCs in Groundwater

As shown on **Figure 4.1**, COPCs in groundwater were identified by comparing the maximum detected concentration during recent sampling events (November 2009 to August 2011, August 2013, and October 2014) to the USEPA Tapwater RSL (TR = 1 x 10^{-6} and THQ = 0.1). Organic chemicals that were detected at concentrations greater than USEPA Tapwater RSLs were generally considered COPCs unless the exceedances were temporally isolated, anomalous, and unrepresentative of the data set; and/or were determined to be associated with non-site-related contamination (i.e., contamination introduced during field sampling or emanating from an upgradient source unrelated to FTMM-08). Metals that were detected at concentrations exceeding the Tapwater RSL were also compared to the maximum detected background concentration (Weston, 1995) as described in Section 4.2.2.2. Detected metals that also exceeded the maximum background concentration (Weston, 1995) were then assessed more holistically to determine whether background exceedances were representative of site-related contamination, or were due to other factors such as turbidity or upgradient sources. Metals exceeding background were exempted from being identified as COPCs as a result of this holistic assessment if any of the following conditions were met:

- There were only a small number of background exceedances during the most recent sampling events such that the exceedances were anomalous outliers and not representative of the vast majority of the data;
- The background exceedances occurred early in the time period encompassed by the most recent sampling events, and concentrations in subsequent samples were below the maximum background concentration;

- The background exceedances only occurred in an upgradient or cross-gradient monitoring well;
- Background exceedances cannot be plausibly related to potential site-related sources of contamination; or
- The metal is classified as an essential human nutrient (i.e., calcium, iron, magnesium, potassium, and sodium).

Based on the holistic assessment described above, the only metal retained as a COPC and evaluated in the risk assessment was manganese. Most of the exceedances of the USEPA Tapwater RSL and maximum background concentration occurred in the eastern and northeastern portions of the site, at wells M8MW14 through M8MW19.

Select VOCs were encountered only in upgradient wells, such as bromodichloromethane, chloroform, and dibromochloromethane, which only exceeded USEPA Tapwater RSL in well M8MW12. Also, there is a known chlorinated VOC groundwater plume that originates upgradient of FTMM-05, and migrates to the northwest beneath FTMM-05 and toward FTMM-08. FTMM-05 may also be contributing to this solvent plume. Analytes associated with this upgradient plume include chloroform, *cis*-1,2-DCE, TCE, and VC (as well as PCE, which did not exceed its USEPA Tapwater RSL at FTMM-08 during recent sampling events). In addition, the only detection of one of these compounds in FTMM-08 soil samples was a single detection of PCE out of 307 samples analyzed. Therefore, these chlorinated VOCs are not attributable to the FTMM-08 landfill and were not retained as COPCs. VOCs that were retained as COPCs (**Table 4.8**) include benzene, chlorobenzene, 1,4-dichlorobenzene, and naphthalene.

The only pesticide detected at a concentration exceeding the USEPA Tapwater RSL was 4,4'-DDD. This exceedance occurred during the 2014 sampling event at 697MW01, which is an upgradient monitoring well, therefore no pesticides were retained as COPCs.

4.3 SURFACE WATER QUALITY

The scope of the surface water monitoring program implemented from October 1996 to September 2010 is summarized in **Table 2.3,** and sampling locations historically associated with FTMM-08 are shown on **Figure 2.3**. Surface water sampling results are summarized in the following subsections. Information was obtained from previous reports (**Appendix A**) and summary sampling results tables for data collected from October 1996 through September 2010 received from the U.S. Army. The more recent data (from March 2007 through September 2010) has been reproduced in this report as **Table 4.9**.

Table 4.9 also shows NJDEP saline water (SE) SWQS and USEPA criteria for protection of human health for VOCs, metals, and select wet chemistry constituents for comparison purposes. Criteria for saline water established by NJDEP were used as comparison criteria because sampling location SS-27, which provides the best indication of the impact of FTMM-08 on surface water quality, is saline based on high tide salinity measurements presented in the BEE (Shaw, 2012). Both NJDEP and USEPA comparison criteria were used for the reasons described for soil in Section 4.1. A hierarchy of USEPA human health criteria were used in the priority shown below to aid in the evaluation. For example, if the highest priority criterion was not available for a particular analyte, the second priority criterion was used, and so on down the line.

1. National Recommended Water Quality Criteria (NRWQC) (organism only),

2. NRWQC (water + organism),
3. USEPA Tapwater RSLs,
4. Maximum Contaminant Levels (MCLs)

Three sampling locations (SS-14 in Lafetra Creek, and SS-05 and SS-15 in Mill Creek) are located upstream of FTMM-08, and one location (SS-27) is located downstream in Parkers Creek. Based on high tide salinity measurements presented in the BEE (Shaw, 2012), these surface water sampling locations, except for upstream location SS-14, are located in reaches of the creeks that are classified as saline. High tide salinity measurements at SS-14 presented in the BEE report are 0 ppt, which is indicative of fresh water. Salinity data indicate that Lafetra Creek becomes saline within approximately 2,000 feet after entering the MP at the northwest corner, and is therefore saline at and downstream of FTMM-08.

4.3.1 Summary of Surface Water Sampling Results From 1999 to 2010

Historical reporting indicates that surface water samples collected in Mill Creek at the nearest upstream location (SS-5, **Figure 2.3**), far upstream location (SS-15), and the downstream location in Parkers Creek (SS-27) from the 4th quarter 1999 through the 3rd quarter 2010 exceeded the freshwater SWQS for PCE (U.S. Army, 2012). PCE concentrations generally decreased in the downstream direction. Note that surface water sampling point SS-15 is located upstream and beyond FTMM's MP boundary, so the PCE concentrations detected in Mill Creek surface water originate from an upstream, offsite source. SS-27 is located approximately 300 feet downstream of FTMM-08. Surface water sampling results were not compared to saline SWQS by the U.S. Army (2012).

Surface water samples were also collected from Parkers Creek adjacent to FTMM-08 during the 2010 BEE (Shaw, 2012). One surface water sample was collected upstream of FTMM-08, just upstream of the confluence of Mill Creek with Lafetra Creek. Two other samples were collected adjacent to FTMM-08 on the northwest and northeast sides. In addition, a sample associated with FTMM-18 was collected downstream of FTMM-08 near stormwater outfalls. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Sampling results were compared to ecological screening criteria (ESC) that are intentionally conservative. The results of the comparisons were used to identify constituents of potential ecological concern (COPECs). There were no COPECs identified in surface water associated with FTMM-08.

4.3.2 Summary of Surface Water Results from Most Recent Eight Quarterly Sampling Events

The most recent eight quarters of surface water monitoring data (December 2008 through September 2010) are evaluated in greater detail in this subsection to represent recent conditions. Recent surface water data is available for locations SS-5, SS-14, SS-15, and SS-27 (**Table 4.9** and **Figure 2.3**). During these eight most recent sampling events the only VOCs detected at concentrations exceeding either NJDEP or USEPA comparison criteria were PCE and cis-1,2-DCE (**Table 4.10**). PCE exceeded its NJDEP SWQS SE criterion. The compound cis-1,2-DCE exceeded its USEPA Tapwater RSL, which was used as the comparison criterion based on the hierarchy described above, in one sample at a concentration just above the RSL (2.89 µg/L compared to a Tapwater RSL of 2.8 µg/L). All PCE and cis-1,2-DCE exceedances were located at SS-15 and SS-5, upstream of FTMM-08 along Mill Creek.

The metals arsenic, lead, mercury, and thallium were detected at SS-14, SS-15, and SS-27 during the eight most recent sampling events at concentrations exceeding the NJDEP SWQS and/or USEPA NRWQC as follows:

- Arsenic was detected 24 times during the 8-quarter sampling period at concentrations exceeding the NJDEP SWQS (0.061 µg/L) and USEPA NRWQC (0.14 µg/L). Concentrations ranged from 1.13 µg/L to 76.1 µg/L. The highest concentration (76.1 µg/L) occurred in a duplicate sample from upstream location SS-14 during the March 2009 event; the concentration in the associated primary sample from that location also exceeded both criteria with a concentration of 64.5 µg/L. During the same March 2009 event, the downstream concentration of arsenic at SS-27 was 56 µg/L. A similarly elevated arsenic concentration (66.6 µg/L) was detected in March 2009 at upstream location SS-15. In general, downstream arsenic concentrations were less than or similar to upstream concentrations, indicating that FTMM-08 is not significantly impacting arsenic concentrations in surface water.
- There was only one exceedance of the NJDEP or USEPA comparison criterion for lead during the most recent 8-quarter sampling period. Lead was detected at a concentration of 18 µg/L, exceeding the USEPA NRWQC for protection of human health (water + organism) of 15 µg/L. The exceedance occurred at downstream sampling location SS-27 in December 2009. Other lead concentrations detected at SS-27 were either non-detect or of much lower magnitude (there were two other detections during the reporting period, at estimated concentrations of 3.09 and 3.54 µg/L). The single exceedance of the USEPA NRWQC for lead is anomalous, and not representative of the data set as a whole.
- Mercury was detected seven times during the 8-quarter sampling period at concentrations exceeding the NJDEP SWQS (0.051 µg/L) and USEPA Tapwater RSL (0.06 µg/L) at upstream locations SS-14 and SS-15 and downstream location SS-27. Detections of mercury were sporadic, and detected concentrations ranged from 0.08 to 0.18 µg/L; concentrations were generally highest in the upstream samples. Therefore, mercury exceedances are not attributable to FTMM-08.
- Thallium was detected twice during the eight most recent sampling events at concentrations exceeding the NJDEP SWQS and USEPA NRWQC (both 0.47 µg/L). The exceedances occurred in the primary and the duplicate samples from upstream location SS-14 in December 2008, and the highest concentration was 3.07 µg/L. Therefore, thallium exceedances are not attributable to FTMM-08.

Surface water samples collected from SS-5, SS-15, and SS-27 in December 2008 were also analyzed for pesticides and PCBs (**Table 2.3**). None of the target analytes were detected, and therefore no results are presented in **Table 4.9**.

Based on the above assessment of surface water quality data for the most recent eight quarterly sampling events, there are no surface water COPCs associated with FTMM-08.

4.4 SEDIMENT

Sediment sampling was conducted along Parkers Creek in April 2000 to evaluate PCB-related impacts to stream sediments associated with FTMM-08 (locations B-1 through B-10,

Figure 2.3). Twenty-one (21) samples were collected from 10 borings. Sample depths ranged from surface (0 to 6 inches below grade) to near-surface (6 to 12 inches) at each boring, with the exception of boring B-3, which also included a sample at 18 to 24 inches below grade.

Sediment sample results were compared to both NJDEP and USEPA criteria for the reasons described in Section 4.1. Human health-based criteria for soil are used for comparison purposes to support identification of COPCs. One PCB (Aroclor 1254) was detected in two of 21 samples at concentrations of 1.455 milligrams per kilogram (mg/kg) (B-7) and 0.138 mg/kg (B-8). Both of the detections were in the 0-6 inch samples. The concentration at B-7 is greater than the NJDEP RDCSRS of 0.2 mg/kg for total PCBs, the NJDEP NRDCSRS (1 mg/kg) for total PCBs, and the USEPA residential and non-residential RSLs for Aroclor 1254 (0.11 and 0.74 mg/kg, respectively) (**Table 4.11**). These sediment samples were collected very close to an outlet of a storm drain that crosses FTMM-08, and while it is possible that impacted soil from FTMM-08 may have been transported into Parkers Creek via the storm drain (ATC, 2000a), there is likely another source. PCBs were detected in near-surface soils at isolated locations at FTMM-08, but Aroclor 1254 was not detected in the soil samples. Therefore, it is likely that one or more sources upstream or otherwise outside of FTMM-08 have contributed PCBs to the sediments in Parkers Creek. Aroclor 1254 was also detected in one sediment sample collected in Mill Creek adjacent to FTMM-05, located immediately south and upstream of FTMM-08; the detected concentration was 0.054 mg/kg. Due to the uncertainty of the potential source of the PCBs in Parkers Creek sediment, there are no sediment COPCs for FTMM-08 (**Table 4.11**).

Sediment samples were also collected from Parkers Creek adjacent to FTMM-08 during the 2010 BEE (Shaw, 2012). The samples were analyzed for VOCS, SVOCs, pesticides, PCBs, and metals. Sampling results were compared to screening criteria that are intentionally conservative. The results of the comparisons were used to identify COPECs. COPECs identified in sediment at FTMM-08 included pesticides, PCBs, and metals. The BEE (Shaw, 2012) concluded that constituents in sediment at FTMM-08 were unlikely to have a deleterious effect on sensitive ecological receptors or habitats, and additional ecological assessments were not warranted or recommended.

SECTION 5
CONTAMINANT FATE AND TRANSPORT

This section addresses the fate and transport of VOCs, SVOCs, PCBs, and metals detected in soil and/or groundwater at FTMM-08 at concentrations exceeding one or more NJDEP or USEPA comparison criteria and (in the case of metals) maximum background concentrations reported in Weston (1995) (see Sections 4.1 and 4.2). The fate and transport of detected constituents in surface water are not addressed because sampling data indicate that surface water quality has not been significantly impacted by FTMM-08. The fate and transport of detected PCBs in sediment are not addressed because Aroclor 1254 was not detected in site soil samples, and it is likely that one or more sources upstream or otherwise outside of FTMM-08 have contributed PCBs to the sediments in Parkers Creek.

The environmental fate and transport of a contaminant is controlled by the contaminant's physical and chemical properties and the nature of the subsurface media through which the contaminant is migrating (USEPA, 1998).

Unless otherwise indicated in the text, the fate and transport information presented in this section was derived from three primary sources:

1. The online Toxnet Hazardous Substances Data Bank (HSDB); http://toxnet.nlm.nih.gov/cgi-bin/sis/search);
2. Toxicological profiles prepared by the Agency for Toxic Substances and Disease Registry (http://www.atsdr.cdc.gov/toxprofiles/index.asp); and
3. The Framework for Metals Risk Assessment (USEPA, 2007).

5.1 POTENTIAL ROUTES OF MIGRATION

Potential migration routes for contaminants detected in soil and groundwater at FTMM-08 include the dissolution of soluble residual contamination in the vadose zone into infiltrating precipitation that percolates through the vadose zone to the water table, and primarily lateral migration of contaminants dissolved in groundwater toward Parkers Creek. In addition, volatile constituents in vadose zone soil and shallow groundwater may volatilize and enter the atmosphere, to be transported by prevailing winds.

5.2 CONTAMINANT PERSISTENCE IN SOIL

5.2.1 Volatile Organic Compounds

The mobility of VOCs in soil will depend largely on the following factors (USEPA, 1998):

- Chemical-specific soil/water distribution coefficient (Kd) and organic carbon/water partition coefficient (Koc) impacting the tendency of the constituent to sorb to soil particles;
- Water solubility; and
- Vapor pressure and Henry's Law constant (impacting the tendency to volatilize into air).

Concentrations of VOCs exceeding NJDEP and/or USEPA comparison criteria were rarely detected in soil samples collected at FTMM-08. Benzene is the only VOC that was retained as a COPC in soil. In general, VOCs in soil are subject to volatilization, biodegradation, and vertical migration toward the water table in percolating recharge water. Therefore, VOCs are expected to have a relatively low degree of persistence in vadose zone soil at FTMM-08.

5.2.2 Semi Volatile Organic Compounds

The SVOCs that exceeded NJDEP and/or USEPA comparison criteria in the largest number of samples are PAHs. Most other SVOCs that exceeded one or more comparison criteria were detected less frequently. These less-frequently detected SVOCs included aniline, benzidine, benzyl alcohol, butylbenzylphthalate, 3,3'-dichlorobenzidine, 4-methylphenol, diethylphthalate, hexachlorobenzene, nitrobenzene, 2,4-dimethylphenol, 4-chloroaniline, azobenzene, dichlorobenzidine, bis(2-ethylhexyl)phthalate, and dibenzofuran. Exceptions included 1,4-dichlorobenzene, di-n-butylphthalate, and dibenzofuran, which exceeded one or more criteria more frequently. Therefore, the fate and transport analysis in this subsection focuses on PAHs, 1,4-dichlorobenzene, di-n-butylphthalate, and dibenzofuran.

The PAHs naphthalene, 2-methylnapthalene, acenaphthene, anthracene, fluoranthene, fluorene, pyrene, chrysene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene are polycyclic aromatic hydrocarbons having 10 to 22 carbon atoms. As the hydrocarbons approach a size of approximately 15 - 20 carbon atoms (including the above-listed PAHs except for naphthalene, fluorene, and 2-methylnaphthalene), their vapor pressures and water solubilities become negligible, and partitioning to air or dissolution in water is unimportant (American Petroleum Institute [API], 2012). API (2012) generally classifies petroleum substances in the C9 to C25 range as "not readily biodegradable" because their biodegradation rates are typically slower than lighter, more volatile fuels, such as gasoline or jet fuel. Therefore, PAHs are expected to be relatively persistent in vadose zone soil at FTMM-08.

The SVOC di-n-butylphthalate is only slightly soluble in water and does not volatilize easily. The mobility of this compound in soil, and consequent migration to groundwater, is expected to be limited. Similarly, the mobility of dibenzofuran in soil is expected to be slight, and adsorption to soil is expected to limit volatilization. Volatilization of 1,4-dichlorobenzene from soil is expected to occur, but also may be inhibited by adsorption to soil particles. This SVOC can also biodegrade, but this process occurs quite slowly. Dichlorobenzenes are only slightly soluble in water. Therefore, similar to PAHs, these SVOCs are expected to be relatively persistent in vadose zone soil at FTMM-08.

5.2.3 PCBs

PCBs are expected to have little to no mobility in soil. The lower the degree of chlorination, the more water soluble a PCB congener will be. However, PCBs may be volatilized from soil surfaces into the atmosphere and subsequently removed from the atmosphere by wet or dry deposition.

5.2.4 Metals

Metals are subject to various transformation processes in soil. For example, metals can exist in the environment in several valence forms, and they can also exist as organometallic

compounds that have a metal-carbon bond. Metal transformation processes, such as metal methylation, occur through interactions with other chemicals and biota in the environment. In general however, metals are elements that are resistant to natural degradation in the environment, and therefore are expected to be relatively persistent in vadose zone soil at FTMM-08.

5.3 CONTAMINANT PERSISTENCE IN GROUNDWATER

5.3.1 Volatile Organic Compounds

Highly-chlorinated VOCs such as PCE and TCE tend to be slowly degradable in aerobic, oxidizing environments and will have a moderate to high degree of persistence in groundwater unless degradation of these compounds is enhanced biologically or chemically via addition of an organic carbon substrate or by other means. In more anaerobic, reducing zones, PCE and TCE can be rapidly dechlorinated to less-chlorinated VOCs (i.e., DCE and VC) or non-toxic end products such as ethene. In contrast, less-chlorinated VOCs such as VC tend to be readily degradable in aerobic environments and more persistent in anaerobic environments. Intermediate compounds such as *cis*-1,2-DCE tend not to be highly degradable in either aerobic or anaerobic environments, but can degrade at low to moderate rates. Despite their differing susceptibilities to destructive attenuation processes such as biodegradation, each of these VOCs will be subject to non-destructive attenuation processes in the saturated zone (i.e., diffusion, dilution, dispersion, volatilization) and therefore will decrease in concentration over time. The fact that all exceedances of the USEPA RSLs for these chlorinated VOCs occurred at or near the upgradient site boundary (at FTMM-05) indicates that they are attenuated prior to migrating to more downgradient wells.

The VOC 1,4-dichlorobenzene can be slowly biodegraded in both aerobic and anaerobic environments, with half-lives of approximately one year or longer. Moderate water solubility suggests that this compound can dissolve in groundwater in excess of regulatory drinking water standards. The vapor pressure of this compound indicates that volatilization from groundwater is possible. Chlorobenzene and benzene are expected to react similarly, with benzene being considerably more volatile. Considering destructive attenuation processes such as biodegradation, as well as non-destructive attenuation processes in the saturated zone (i.e., diffusion, dilution, and dispersion), these VOCs will decrease in concentration over time unless they are maintained by a continuing source.

Naphthalene in groundwater is expected to adsorb to suspended solids and aquifer matrix materials. In addition naphthalene has been shown to biodegrade in water, although degradation rates vary depending on dissolved oxygen concentrations and reduction-oxidation conditions. This compound can volatilize, but typically at a slower rate than many other VOCs. Overall, naphthalene is unlikely to be persistent in the dissolved state due to its tendency to adsorb and biodegrade.

5.3.2 Metals

Metals in groundwater are subject to retardation processes. Retardation processes depend on a number of factors including sorption (attachment of metals species to mineral surfaces), speciation (particularly metals complexes which have differing tendencies to be adsorbed or desorbed), precipitation (metals precipitate out of solution when solubility limits are reached), colloid formation (formation of colloids and association of metal species within them), biofixation (binding of metals to solid surfaces through the actions of microorganisms or plants)

and natural organic matter interactions. The processes may be affected at least by pH, oxidation-reduction potential, salinity, and concentrations of competing ions. In general, metals in groundwater are sorbed to particles or retained in solution, and are expected to be relatively persistent in shallow groundwater at FTMM-08. As the mass of bioavailable organic carbon (e.g., landfilled organic waste) in the reaction zone becomes depleted, the groundwater system at FTMM-08 will likely become more oxidizing, and concentrations of ORP-sensitive metals such as manganese in groundwater should decrease.

5.4 CONTAMINANT MIGRATION IN SOIL

5.4.1 Volatile Organic Compounds

In general, VOCs are expected to be moderately to highly mobile in vadose zone soil, and the potential for substantial vertical migration to groundwater exists.

5.4.2 Semivolatile Organic Compounds

For the reasons described in Section 5.2.2, SVOCs detected in near-surface soil at FTMM-08 are expected to be relatively immobile and will not readily leach to groundwater.

5.4.3 PCBs

For the reasons described in Section 5.2.3, PCBs detected in soil at FTMM-08 are expected to be strongly sorbed to soil particles and have little to no mobility in soil. Therefore, they will not readily leach to groundwater.

5.4.4 Metals

Because the behavior of metals in the environment defies simple generalities, understanding the chemistry of the particular metal and the environment of concern is necessary to assess the metal's behavior in the environment in a detailed fashion. However, the factors that control metal chemistry and the environmental characteristics used to produce estimates of metal fate and effects can be generalized. The pH of the host medium is probably the single most important variable that influences the behavior of metals in the environment; most complexation and precipitation reactions are pH dependent.

Movement of metals through soil is dependent on the chemical properties controlling speciation, the presence of ligands that control complexation of metals within pore water and adsorption onto mineral surfaces, and the rate of water flux through the soil. Metals are lost from the soil by leaching into groundwater and through metal-specific uptake by plants. As metals age in soils, they decrease in bioavailability.

In the soil environment, metals can exist as cations (having a positive charge), anions (having a negative charge), or neutral species (having a zero charge). Their form significantly affects their sorption, solubility, and mobility. For example, most soils are chiefly negatively charged; thus, metal cations have a higher propensity to be sorbed by soil particles than do metal anions. For most soils in the U.S., negatively charged sites are more plentiful; less than 5% of the total available charge on the soil surface is positively charged. Metals existing as cationic species have a greater propensity to associate with such soils, making them less bioavailable. Anionic metals generally move into pore water—and so are more bioavailable—but leach out of the system much more rapidly. In summary, soil pH and availability of charged sites on soil surfaces

are the primary soil factors controlling release of metals to pore water and, subsequently, bioavailability.

Metals are usually cations, including those listed in Section 4.1.2 except for selenium. The HSDB states that selenium has sorptive affinity for hydrous metal oxides, clays, and organic materials. Therefore, metals in vadose zone soil at FTMM-08 are expected to be relatively immobile.

5.5 CONTAMINANT MIGRATION IN GROUNDWATER

5.5.1 Volatile Organic Compounds

Chlorinated VOCs such as PCE, TCE, *cis*-1,2-DCE, and VC are capable of migrating substantial distances in the saturated zone with advective groundwater flow. Their mobility tends to increase as the degree of chlorination decreases (i.e., PCE will be the least mobile and most highly retarded due to sorption to aquifer matrix materials and VC will be most mobile and least retarded due to sorption).

VOCs identified as COPCs in FTMM-08 groundwater, including benzene, chlorobenzene, 1,4-dichlorobenzene, and naphthalene, can also migrate in the saturated zone. Naphthalene will have a relatively low degree of mobility, however, due to its tendency to adsorb to suspended solids and aquifer matrix materials.

The migration distances for all of these VOCs are limited by the operation of destructive and non-destructive attenuation processes that decrease their concentration in groundwater. VOC concentrations in FTMM-08 groundwater are relatively low; therefore, substantial lateral migration of concentrations that are of concern from a regulatory standpoint is not likely.

5.5.2 Metals

As with soils, the behavior of metals in groundwater cannot readily be generalized. Under some conditions metals in groundwater can be mobile as colloidal sized particles, even though the metal is in an insoluble form. Although not soluble, colloidal particles are so small they may approach the size of ionized species within an order of magnitude. As such they are transportable in the pore spaces of tight aquifer formations (Vance, 1993). Metals in groundwater will interact with and adsorb to components of the soil matrix. Clays, other mineral components, and carbonaceous material (especially humic and fulvic substances) can act in this manner. However in the case of metals, the dominant adsorptive component of the soil matrix is iron. Iron oxides (particularly of Ferric (Fe^{+3}) iron) have a very high adsorptive affinity and total capacity for metal ions and oxyanionic metal complexes (Vance, 1993).

The USEPA (1992) states that transport of metals may be enhanced due to formation of organic and inorganic metal complexes that do not sorb to soil surfaces, and concludes that evaluating the extent of metal retention by a soil (and by extension, in an unconsolidated aquifer) is site-, soil-, and waste-specific due to the wide range of soil characteristics and various forms that metals can take in the subsurface. Predicting the migration of metals in shallow groundwater at FTMM-08 is further complicated by the presence of landfill solid waste that may extend below the water table, at least seasonally.

While manganese is more soluble under reducing conditions, migration of this metal out of the reactive zone where anaerobic biodegradation of organic carbon (e.g., landfilled organic waste) is occurring is often substantially retarded by adsorption to the aquifer matrix and/or

precipitation as insoluble manganese sulfides (e.g., Butler and Hayes, 1999). In naturally oxidizing groundwater systems, the mobilized Mn^{+2} is typically precipitated/immobilized downgradient of the reactive zone when the groundwater conditions return to a more oxidizing state closer to background conditions.

5.6 SUMMARY

The contaminant fate and transport information presented above indicates that VOCs in vadose zone soil are expected to have a relatively low persistence and moderate to high mobility. In contrast, SVOCs, PCBs, and metals in vadose zone soil at FTMM-08 are expected to be relatively persistent and immobile, limiting their impact on groundwater quality.

VOCs that dissolve into groundwater are expected to be moderately to highly mobile and transported laterally with advective groundwater flow, although some sorption to aquifer matrix materials will occur. Highly chlorinated solvents such as PCE have a higher sorption potential than less chlorinated solvents such as VC, and the migration of PCE in groundwater will be more retarded as a result. Of the non-chlorinated VOCs, naphthalene has a relatively high sorption potential, which will limit its mobility in the saturated zone. VOC concentrations in the saturated zone will attenuate over time as a result of destructive and non-destructive attenuation mechanisms. VOC concentrations in groundwater at FTMM-08 are relatively low; therefore, substantial migration at concentrations of regulatory concern is not likely.

Metals in groundwater will likely be moderately to highly sorbed to aquifer matrix materials and thus have more limited mobility than VOCs, but their mobility in groundwater is dependent on too many metal- and site-specific factors to predict with confidence. NJDEP (2003) found that New Jersey soils typically have high iron concentrations. Glauconitic soils have iron-rich clay minerals (Dooley, 2001); these soils are common at FTMM and potentially may enhance sorption of metals to the soil matrix in the saturated zone. As the mass of bioavailable organic carbon (e.g., landfilled organic waste) in the reaction zone becomes depleted, the groundwater system will likely become more oxidizing, and concentrations of manganese in groundwater should decrease.

SECTION 6
BASELINE RISK ASSESSMENT

The objective of this baseline Human Health Risk Assessment (HHRA) is to provide a quantitative evaluation of the risk associated with exposure to soil, surface water, sediment, and groundwater at FTMM-08. The HHRA will determine if there is potential unacceptable risk to human health associated with exposure to contaminants present in these environmental media. The streamlined method to assess human health risk at FTMM-08 was developed as a component of a presumptive remedial strategy for the landfills at FTMM. The streamlined method was developed without consultation with the U.S. Army Public Health Command. However, as discussed below, the resulting quantitative risk estimates are comparable to those resulting from conventional risk assessment methods defined in the *Risk Assessment Guidance for Superfund* (RAGS; USEPA, 1989) and U.S. Army Corps of Engineers' (USACE) *Risk Assessment Handbook* (EM 200-1-4) (USACE, 1999) for the purpose of evaluating risk at a landfill site where a presumptive remedy will be implemented.

In a letter to Ms. Wanda Green, BRAC Environmental Coordinator at FTMM, dated August 27, 2012, NJDEP (2012) accepted the revised BEE submittal (Shaw, 2012), agreed that "all exceedances have been sufficiently evaluated and addressed for ecological receptor considerations," and stated that "no additional ecological evaluation or assessment is necessary for the Main Post and Charles Wood Area." Therefore, additional ecological risk evaluation was not performed for FTMM-08.

6.1 RISK ASSESSMENT PROCESS

6.1.1 Summary of Available Data for FTMM-08

This quantitative HHRA for FTMM-08 used data collected in the investigations summarized in Section 2 of this RI. As described in Section 2, environmental sampling at the site has included surface soil, sediment, surface water, and groundwater.

The analytical results for chemicals detected in each environmental medium at FTMM-08 are provided in data summary tables in Section 4 of this RI (**Tables 4.1 through 4.4** [soil]**,** **Tables 4.6** and **4.7** [groundwater], **Table 4.9** [surface water] and **Table 4.11** [sediment]. COPCs were identified in soil (**Table 4.5**) and groundwater (**Table 4.8**). No COPCs were identified in surface water (**Table 4.10**) or sediment (**Table 4.11**).

6.1.2 General HHRA Approach and Guidance Documents

Techniques and methods developed or recognized by the USACE and the USEPA were modified for use in this HHRA. This quantitative HHRA used a risk ratio approach (which is further described in Section 6.2.1 below) to quantify potential carcinogenic risk and non-carcinogenic hazards. This streamlined approach, rather than the traditional risk assessment approach, was selected for use at the landfill sites because there is already a presumptive remedy of containment that will be implemented. Use of the streamlined approach will reduce costs associated with the risk assessment process by reducing the risk assessment effort, rapidly identifying the need for corrective action, and supporting property transfer and redevelopment plans. In the case of the landfill sites at FTMM, where a presumptive remedy of containment will be implemented, the streamlined risk assessment is appropriate. See *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (USEPA, 1991).

Additionally, USEPA guidance states "One method for establishing risk using a streamlined approach is to compare contaminant concentration levels (if available) to standards that are potential chemical-specific applicable or relevant and appropriate requirements (ARARs) for the given action." (USEPA, 2015a. *Presumptive Remedy for CERCLA Municipal Landfill Sites*, viewed at: http://www.epa.gov/superfund/policy/remedy/presump/clms.htm (last accessed January 30, 2015).

The risk ratio approach is a useful surrogate for the RAGS analysis because, as discussed in detail below, there is a direct relationship between the COPC concentration and risk, and therefore cancer risk and non-cancer hazard can be estimated as the ratio of site concentrations to RSLs. The risk ratio approach encompasses the principles and procedures included in USEPA guidance, while streamlining them for evaluating risk and determining the need for corrective action at FTMM landfill sites. The risk assessment process used in this document incorporates the four steps that define a human health risk assessment according to USEPA (1989) (i.e., data evaluation and identification of COPCs, exposure assessment, toxicity assessment, and risk evaluation), as summarized below.

Data Evaluation and Identification of COPCs: This step of the risk assessment process was conducted in a manner consistent with RAGS and the Risk Assessment Handbook. COPCs were identified in environmental media following comparison to published medium-specific screening values and FTMM-specific background concentrations. Those analytes that were detected at the site at concentrations greater than appropriate screening values and that are attributable to site activities were identified as COPCs and included in the risk assessment.

Exposure Assessment: This step of the risk assessment includes identification of relevant receptors and potential exposure pathways. Once relevant receptors and exposure pathways and a potential source of contamination were identified, a conceptual site model (CSM) is developed to define the potential for exposure. Exposure pathways for various media and exposure routes (i.e., ingestion, dermal contact, inhalation) that coincide are determined to be potentially complete and are evaluated in the risk assessment. In this case, exposure pathways may be complete for current and future outdoor workers, future utility workers, and potential future recreational users (as defined by project stakeholders).

The USEPA RSLs (USEPA, 2015b) are risk-based concentrations that were developed by USEPA to rapidly identify chemicals that have the potential to present human health risks as a result of exposure. The exposures of concern for FTMM-08 include inhalation, ingestion, and dermal contact of outdoor workers, utility workers, and recreational users to COPCs. Site-specific screening levels for exposure of utility workers and recreational users to soil were calculated to support this risk evaluation.

The streamlined risk assessment approach for the FTMM landfills incorporates exposure parameters and toxicity values inherent to the RSLs, along with observed site concentrations, to calculate risks or hazards associated with identified COPCs at the site. The intent is for the conclusions of the risk assessment to represent likely future land use at FTMM.

Toxicity Assessment: This step of the risk assessment identifies toxicity factors that will be used when calculating the risk or hazard associated with exposure to COPCs at the site. In this case the toxicity factors are those either established or used by USEPA to calculate risk estimates and RSLs. Therefore, there are no differences in the toxicity values used in a conventional

RAGS-based approach and the USEPA risk ratio approach conducted for FTMM-08 as described in this report.

Risk Characterization: Cancer risk estimates and noncancer hazard quotients are calculated based on site concentrations, exposure assumptions, and toxicity factors. The RSLs for a given exposure scenario can be used to rapidly determine site-specific cancer risks or hazard estimates for that scenario. RSLs are medium-specific concentrations corresponding to predetermined cancer risk or noncancer hazard estimates (see RSL supporting documentation for further details on calculation of RSLs). A COPC concentration in soil equal to the USEPA RSL will result in a 1×10^{-6} cancer risk and/or a HQ of 1. Because there is a direct relationship between COPC concentrations and risk, cancer risks and/or noncancer hazard quotients can be estimated as the ratio of site concentrations to RSLs. This approach is extended to calculated receptor specific screening levels (i.e., recreational user and utility worker screening levels). Cumulative cancer risk and hazard index estimates resulting from multiple COPCs may then be resolved by summing the ratios. As a streamlined approach, the risk ratio approach does not specifically express the contribution of specific routes of exposure (e.g., ingestion, dermal contact, inhalation) to overall risk, and the risk estimates are limited to the inherent exposure parameters (such as days per year exposed) used in calculating the screening values that are used in calculating the risk ratios. This approach can limit the flexibility of the risk manager in making risk management decisions. The resulting risk estimates do, however, incorporate the noted multiple exposure routes, and are appropriate for making health-based determinations for the landfills.

Comparison of Traditional and Streamlined Risk Assessment Approach

Streamlined Risk Assessment Approach	Traditional Risk Assessment Approach
• Appropriate for simple sites, when generic exposure assumptions are appropriate, and summary risk estimates are sufficient	• Appropriate for complex sites, when site-specific exposure assumptions, and exposure-route specific risk estimates are needed for risk management decisions
• Provides chemical-specific risk estimates that are identical to traditional calculations, when exposure assumptions are the same, and all exposure routes are combined	• Exposure routes (i.e., ingestion, inhalation, dermal) can be evaluated separately
• Streamlined, using simple calculations requiring minimal documentation to support the calculations	• Calculations are more complex and require a greater amount of supporting documentation. However, there is greater flexibility to calculate risk only for those scenarios that are directly applicable to the site.
• Exposure assumptions used in the calculations are consistent with those favored by USEPA	• Allows the use of site-specific exposure assumptions allowing the risk calculations to be tailored to the exact exposure scenarios expected at the site

6.1.3 Organization of the HHRA

The overall risk assessment process consists of four key steps: data evaluation and identification of COPCs, exposure assessment, toxicity assessment, and risk characterization. These four steps of risk assessment provide the general outline of a quantitative risk assessment report. Because this HHRA uses the risk ratio approach, the outline and overall format is slightly modified from the traditional HHRA. This HHRA is still consistent with USEPA guidelines as presented in RAGS (USEPA, 1989) and supporting supplemental guidance including the Standard Scopes of Work for HTRW Risk Assessments (USACE, 2001). This HHRA is organized into five sections (including this one), as outlined below.

6.1 Risk Assessment Process;

6.2 Data Evaluation and Identification of COPCs;

6.3 Exposure Assessment;

6.4 Risk Ratio and Screening Criteria Assessment; and

6.5 Risk Assessment Results and Uncertainties.

6.2 DATA EVALUATION AND IDENTIFICATION OF CONSTITUENTS OF POTENTIAL CONCERN

Soil data included in the risk assessment were collected in 1998 and 1999 (Versar, 2004b). Groundwater data were included from the eight most recent sampling events (December 2009 through August 2011) the August 2013 baseline sampling event, and the 2014 annual sampling event. Surface water data were included from the eight most recent sampling events (December 2008 through September 2010). Sediment sampling was conducted in April 2000 (Versar, 2004a). Data validation classified the data through the use of several qualifiers. Data without qualifiers were considered appropriate for risk assessment purposes. Following USEPA guidance (1989), data with J, E or ER, and D qualifiers were treated as detected concentrations and used for risk assessment purposes. U and UJ qualified data were considered to be non-detect, but usable for risk assessment purposes. B and BJ qualified data were treated as non-detect concentrations because the chemical was detected in the associated blank and the estimated chemical concentration in the sample was not five or ten times greater than the concentration in the associated blank (USEPA, 1989). R qualified data were excluded from this risk assessment (USEPA, 1989).

Calcium, iron, magnesium, potassium, and sodium were not evaluated in the HHRA because they are essential nutrients and are not expected to pose a risk to human health.

COPCs at FTMM-08 are those site-related contaminants for which there is evidence of a potential release due to historical site activities. COPCs are then evaluated for their potential to pose a risk to human health. Soil, groundwater, surface water, and sediment have been sampled at the site. Sampling results for the chemicals detected in each environmental medium are summarized in **Tables 4.1 through 4.4** (soil), **Tables 4.6** and **4.7** (groundwater), **Table 4.9** (surface water), and **Table 4.11** (sediment). COPCs identified in soil include specific VOCs, SVOCs, PCBs, and metals as listed in **Table 4.5**. COPCs identified in groundwater include specific VOCs and one metal as listed in **Table 4.8**. No COPCs were identified in surface water (**Table 4.10**) or sediment (**Table 4.11**). Therefore, surface water and sediment will not be evaluated further in the risk assessment.

6.2.1 Risk Ratio Approach

The quantitative HHRA uses a risk ratio approach to quantify potential cumulative carcinogenic risk and non-carcinogenic hazard for COPCs in each contaminated medium. The general risk assessment process for FTMM-08 is summarized in **Figure 6.1**.

Exposure point concentrations (EPC) are the concentrations of chemicals in a given medium to which a receptor may be exposed at a specific location known as the "exposure point". The maximum detected concentration or the 95% Upper Confidence Limit (UCL) on the mean for each environmental medium was used as the EPC.

To calculate a risk ratio, the EPC is divided by the appropriate screening level for the environmental medium to determine the ratio of the site concentration to a risk-based health protective concentration. Risk ratios were calculated for outdoor workers, utility workers, and recreational users exposed to soil (Section 6.5.1), and for utility workers exposed to groundwater (Section 6.5.2). The criteria used to calculate the risk ratios for soil were the USEPA industrial soil RSLs (TR = 1 x 10^{-6}; THQ = 1.0) while site-specific screening levels calculated in support of this project were used to calculate the risk ratios for utility worker and recreational user exposure to soil. The criteria used to calculate risk ratios for groundwater were site-specific screening levels calculated in support of this project for utility workers exposed to groundwater. The site-specific soil and groundwater screening levels for utility workers and recreational users are presented in **Appendix B**.

The cumulative risk at FTMM-08 was calculated using the maximum detected concentration from any well. If the cumulative carcinogenic risk for all groundwater samples was within or less than the risk level that may require remedial action (i.e., 1 x 10^{-4}) or if the non-carcinogenic hazard quotient is less than 1, no further evaluation was conducted. If the carcinogenic risk and/or hazard quotient are greater than the USEPA acceptable range, the risk estimate was further refined to calculate the risk and hazard at individual wells. Evaluation of risk/hazard for individual wells provides a more accurate representation of exposure, since potential future exposure to groundwater would assume that a utility worker would excavate and encounter groundwater at a specific point, represented by a single well.

After calculating the risk ratios for individual COPCs, the ratios are then summed to determine the cumulative risk. Cumulative non-carcinogenic risk ratios greater than one indicate a potentially unacceptable non-carcinogenic risk. Cumulative carcinogenic risk ratios greater than the upper end of USEPA's risk level of 1 x 10^{-4} that may require remedial action indicate a potentially unacceptable carcinogenic risk.

After the cumulative carcinogenic risk or non-carcinogenic hazards were calculated, the COPCs posing the greatest risk or hazard were identified. These COPCs are the primary contributors to cumulative risk. Initially, the maximum detected concentration of each COPC was used as the EPC. Use of maximum concentrations generally provides a conservative (i.e., health-protective) estimate of exposure to that chemical. However, the use of maximum detected concentrations overestimates the potential exposure if elevated concentrations of a contaminant are limited to a small portion of a potential exposure area. Therefore, an average concentration, represented by the 95% Upper Confidence Limit (95% UCL) on the mean, can be used as the EPC. The 95% UCL better represents the concentration that a receptor may be exposed to in a given area over an extended exposure duration. To provide a more accurate estimate of exposure,

the 95% UCL is calculated for each primary contributor to cumulative risk. The cumulative risk is then calculated using the 95% UCL in place of the maximum detected concentration for primary risk drivers. The selected EPCs (maximum detected concentration or the 95% UCL) are identified on the risk ratio tables.

Generally, use of 95% UCL on the mean provides a conservative (i.e., health-protective) estimate of exposure to that chemical, but better represents the concentration that a receptor may be exposed to over a period of time. Therefore, the 95% UCL is less likely to overestimate the potential exposure. The 95% UCL for soil was calculated using parametric methods (for a normal or lognormal distribution) or nonparametric methods if data are not normally or lognormally distributed (USEPA 2002). Data distribution was tested using the Shapiro-Wilk test prior to calculating the 95% UCL. Statistical evaluation is not conducted for analytes with fewer than eight detected concentrations in a data set. 95% UCLs were calculated using ProUCL (Version 5.0) (USEPA, 2013a). ProUCL output, including summary statistics, graphic representations of the data distribution (quantile plot), and outlier tests are provided in **Appendix B.**

Lead is not included in the cumulative risk ratios. Following USEPA guidance, lead was evaluated based on the potential for exposure to increase blood lead levels and not the potential for carcinogenic or non-carcinogenic risks. Therefore, lead concentrations (based on either the simple arithmetic mean of the maximum detected concentration or the 95% UCL, as appropriate) at the site are directly compared to the screening level. A ratio of the site concentration to the screening value will be calculated. For soil, the screening value is the Industrial Soil RSL (TR = 1×10^{-6}; THQ = 1.0) is used for outdoor workers, and the calculated site-specific utility worker or recreational user screening levels. If lead concentrations at the site exceed the screening level, then unacceptable risk may occur. However, if lead concentrations are lower than the screening level, then further evaluation of the risk associated with exposure to lead is not required and further management of the risk associated with exposure to lead will not be required.

USEPA's Adult Lead Model (ALM) is the recommended approach for assessing nonresidential adult risks and uses a set of equations that relate soil lead concentrations to blood lead concentrations in women of child-bearing age and their fetuses as a result of chronic exposure (USEPA, 2003a). To determine the screening level for utility workers, the ALM was used, assuming that the utility worker is onsite for 30 days per year, and assumed to have a soil ingestion rate of 330 mg/day. However, recreational users are expected to have intermittent exposures to lead in soil at the site, rather than chronic exposures. Therefore, to determine the appropriate screening level for recreational users at the site, the ALM was modified to address the adolescent and adult (USEPA, 2003b). Recreational users at the site are assumed to be onsite one day per week for 50 weeks of the year. Adolescent recreational users (from ages 6 to <16) are assumed to have a soil ingestion rate of 100 mg/day, while adult recreational users have a soil ingestion rate of 50 mg/day. The ALM output is provided in **Appendix B**.

The ALM assumes a baseline blood lead level to ensure that exposure does not result in exceedances of a target blood lead level when considered additively. The ALM references two different National Health and Nutrition Examination Survey (NHANES) studies that estimated baseline blood lead levels in adults. To determine a soil concentration that would not result in a blood lead level (considering a baseline blood lead level) greater than 10 micrograms per deciliter (µg/dL), the soil concentration is adjusted until the model returns a blood lead level of

10 µg/dL. The ALM can also calculate a preliminary remediation goal (PRG) for women of child-bearing age, assuming a fetal blood lead level of 10 µg/dL. The screening level for the utility worker, is based on the lowest (most conservative) PRG that attains a target fetal blood lead level of 10 µg/dL (1,400 mg/kg). The ALM was also used to calculate a PRG assuming that a pregnant adolescent recreational user contacted lead contaminated soil at the site. This is a conservative approach, since the probability of a pregnant recreational user contacting soil at the site in a manner consistent with the exposure assumptions used in this calculation is quite low. The lowest (most conservative) PRG that attains a target fetal blood lead level of 10 µg/dL is 2,700 mg/kg, which is protective of the pregnant adolescent recreational user. Therefore, this PRG is used as the screening level for recreational users exposed to lead in soil at the site. If lead concentrations at the site exceed the screening level, then unacceptable risk is possible. However, if lead concentrations are less than the screening level, then further evaluation of the risk associated with exposure to lead is not required and further management of the risk associated with exposure to lead will not be required.

USEPA guidance (USEPA, 1989) also allows elimination of COPCs if they are detected in fewer than 5 percent of the samples in a particular medium. This would require at least 20 samples. However, detection frequency was only qualitatively reviewed on a case by case basis in this HHRA and only following the risk ratio analysis (e.g., infrequently detected chemicals that are driving an unacceptable risk are identified). Thus, constituents were not screened from the HHRA based on detection frequency.

6.2.2 Soil Samples

This HHRA evaluated chemicals identified as COPCs, which includes those analytes attributed to site activities for which there is evidence of a release to environmental media. Organic compounds detected at concentrations greater than screening levels, and metals detected at concentrations greater than screening levels and greater than background concentrations, were identified as COPCs and included in the risk assessment. Surface soil at the site is defined as soil collected at depths less than two feet from the surface and would include exposure pathways with no, or very minor, soil disturbance (e.g., wind dispersion of surface soil, landscaping/grounds keeping activities in surface soil). Surface soil samples were collected in 1998 and 1999 (Versar, 2004a). Each of the soil samples, except those prepared for VOC analysis, was collected between approximately 6 and 12 inches bgs. VOC samples were collected at approximately 24 inches bgs since surface soil would not be expected to retain volatile constituents over time. **Tables 4.1 through Table 4.4** and **Figure 2.1** summarize the soil sampling location and sampling depths. **Table 4.5** shows the COPCs in soil that are evaluated in the HHRA.

6.2.3 Groundwater Samples

Multiple rounds of groundwater samples were collected from monitoring wells at FTMM-08 (**Figure 1.3**). Many of these samples were collected at the same wells during different time frames and not all sampling activities included analyses for a complete suite of analytes.

The locations of groundwater monitoring wells at FTMM-08 are provided on **Figure 1.3**. **Tables 2.1 and 2.2** present the well construction summary and groundwater sampling summary. The most recent eight quarters of groundwater monitoring data (December 2009 through August 2011), the August 2013 baseline sampling event, and the 2014 annual sampling event were

included in the HHRA. **Table 4.6** summarizes the groundwater samples collected between March 2008 and August 2011. **Table 4.7** summarizes the groundwater samples collected in the 2013 and 2014 annual sampling events. This HHRA evaluated chemicals identified as COPCs, which includes those analytes attributed to site activities for which there is evidence of a release to environmental media. Organic compounds detected at concentrations greater than screening levels, and metals detected at concentrations greater than screening levels and greater than background concentrations, were identified as COPCs (**Table 4.8**) and included in the risk assessment.

6.2.4 Sediment Samples

Sediment sampling was conducted in April 2000 (Versar, 2004a). In 2000, 21 sediment samples were collected at surface (0 to 6 inches below grade) and near-surface (6 to 12 inches below grade) depths from 10 sample location; samples were analyzed for PCBs. While there were detections of PCBs in two shallow sediment samples (**Table 4.11**), no COPCs were identified in sediment at FTMM-08. Therefore, there are no complete exposure pathways for sediment.

6.2.5 Surface Water Samples

The most recent eight quarters of surface water monitoring data (December 2008 through September 2010) for surface water sampling locations SS-5 (upstream of FTMM-08 in Mill Creek), SS-14 (far upstream along Lafetra Creek), SS-15 (far upstream beyond the MP boundary in Mill Creek), and SS-27 (downstream, near the FTMM-18 landfill) are summarized in **Table 4.9**. No site-related COPCs were identified in surface water at FTMM-08 (**Table 4.10**). Therefore, exposure to surface water at FTMM-08 is considered an incomplete pathway, and no unacceptable risks due to exposure to surface water are expected.

6.3 EXPOSURE ASSESSMENT

The objective of the exposure assessment is to estimate the type and magnitude of potential exposures to COPCs at the site. The exposure assessment includes identification of potential exposure pathways, receptors, and exposure scenarios, as well as quantification of exposure. Characterization of the exposure setting and identification of potentially exposed receptors and exposure pathways are discussed in this section. A (CSM) showing results of the exposure assessment is shown on **Figure 6.2**. Quantification of exposure involves quantifying the magnitude, frequency, and duration of exposure for the receptors and exposure pathways of concern.

Soil and groundwater are evaluated as the environmental media of concern at FTMM-08. The exposure pathways relevant to the site are described in this exposure assessment of the HHRA and shown in the CSM.

6.3.1 Conceptual Site Model

A CSM is an effective tool for defining site dynamics, streamlining risk assessments, establishing exposure hypotheses, and developing appropriate corrective actions. The CSM diagram for FTMM-08 is provided as **Figure 6.2**. CSMs are useful for identifying completed exposure pathways between the contaminated media and potential receptors. The purpose of the CSM is to aid in understanding and describing a site and presents the assumptions regarding:

- Suspected sources and types of contaminants present;

- Contaminant release and transport mechanisms;
- Affected media;
- Potential receptors that could come in contact with site-related contaminants in affected media under current and future land use scenarios; and
- Potential routes of exposure.

An overall description of contaminant sources, affected media, and removal actions was provided in previous Sections. Potential receptors and completed exposure pathways are discussed in the following subsections.

6.3.2 Potential Receptors

Potential human receptors are defined as individuals who may be exposed to site-related contaminants in environmental media. Consistent with USEPA RAGS (1989) guidance, current and reasonably anticipated land uses were considered in the receptor selection process.

USEPA (1989) defines an exposure pathway as: "The course a chemical or physical agent takes from a source to an exposed organism. An exposure pathway describes a unique mechanism by which an individual or population is exposed to chemicals or physical agents at or originating from a site. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source, a transport/exposure medium (e.g., air) or media (in cases of intermedia transfer) is also included."

A review of potential exposure pathways links the sources, locations, and types of environmental releases with receptor locations and activity patterns to determine the significant pathways of concern.

Observations and reasonable assumptions for the potential human receptors for FTMM-08 are listed below, and summarized in **Figure 6.2**.

- **Current Receptors** – FTMM-08 is a landfill that was used for domestic and industrial waste disposal. The Fort Monmouth Economic Redevelopment Planning Authority (FMERPA) reuse plan calls for FTMM-08 to be designated as passive open space (EDAW, Inc., 2008). It is currently vacant and unused. There are no new development activities occurring. Current activities at the site include infrequent visits, such as those that would be performed during routine landscaping/mowing, resulting in exposure to COPCs in soil through incidental ingestion, dermal contact, and inhalation of volatiles and particulates. Exposure to soil by a current outdoor worker was assumed for this current land use scenario. This calculation assumes an exposure frequency of 225 days per year and an exposure duration of 25 years. Thus, it provides a conservative evaluation for a potential current outdoor worker who would be expected to have less frequent exposure at this particular site. Two creeks (Parkers and Lafetra) converge near the southwestern corner of FTMM-08. Both Parkers Creek and Lafetra Creek originate off-post. The surface water is not used as potable water supply. Incidental ingestion of surface water/sediment, inhalation of volatiles from surface water/sediment, and dermal contact with surface water/sediment were assumed for this current land use scenario. However, no COPCs are identified in surface water or sediment at the site. Therefore, current exposure to surface water/sediment is an incomplete pathway.

- **Future Receptors** – Evaluation of the outdoor worker as a current receptor would be protective of future outdoor workers and is not re-evaluated for the future scenario. There are no current plans to develop commercial buildings at the site, but if commercial buildings are constructed in the future, indoor workers would potentially be exposed to soil. Evaluation of the current outdoor worker would also protect the hypothetical future indoor commercial worker, because indoor commercial worker exposure to soil would be much less than the outdoor worker. Thus, the indoor worker exposure scenario is considered to be conservatively evaluated by the above current outdoor worker scenario. Future utility workers may be present on the site, involved in single short-term excavation projects at a given location, such as would be expected to be associated with repair or installation of utility lines. The calculation of the exposure of a utility worker to soil assumes that the utility crew would not return to the same location to conduct additional repairs, installation, or maintenance of underground utility lines. Utility workers are assumed to be on-site for 30 days of the year, over the course of one year and would be expected to come in contact with soil and shallow groundwater during excavation activities. Utility workers may also come in contact with surface water and sediment. However, surface water and sediment pathways are incomplete pathways and not evaluated here. The FMERPA reuse plan calls for FTMM-08 to be designated as passive open space. Because the site is planned to be passive open space, a future recreational user could be exposed to COPCs in the soil through incidental ingestion, dermal contact, and inhalation of volatiles and particulates. The calculation of the exposure of a recreational user to soil assumed that the person is onsite once a week for 50 weeks of the year, for 24 years. Further, the site-specific screening value for the recreational user assumes that a portion of the time is spent on the site as an adolescent (age 6 to <16) and a portion as an adult. This provides a conservative evaluation for a future recreational user that is not likely to be onsite every week of the year. The site is not residential and no plans are in place to convert it to residential use. Therefore, the future residential scenario is not further evaluated.

- **Current Exposure to Groundwater** – Site groundwater is not used by current outdoor workers or indoor workers, because municipal water is provided for use. Therefore, there are no current exposures to groundwater.

- **Future Exposure to Groundwater** – In areas with shallow groundwater (i.e., groundwater present at depths less than 15 ft bgs), utility workers may also be exposed to contaminants present in groundwater. Future utility workers may be present on the site, involved in single short-term excavation projects at a given location, such as would be expected to be associated with repair or installation of utility lines. The calculation of the exposure of a utility worker to groundwater assumes that the utility crew would not return in subsequent years to the same location to conduct additional repairs, installation, or maintenance of underground utility lines. Utility workers are assumed to be on-site for 30 days of the year, over the course of one year. Outdoor workers, indoor workers, and recreational users are not exposed to groundwater. Therefore, the outdoor worker, indoor worker, and recreational user groundwater exposure pathways are incomplete. The site is not

planned for future residential use. Therefore, future residential exposure to groundwater is an incomplete exposure pathway.

6.3.3 Exposure Pathways

6.3.3.1 Soil Exposure Pathways

Exposure to site soil occurs by direct contact (ingestion and dermal contact) with site soil and wind dispersion of soil resulting in inhalation of contaminants. The receptors and pathways evaluated for soil are listed below.

- Incidental ingestion of soil, inhalation of volatiles and particulates from soil, and dermal contact with soil by a current outdoor worker. This calculation assumes an exposure frequency of 225 days per year and an exposure duration of 25 years (USEPA, 2013). Thus, it provides a very conservative evaluation for a potential current outdoor worker who would be expected to have much less exposure at this particular site;
- Incidental ingestion of soil, inhalation of volatiles and particulates from soil, and dermal contact with soil by a future outdoor worker. This is a potentially complete exposure pathway but is not included in the risk ratio analysis because it is assumed to be conservatively evaluated under the current outdoor worker scenario (based on the exposure frequency and exposure duration);
- Incidental ingestion of soil, inhalation of volatiles and particulates from soil, and dermal contact with soil by a future indoor worker. This is a potentially complete exposure pathway but is not included in the risk ratio analysis because it is assumed to be conservatively evaluated under the current outdoor worker scenario (future indoor workers would have much less exposure to soil);
- Incidental ingestion of soil, inhalation of volatiles and particulates from soil, and dermal contact with soil by a future utility worker. This calculation assumes an exposure frequency of 30 days per year, and an exposure duration of one year; and
- Incidental ingestion of soil, inhalation of volatiles and particulates from soil, and dermal contact with soil by a future recreational user. This calculation assumes an exposure frequency of 50 days per year (one time per week) for 24 years. Further the calculation assumes that a portion of the recreational user exposure occurs as an adolescent (age 6- <16) and a portion as an adult. Thus, it provides a conservative evaluation for a future recreational user that is expected to be onsite less frequently than one time per week.

6.3.3.2 Groundwater Exposure Pathways

Exposure to groundwater can occur through direct contact (ingestion and dermal contact) and through inhalation of volatile COPCs present in groundwater. However, FTMM-08 is currently vacant and unused and there are no plans for development of the land. There are no supply wells present on-site and none are planned. All potable water is provided through municipal water supplies. However, future utility workers may encounter shallow groundwater during excavation activities, and be exposed to COPCs in groundwater through incidental ingestion of groundwater and dermal contact. This calculation assumes an exposure frequency of 30 days per year, and an exposure duration of one year. The USEPA calculator used to develop

groundwater screening levels for utility workers does not include a pathway for inhalation of volatiles present in groundwater.

6.3.3.3 Surface Water and Sediment Exposure Pathways

Two creeks (Mill and Lafetra) converge near the southwestern corner of FTMM-08 to feed into Parkers Creek. Both Mill Creek and Lafetra Creek originate off-post. The surface water is not used as potable water resource. No COPCs were identified in surface water or sediment, so the surface water and sediment exposure pathways are incomplete.

6.4 RISK RATIO AND SCREENING CRITERIA ASSESSMENT

This HHRA used a risk ratio approach to quantify potential carcinogenic risk and non-carcinogenic hazard for each chemical identified as a COPC. This section describes the risk ratio assessment used in this HHRA.

6.4.1 Risk Ratio Assessment

The risk ratio method considered risk due to exposure to soil and groundwater at FTMM-08. For the risk ratio assessment, the EPC, either the maximum detected concentrations or the 95% UCL (as defined in Section 6.2.1), was used to calculate risk for soil and groundwater.

In the risk ratio analysis, the EPC was divided by the appropriate screening level (as described in Section 6.2.1) for the environmental medium to calculate the risk ratio. The risk ratio for soil was calculated for outdoor workers, utility workers, and recreational users. The risk ratio screening levels for soil are the USEPA Industrial Soil RSLs (TR = 1 x 10^{-6}; THQ = 1.0) for outdoor workers, site-specific SLs for utility workers and recreational users calculated in support of this project. The risk ratio for groundwater was calculated using site-specific SLs for utility workers.

Following calculation of the risk ratios for individual chemicals, the ratios were then summed to determine the cumulative risk due to exposure to each medium. Cumulative non-carcinogenic risk ratios greater than 1 (one) indicate a potential unacceptable non-carcinogenic risk. Cumulative carcinogenic risk ratios greater than the upper end of USEPA's acceptable risk range of 1 x 10^{-4} to 1 x 10^{-6} indicate a potential unacceptable carcinogenic risk.

6.4.2 Risk Ratio Equations

Carcinogenic risks were estimated using the following equation.

$$\text{Cumulative Risk} = \sum (TR) \frac{(EPC_i)}{SL_{c-i}}$$

where:

Cumulative Risk = Cumulative risk for carcinogenic COPCs one through "i" (unitless), where $(TR)\frac{(EPC_i)}{SL_{c-i}}$ is the chemical-specific carcinogenic risk for chemical "i";

TR = Target lifetime excess carcinogenic risk of 10^{-6} (unitless);

EPC_i = Exposure point concentration for chemical "i" (mg/kg for soil or µg/L for water); and

SL_{c-i} = Medium–specific human health screening level (mg/kg for soil or µg/L for water) for carcinogenic chemical "i".

Non-carcinogenic hazards were estimated using the following equation.

where:

$$HI = \sum (THQ)\frac{(EPC_i)}{SL_{nc-i}}$$

HI = Cumulative hazard index for non-carcinogenic COPCs one through "i" (unitless), where $(THQ)\frac{(EPC_i)}{SL_{nc-i}}$ is the chemical-specific non-carcinogenic hazard quotient (HQ) for chemical "i";

THQ = Target hazard quotient of one (unitless);

EPC_i = Exposure point concentration for chemical "i" (mg/kg for soil or µg/L for water); and

SL_{nc-i} = Medium-specific human health screening levels (mg/kg for soil or µg/L for water) for non-carcinogenic chemical "i".

6.4.3 Screening Criteria

6.4.3.1 Soil Screening Criteria

The soil results were evaluated using USEPA Industrial RSLs for outdoor workers, site-specific screening levels for utility workers and recreational users. The USEPA RSL is based on the combined exposure (i.e., incidental ingestion of soil, dermal contact and inhalation of particulates and volatiles). The utility worker and recreational user screening levels were calculated using the USEPA RSL calculator, based on site-specific exposure parameters (USEPA, 2013). The utility worker and recreational user equations used in the calculator are provided in **Appendix B**. The calculated utility worker and recreational user screening levels are based on combined exposure (i.e., incidental ingestion, dermal contact, and inhalation of particulates and volatiles). The exposure parameters for utility workers assumed exposure of 30 days per year, over the duration of one year. The utility worker is assumed to be an adult. The exposure parameters for recreational users assumed exposure of one time per week. Thus, there are 50 exposure events per year for 24 years. Further, the recreational user is expected to be onsite partially as an adolescent (age 6 to <16 years) and partially as an adult. The exposure parameters used in the utility worker and recreational user SL calculations are shown in **Appendix B**. The outdoor worker screening levels are provided in the USEPA Industrial RSL tables, but for comparison, the exposure parameters for the outdoor worker are also shown in **Appendix B**. The USEPA RSL table indicates whether a chemical is carcinogenic, non-carcinogenic, or both. If a chemical is considered both carcinogenic and non-carcinogenic

(exerting both carcinogenic and non-carcinogenic effects), it will be included in the cumulative cancer risk calculation and the cumulative hazard quotient calculation.

6.4.3.2 Groundwater Screening Levels

Groundwater analytical results were evaluated using site-specific screening levels for utility workers. The utility worker screening levels were calculated using the USEPA RSL calculator, based on site-specific exposure parameters (USEPA, 2013). The utility worker equations used in the calculator are provided in **Appendix B**. The calculated utility worker SL is based on combined exposure (i.e., incidental ingestion and dermal contact, but the calculator does not provide a calculation for inhalation of volatiles). The exposure parameters for utility workers assumed exposure of 30 days per year, over the duration of one year. The utility worker is assumed to be an adult. The USEPA RSL table indicates whether a chemical is carcinogenic, non-carcinogenic, or both. If a chemical is considered both carcinogenic and non-carcinogenic, (exerting both carcinogenic and non-carcinogenic effects), it was included in the cumulative cancer risk calculation and the cumulative hazard quotient calculation.

6.5 RISK ASSESSMENT RESULTS AND UNCERTAINTIES

The primary objective of this HHRA was to quantitatively characterize the human health risk and hazard associated with current and reasonably expected future exposure to contaminated media at FTMM-08. As discussed in Section 6.3, potentially complete exposure pathways for the site were evaluated. The exposure pathways were outlined in Section 6.3 and are also shown on the CSM (**Figure 6.2**). The results of the risk ratio quantification are presented in this section.

6.5.1 Estimated Risks for Soil

The risk ratio calculations for potential exposure to soil by a current and future outdoor worker are shown in **Table 6.1,** by a future utility worker are shown in **Table 6.2,** and by a future recreational user are shown in **Table 6.3.**

For outdoor workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 9×10^{-4}, exceeds 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The carcinogenic risk in soil to an outdoor worker is driven primarily by exposure to the carcinogenic polycyclic aromatic hydrocarbons (PAHs) (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluroanthene, dibenz(a,h)anthracene), contributing between 1 and 52% of cumulative risk, benzidine (contributing about 13% of the cumulative risk), and the PCB Aroclor-1242 (contributing about 9% of cumulative risk) (**Table 6.1)**.

No unacceptable carcinogenic risk was calculated for soil at FTMM-08 for utility workers. The cumulative carcinogenic risk ratio for utility workers is 1×10^{-5} (**Table 6.2**). The cumulative carcinogenic risk is less than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. Therefore, unacceptable carcinogenic risk associated with exposure to soil by utility workers is unlikely.

The cumulative carcinogenic risk ratio for recreational users, 3×10^{-4} is greater than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The contributors to cumulative risk for recreational users follow the same patterns of risk as for the outdoor worker (**Table 6.3**).

Unacceptable hazards are calculated for soil, using the maximum detected concentrations or the 95% UCL for risk drivers. The cumulative hazard index is 2 for outdoor workers, which is greater than the target hazard index of 1, driven primarily by arsenic and cobalt, each of which contribute 20% (combined 40%) to the total non-carcinogenic hazard for outdoor workers (**Table 6.1**). For the utility worker, the cumulative hazard index of 0.6 (**Table 6.2)** and for the recreational user, the cumulative hazard index of 0.3 (**Table 6.3)**, do not exceed the target hazard index of 1. Therefore, no potential non-carcinogenic effects to utility workers and recreational users are expected from exposure to soil at FTMM-08.

Lead was evaluated separately from the other chemicals. The ratio of the site lead concentration to the screening value for outdoor workers is 0.3, for future utility workers is 0.2, and for future recreational users is 0.1. The ratios are less than 1. Therefore, no potential effects are expected from exposure to lead in soil at FTMM-08.

6.5.2 Estimated Risks for Groundwater

The calculated risk ratios for exposure of a future utility worker to COPCs detected in groundwater from any well on site are shown in **Table 6.4**.

No unacceptable carcinogenic risk was calculated for groundwater at FTMM-08 for utility workers. The cumulative carcinogenic risk ratio for utility workers is 7×10^{-10} (**Table 6.4**). The cumulative carcinogenic risk is less than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. Therefore, unacceptable carcinogenic risk associated with exposure to groundwater for utility workers are unlikely.

No unacceptable hazards are calculated for the non-carcinogenic COPCs in groundwater at FTMM-08. The cumulative hazard index for future utility workers is 0.04 (**Table 6.4**). Cumulative hazards for potential future receptors are less than 1. Therefore, no potential non-carcinogenic effects are expected from exposure to soil at FTMM-08.

6.5.3 Risk Assessment Uncertainties

All risk assessments involve use of assumptions, professional judgments, and imperfect data to varying degrees, which result in uncertainty in the final estimates of risk. Risk assessment in general is often based on conservative assumptions and scenarios. Uncertainty can be introduced into a risk assessment at every step of the process outlined in this document. Uncertainties are present in a risk assessment because it requires integration of the following:

- Release of constituents into the environment, and the areal and vertical distribution of these materials in soil and groundwater;
- Fate and transport of constituents in a variety of different and variable environments by processes that are often poorly understood or too complex to quantify accurately;
- Potential for adverse health effects in humans based on extrapolations from animal studies; and
- Probability of adverse effects in a human population that is highly variable with respect to genetics, age, activity level, and lifestyle.

This section qualitatively describes the inherent and site-specific uncertainties of the assessment process.

6.5.3.1 Uncertainty in Data Collection and Evaluation

The analysis of uncertainties focuses on determining whether the available data are representative of contaminant concentrations and site conditions, and whether features of sampling, analyses, or statistical treatment of the data result in an over- or underestimation of potential risk.

EPA's ProUCL 5.0 will calculate UCLs for datasets with small sample sizes in order to accommodate the Incremental Sampling Method (USEPA, 2013). Because the soil samples collected at FTMM-08 were collected as discrete samples, not all UCLs calculated or suggested by ProUCL are appropriate for use in the risk calculations. Parametric and non-parametric methods (i.e., Chebyshev [Mean, Sd], KM [Percentile Bootstrap], KM [Chebyshev], Adjusted Gamma KM, and Approximate Gamma KM,) were used to determine the 95% UCL for the analytes with six or more samples. For analytes with six samples or less, or if ProUCL generated a warning with regards to unreliable statistics, the maximum detected concentration was used as the exposure point concentration. The use of the maximum detected concentration introduces uncertainty into the risk assessment, since the use of one analytical result likely does not accurately represent the concentration of the constituent in the volume of soil that is being evaluated. In cases where the analyte is infrequently detected, the use of the maximum concentration will likely overestimate the actual exposure point concentration, resulting in an overestimate of the risk. In cases with few total samples, the use of the maximum detected concentration can either over- or underestimate the exposure concentration depending on the distribution of the actual concentrations in the medium of concern.

USEPA has researched how to determine the appropriate method for calculating a 95% UCL based on the data distribution, data set size, skewness, and percentage of non-detect observations. The ProUCL output included in **Appendix B** states, "Suggestions regarding the selection of a 95% UCL are provided to help the user select the most appropriate 95% UCL." ProUCL generates UCLs using all available methods for each data set, regardless of the appropriateness of the method. The results listed under "Suggested UCLs to Use" are the results recommended by ProUCL based on data size, data distribution, and skewness of the data set, as well as the results of simulation studies. Where more than one result was listed in the ProUCL output in "Suggested UCLs to Use", the most conservative (highest) of the recommended "Suggested UCLs to Use" was selected for use as the EPC. This is a default selection made without regard to scientific validity. The use of the most conservative UCL may overestimate the EPC and, therefore, the risk.

Detected analytes that do not have screening values are not identified as COPCs. If these analytes are present in environmental media, not including them in the risk assessment may underestimate the risk for exposure to that medium.

Chemicals that were never detected in any samples were eliminated from the HHRA. It is possible that some chemicals may have been present in samples below the sample quantitation limit and not retained in the risk assessment. However, because samples were collected from areas where concentrations were expected to be high and because maximum detected concentrations were used in the HHRA comparisons, it is very unlikely that chemicals were present at health-significant levels and not detected in at least one sample.

6.5.3.2 Uncertainty in Exposure Assessment

The risk assessment estimates are conditional on actual and potential exposure pathways identified at the site. If exposure does not occur, no risks are present. Furthermore, the risk assessment process does not factor in the probability of exposure occurring. For example, there may not be a reason for an outdoor worker to be present on site 225 days per year. The actual exposure for the potential landscaper/groundskeeper is likely to be less often than 225 days per year.

Current land uses and characterization of the site's current physical setting provided the basis for predicting future land use at and in the vicinity of the site. Steady-state conditions were assumed for evaluation of potential future exposures. The assumption of steady-state conditions may tend to overestimate long-term exposure and health risk because contaminant concentrations may decline over time due to natural dissipation processes. In some cases, depending on the contaminant and or the release mechanisms involved, steady-state assumptions could potentially underestimate risk (e.g., a continuous source contributing to contamination in another medium).

There is also some concern as to how well an exposure scenario approximates the actual conditions that a receptor may be exposed to at a given site. Potential human exposures could deviate from those used in the risk assessment through differences in exposure frequency, contact rates, exposure durations, body weight, and life span. Each of these factors has a degree of uncertainty associated with it that could over- or underestimate risk.

Evaluation of risk for recreational user exposure to soil includes calculation of the risk to adolescents. Other sensitive subpopulations such as children, elderly people, pregnant or nursing women, and people with chronic illnesses were not specifically evaluated in this risk assessment. These subpopulations may be more sensitive to certain chemical exposures. However, USEPA generally considers sensitive subpopulations when developing toxicity factors. Additionally, there are no daycare or school facilities, healthcare facilities onsite, nursing homes, retirement communities, or residential areas with children or adolescents onsite currently.

Exposure to lead in soil is evaluated by using the ALM at FTMM-08. The screening values for recreational users are based on the assumption that an adolescent recreational user is pregnant and onsite for 50 days per year. This scenario, while possible, is very unlikely. Therefore, the risk assessment overestimates the risk of exposure to lead in soil to adolescent recreational users at the site.

Exposure to groundwater was evaluated for utility workers to determine the potential risk during routine activities. The utility worker screening levels assume that the worker will be exposed through dermal contact and incidental ingestion. If volatile contaminants are present in groundwater, a utility worker may be exposed to them in groundwater. However, there is no validated model available to quantify the exposure of utility workers to volatiles in groundwater. If volatiles are present in groundwater, and if groundwater is at the depth where trenches are present, volatiles in groundwater are expected to volatilize rapidly in air, thus diluted, and the exposure to utility works is expected to be insignificant.

6.5.3.3 Uncertainty in Toxicity Assessment

Some uncertainty is also inherent in the toxicity values used in the risk assessment. Carcinogenic slope factors and route-specific values were derived only for compounds that have

been shown to cause an increased incidence of tumors in either human or animal studies. This dose-response curve is then assumed to be linear at low doses (e.g., those found in situations of environmental contamination) and is used to predict tumor incidence at low exposure levels. When an animal study is used, the final slope factor is adjusted to account for extrapolation of animal data to humans. If the studies used to derive the slope factor were conducted for less than the life span of the test organism, the final slope factor had also been adjusted to reflect risk associated with lifetime exposure. The chronic RfD for a compound is based on studies where either human or animal populations were exposed to a given compound by a given route of exposure for a major portion of the life span (as a USEPA guideline, seven years to a lifetime; USEPA, 1989). RfDs are derived by determining dose-specific effect levels from available quantitative studies and applying uncertainty factors to the most appropriate effect level to determine a RfD for humans. The slope factors and RfD for compounds are used to calculate the default USEPA RSLs or the calculated utility worker or recreational user screening levels for soil, and are used to calculate the site-specific screening levels for utility workers exposed to groundwater. The screening levels are then based on conservative assumptions, and tend to overestimate risk.

6.5.3.4 Uncertainty in Estimating Chemical Risk

The expression of the potential risk associated with contaminants detected at the site is a result of the combined steps of data evaluation, exposure assessment, and toxicity assessment. This combination can magnify the uncertainties present in these steps of the HHRA process.

Screening criteria are developed using very conservative (health-protective) exposure and intake assumptions. The HHRA comparisons also use conservative concentrations of the chemicals detected at the site. In addition, screening criteria used in the HHRA are considered health-protective for carcinogenic and non-carcinogenic chemical mixtures. Carcinogenic chemicals correspond to the conservative 1×10^{-6} (one in a million) excess cancer risk level, providing a very protective screening value. Non-carcinogens use a target HQ of 1 and also account for the cumulative non-cancer risk for chemicals with the same toxic endpoint or mechanism of action.

6.5.4 Conclusions

The human health risk assessment was conducted to evaluate the potential for human health effects as a result of potential exposures to chemicals in soil or groundwater at FTMM-08.

The cumulative carcinogenic risks and non-carcinogenic hazards estimated for current and future outdoor worker, future utility workers, and future recreational user exposure to soil, and future utility worker exposure to groundwater are as follows.

- For outdoor workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 9×10^{-4} is greater than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The cumulative non-carcinogenic hazard index is 2, which is greater than the cumulative hazard goal of 1. Lead was evaluated separately from carcinogenic and non-carcinogenic COPCs. The ratio of lead concentrations to screening levels for lead in soil is 0.3, which is less than 1. These results indicate that there is an unacceptable carcinogenic risk and an unacceptable non-carcinogenic hazard from exposure to soil at FTMM-08. However, no effects are expected for exposure to lead in soil.

- For utility workers exposed to surface soil at FTMM-08, the cumulative carcinogenic risk of 1×10^{-5} is less than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The cumulative non-carcinogenic hazard is 0.6, which is less than the cumulative hazard goal of 1. Lead was evaluated separately from carcinogenic and non-carcinogenic COPCs. The ratio of the concentration of lead in soil to the screening level is 0.2, which is less than 1. These results indicate that unacceptable carcinogenic risk, as well as non-carcinogenic effects or effects due to lead in soil are unlikely for future utility workers.
- For recreational users exposed to surface soil at FTMM-08, the cumulative carcinogenic risk of 3×10^{-4} is greater than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The cumulative hazard index is 0.3, which is less than the cumulative hazard goal of 1. Lead was evaluated separately from carcinogenic and non-carcinogenic COPCs. The ratio of the concentration of lead in soil to the screening level is 0.1, which is less than 1. These results indicate that there is an unacceptable carcinogenic risk from exposure to soil at FTMM-08. However, no non-carcinogenic effects or effects due to lead in soil are expected.
- For utility worker exposed to groundwater, the cumulative carcinogenic risks for all wells is 7×10^{-10}, which is less than 1×10^{-4}, which is the cancer risk above which a remedial action may be required. The cumulative non-carcinogenic hazard index for all wells is 0.04, which is less than the hazard goal of 1. Therefore, no potential non-carcinogenic or carcinogenic effects to utility workers are expected from exposure to groundwater at FTMM-08.

SECTION 7
REMEDIAL INVESTIGATION SUMMARY AND CONCLUSIONS

7.1 NATURE AND EXTENT OF CONTAMINATION

The targeted constituents exceeding NJDEP and/or USEPA comparison criteria in sampled media at FTMM-08 are summarized below.

7.1.1 Soil

A total of 614 near-surface soil samples were collected from the top two feet of the soil column at FTMM-08 during RI sampling activities in 1998 and 1999, and an additional 293 supplemental soil samples were collected from 22 Geoprobe® borings advanced around well M8MW24. Concentrations of the following constituents exceeded the current NJDEP RDCSRS and/or USEPA residential RSL in at least one near-surface soil sample:

- The VOC benzene;
- The SVOCs 1,4-dichlorobenzene, naphthalene, 2-methylnapthalene, acenaphthene, dibenzofuran, fluorene, hexachlorobenzene, anthracene, fluoranthene, benzidine, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;
- The pesticides heptachlor, heptachlor epoxide, 4,4'-DDE, dieldrin, 4,4'-DDD, 4,4'-DDT, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1242, and Aroclor 1260; and
- The metals aluminum, antimony, arsenic, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

Concentrations of the following constituents exceeded the current NJDEP NRDCSRS and/or USEPA industrial RSL in at least one near-surface soil sample:

- The SVOCs naphthalene, 2-methylnaphthalene, dibenzofuran, hexachlorobenzene, fluoranthene, benzidine, pyrene, chrysene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;
- The pesticides heptachlor, heptachlor epoxide, dieldrin, 4,4'-DDD, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1242, and Aroclor 1260; and
- The metals antimony, arsenic, cobalt, iron, lead, mercury, nickel, and thallium.

Concentrations of the following constituents exceeded the current NJDEP Impact to Ground Water SL and/or USEPA Groundwater Protection RSL in at least one near-surface soil sample:

- The VOCs MTBE, acetone, carbon disulfide, methylene chloride (a common laboratory contaminant), 2-butanone (a common laboratory contaminant), benzene, toluene, PCE, chlorobenzene, ethylbenzene, and m+p xylenes;
- The SVOCs aniline, 1,4-dichlorobenzene, benzyl alcohol, 4-methylphenol, nitrobenzene, 2-4-dimethylphenol, naphthalene, 4-chloroaniline, 2-methylnapthalene,

acenaphthene, dibenzofuran, diethylphthalate, fluorene, azobenzene, hexachlorobenzene, anthracene, di-n-butylphthalate, fluoranthene, benzidine, pyrene, butylbenzylphthalate, chrysene, 3,3'-dichlorobenzidine, bis(2-ethylhexyl)phthalate, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoroanthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene;

- The pesticides gamma-BHC, heptachlor, heptachlor epoxide, 4,4'-DDE, dieldrin, endrin, 4,4'-DDD, 4,4'-DDT, gamma-chlordane, and alpha-chlordane;
- The PCBs Aroclor 1016, Aroclor 1221, Aroclor 1242, and Aroclor 1260; and
- The metals aluminum, antimony, arsenic, barium, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

The maximum-detected concentrations of all of the metals targeted for analysis exceed their maximum background concentrations for the MP presented in Weston (1995).

Based on comparison to USEPA Residential Soil RSLs and (in the case of metals) maximum background concentrations presented in Weston (1995), COPCs in soil that are evaluated in the risk assessment include 1) the VOC benzene; 2) the SVOCs 1,4-dichlorobenzene, naphthalene, 2-methylnapthalene, acenaphthene, dibenzofuran, fluorene, hexachlorobenzene, anthracene, fluoranthene, benzidine, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene; 3) the PCBs Aroclor 1016, Aroclor 1242, and Aroclor 1260; and 4) the metals aluminum, antimony, arsenic, beryllium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc. Pesticides in near-surface soil were not evaluated as COPCs because their widespread presence in near-surface soil at FTMM-08 (i.e., surficial fill material covering the landfill) is indicative of proper application of pesticides for their intended purpose and not of a landfill-related release.

7.1.2 Groundwater

Previous reports identified chlorobenzene, PCE, and benzene as the primary constituents of concern in FTMM-08 groundwater. Reductions in PCE concentrations and the presence of degradation byproducts in FTMM-08 monitoring wells have been historically interpreted to indicate that that the HRC® injection program conducted at and near FTMM-05 (located just south of FTMM-08) and also at the upgradient boundary of FTMM-08 was enhancing the natural attenuation of PCE. During the 10 most recent sampling events (8 quarterly events, the 2013 baseline event, and the 2014 annual sampling event), concentrations of the following constituents exceeded the current NJDEP GWQS and/or USEPA Tapwater RSLs in at least one sample:

- The VOCs benzene, chlorobenzene, bromodichloromethane, chloroform, dibromochloromethane, *cis*-1,2-DCE, 1,4-dichlorobenzene, naphthalene, PCE, TCE, and VC;
- The pesticide 4,4'-DDD; and
- The metals aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, sodium, vanadium, and zinc.

The distributions of PCE, TCE, cis-1,2-DCE, VC, chloroform, bromodichloromethane, and dibromochloromethane in groundwater suggest that they are sourced hydraulically upgradient of FTMM-08 (i.e., at and east to northeast of FTMM-05) and are not associated with FTMM-08. Therefore, they were not identified as site-related COPCs for FTMM-08.

The metals detected at concentrations exceeding their NJDEP GWQS and/or USEPA Tapwater RSL and also the maximum background concentration for the MP established by Weston (1995) include antimony, barium, beryllium, cadmium, cobalt, copper, lead, manganese, mercury, selenium, silver, sodium, and zinc. However, the only metal that is not readily attributable to background conditions is manganese.

Based on established decision logic, COPCs in groundwater that were evaluated in the risk assessment include the VOCs benzene, chlorobenzene, 1,4-dichlorobenzene, and naphthalene; and the metal manganese.

7.1.3 Surface Water

Surface water samples were collected at 4 to 5 locations in Mill Creek, Lafetra Creek, and Parkers Creek from October 1996 through September 2010. These locations have historically been associated with FTMM-08 in previously prepared reports, and are located upstream and downstream of FTMM-08.

The most recent eight quarters of monitoring data (December 2008 through September 2010) were evaluated as being representative of recent conditions. Concentrations of VOCs detected (PCE and cis-1,2-DCE) were greater at upstream locations SS-15 and SS-5, than at downstream location SS-27, indicating an upstream off-site source. The metals arsenic, mercury, and thallium were detected at similar or greater concentrations in upstream samples compared to downstream samples, and are not directly attributable to FTMM-08. Lead was only detected in one sample from downstream location SS-27; concentrations in other samples from this location were non-detect or of much lower magnitude; therefore the single elevated lead detection is anomalous, not representative of the larger data set, and not directly attributable to FTMM-08. No site-related COPCs were identified in surface water.

7.1.4 Sediment

Sediment sampling was conducted in Parkers Creek in April 2000 to evaluate PCB-related impacts to stream sediments associated with FTMM-08. Aroclor 1254 was detected in two of 21 samples at concentrations exceeding NJDEP and/or USEPA screening criteria. These sediment samples were collected very close to an outlet of a storm drain that crosses FTMM-08, and while it is possible that impacted soil from FTMM-08 may have been transported into Parkers Creek via the storm drain, there are likely one or more additional sources. Although PCBs were detected in near-surface soil at isolated locations at FTMM-08, Aroclor 1254 was not detected in the soil samples. Therefore, it is likely that one or more sources upstream or otherwise outside of FTMM-08 have contributed PCBs to the sediments in Parkers Creek. There are no site-related COPCs in sediment associated with FTMM-08.

7.2 CONTAMINANT FATE AND TRANSPORT

Primary constituents of interest in terms of contaminant fate and transport at FTMM-08 include VOCs, SVOCs, PCBs, and metals in soil, and VOCs and manganese in groundwater. VOCs in vadose zone soil are expected to have a low persistence and moderate to high mobility.

In contrast, SVOCs, PCBs, and metals in near-surface soil at FTMM-08 are expected to be relatively persistent and immobile limiting their impact on groundwater quality.

VOCs that dissolve into groundwater are expected to be moderately to highly mobile and transported laterally with advective groundwater flow, although some sorption to aquifer matrix materials will occur (especially with naphthalene). VOC concentrations in the saturated zone will attenuate over time as a result of destructive and non-destructive attenuation mechanisms; substantial migration of VOCs in groundwater at concentrations of regulatory concern is not likely.

Metals in groundwater will likely be moderately to highly sorbed to aquifer matrix materials and thus have more limited mobility than VOCs, but their mobility in groundwater is dependent on too many metal- and site-specific factors to predict with confidence. The presence of abundant iron in soil may enhance sorption of metals to the soil matrix in the saturated zone. As the mass of bioavailable organic carbon (e.g., landfilled organic waste) in the reaction zone becomes depleted, the groundwater system will likely become more oxidizing, and concentrations of manganese in groundwater should decrease.

7.3 RISK ASSESSMENT

An evaluation of the potential risk resulting from human exposure to soil, surface water, sediment, and groundwater was conducted as part of this RI. No COPCs were identified in surface water or sediment. Therefore, further evaluation of surface water and sediment in the risk assessment was not conducted. The HHRA utilized a conservative approach that assumed exposure to the maximum detected concentration or the 95% UCL of analytes in soil and groundwater. Lead in soil was evaluated separately from carcinogenic and non-carcinogenic COPCs.

For outdoor workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 9×10^{-4} exceeds upper end of the target range 1×10^{-4}, which is the risk level above which remedial action may be required. The cumulative non-carcinogenic hazard is 2, which is greater than the cumulative target hazard index of 1. For outdoor workers exposed to lead in soil at FTMM-08, the ratio of lead concentration to screening level is 0.3, which is less than the target hazard quotient of 1. . Therefore, there are potential unacceptable risks and hazards associated with outdoor workers exposure to soil, but no effects due to exposure to lead in soil are expected for outdoor workers.

For utility workers exposed to soil at FTMM-08, the cumulative carcinogenic risk of 1×10^{-5} is less than target risk range1×10^{-4}, which is the risk level above which remedial action may be required. The cumulative non-carcinogenic hazard is 0.6, which is less than the cumulative target hazard index of 1. For utility workers exposed to lead in soil at FTMM-08, the ratio of lead concentration to screening level is 0.2, which is less than the target hazard quotient of 1. Therefore, no unacceptable risks, non-carcinogenic effects, or effects due to exposure to lead in soil are expected as a result of.

For recreational users exposed to soil at FTMM-08, the cumulative carcinogenic risk of 3×10^{-4} exceeds upper end of the cumulative target risk range1×10^{-4}, which is the risk level above which remedial action may be required. The cumulative non-carcinogenic hazard is 0.3, which is less than the cumulative target hazard index of 1. For recreational users exposed to lead in soil at FTMM-08, the lead hazard is 0.1, which is less than the target hazard quotient of 1.

Therefore, no potential non-carcinogenic effects, or effects due to exposure to lead in soil are expected of recreational users. However, there is a potential unacceptable carcinogenic risk associated with exposure of recreational users to soil.

Future utility workers may be exposed to groundwater. For utility workers exposed to groundwater, the cumulative carcinogenic risk of 7×10^{-10} is less than the cumulative target risk range of 1×10^{-4} , which is the risk level above which remedial action may be required. The cumulative non-carcinogenic hazard for any well is 0.04, which is less than the target hazard quotient of 1. Therefore, there are no unacceptable risks and non-carcinogenic effects risks associated with exposure of utility workers to groundwater are not expected.

7.4 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the RI, including the risk assessment, no unacceptable risks were calculated for groundwater, surface water, or sediment; however, unacceptable risks and hazards to human health associated with direct contact with constituents of concern COCs in soil (as discussed below in Section 8) are present. Therefore, a FS is recommended and provided in Sections 8 through 12.

SECTION 8
REMEDIAL ACTION OBJECTIVES, CLEANUP GOALS, AND ARARS

The purpose of a FS is to identify, develop, and perform a detailed analysis of potential remedial alternatives that meet the remedial action objectives (RAOs) for site FTMM-08, so that decision-makers will have adequate information to select the most appropriate remedial alternative. In this section, RAOs for FTMM-08 are defined. RAOs must be clearly defined so that appropriate general response actions (GRAs) and specific response actions (SRAs) can be selected. Finally, ARARs and "to be considered" (TBC) criteria are identified.

8.1 REMEDIAL ACTION OBJECTIVES

RAOs are specific goals for protecting human health and the environment from the environmental hazards identified in the risk assessment. RAOs can be accomplished by ensuring exposure pathways are not completed or by reducing concentrations of COCs at exposure points to protective concentrations.

Specifically, the RAOs developed in this section address the risks and hazards identified in the risk assessment. The RAO for site FTMM-08 is:

- Protect public health by preventing future workers and site recreational users from exposures to COCs in soil that could pose an excessive carcinogenic risk or non-carcinogenic (non-cancer) hazard.

8.2 ARARS AND TBC CRITERIA

The NCP established a general requirement that response actions comply with ARARs, based on site-specific conditions. "Applicable requirements" are promulgated environmental cleanup standards, standards of control, and other substantive requirements, criteria, or limitations that specifically address a hazardous substance, remedial action, location, or other circumstances found at a release site. "Relevant and appropriate requirements" are promulgated environmental cleanup standards, standards of control, and other substantive requirement, criteria, or limitations that, while not legally "applicable" to site conditions, address problems or situations sufficiently similar to those encountered at the site that their use is well suited for the site. Other TBC criteria, such as non-promulgated policy and guidance documents, may also be useful in directing a response action at a site.

COCs are the "the hazardous substances, pollutants, and contaminants that, at the end of the risk assessment, are found to be the risk drivers or those that may actually pose unacceptable human or ecological risks. The COCs were derived from the list of COPCs that are contributing to risk shown on **Tables 6.1 and 6.3**. COCs are specifically identified in this section (**Table 8.1**). Only the analytes that are considered primary risk drivers in either the cumulative risk (carcinogenic analytes) or the HQ (i.e., for non-carcinogenic analytes), and that were detected at concentrations greater than the NJDEP NRDCSRS for soil were retained as COCs. The cleanup goals for the soil COCs identified at FTMM-08 are presented on **Table 8.1**.

Because federal promulgated standards (i.e., ARARs) for soil remediation are not available, the numerical cleanup criteria for soil are based on TBC criteria. The soil cleanup goals for COCs are the direct contact soil remediation standards (non-residential) published in the N.J.A.C. 7:26D (Remediation Standards).

8.2.1 PCB Cleanup Levels

Cleanup levels for PCBs are coordinated between the NJDEP SRP and the TSCA. Under the current NJDEP SRP policy, PCBs detected below 0.2 mg/kg would not require remediation. In a non-residential or restricted use scenario such as site FTMM-08, PCBs detected at concentrations greater than 0.2 mg/kg requires a deed notice, and when above 1 mg/kg requires a deed notice and cap. The NJDEP SRP policy since 1993 allows for contaminants with appropriate institutional controls (IC) and engineering controls (EC) to be non-permanently remediated as long as the remedy is found to be protective of human health and the environment. Because only substantive provisions (i.e., appropriate cleanup levels that are more stringent than federal requirements) of the Administrative Requirements for the Remediation of Contaminated Sites [N.J.A.C. 7:26C-7] apply under the Defense Environmental Restoration Program (DERP), state administrative requirements such as remediation permits will not be required prior to transfer.

For the impact to groundwater pathway, the default Soil Screening Level of 0.2 mg/kg may be used as a site-specific IGW standard. Alternatively, other procedures, most notably the Synthetic Precipitation Leaching Procedure, may be implemented to determine a site specific standard, which in most cases will be greater than the default Soil Screening Level. Even when PCBs are present at the screening or site specific IGW standards, or at concentrations exceeding the site specific IGW standard, there may be enough of a buffer between the deepest concentrations and the water table to preclude the PCB contamination reaching the water table. This can be demonstrated by using the SESOIL transport model or the Immobile Chemicals option. In such an instance remediation may not be necessary, providing the direct contact pathways have been addressed satisfactorily. These and other options are detailed in the IGW guidance at http://www.nj.gov/dep/srp/guidance/rs/.

TSCA provides federal PCB remediation requirements, regulated by the USEPA, which must be coordinated with the NJDEP SRP policy during PCB remediation projects. The TSCA regulations are principally found in 40 CFR Part 761. TSCA stipulates a range of self-implementing cleanup levels based upon contaminated media and future high and low occupancy scenarios that are identified in 40 CFR § 761.61(a)(4). FTMM-02 is considered low occupancy under TSCA, which has a cleanup level of 25 mg/kg. Bulk remediation wastes in low occupancy areas may remain between 25 and 50 mg/kg if the site is secured by a fence and marked with a sign including the ML mark, or remain between 25 and 100 if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and 761.61 (a)(8).

Since NJDEP SRP policy allows for contaminants with appropriate institutional and engineering controls to be non-permanently remediated as long as the remedy is found to be protective of human health and the environment, and TSCA considers sites such as FTMM-08 to be remediated if PCB concentrations do not exceed 25 mg/kg, removal of PCBs greater than 25 mg/kg is the cleanup level for Site FTMM-08.

At Site FTMM-08, 250 soil borings were advanced in previous investigations for PCB analysis; 15 of the 250 soil borings encompassing three isolated areas resulted in PCB concentrations above 1 mg/kg. Concentrations over 1 mg/kg ranged from 3.03 mg/kg at 12 inches bgs in boring B159 (see **Figure 9-3**) to 5,654 mg/kg at 12 inches bgs in boring B164; two additional borings resulted in PCB concentrations exceeding 100 mg/kg (boring B3; 342 mg/kg at 174 inches bgs; and boring B11; 275 mg/kg at 54 inches bgs). Complete historical PCB results are found in **Appendix A**.

SECTION 9
IDENTIFICATION AND SCREENING OF RESPONSE ACTIONS

The NCP establishes expectations for the types of remedies that will be used for addressing principal threat and low-level threat wastes. The concept of principal threat waste and low level threat waste developed in the NCP is applied on a site-specific basis when characterizing source material. Source material is defined as material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, to air, or acts as a source for direct exposure. Low-level threat wastes are wastes that exhibit a low toxicity, low mobility in the environment or are near health-based levels. In contrast, principal threat wastes are highly toxic or highly mobiles wastes that would present a significant risk to human health or the environment should exposure occur. The waste remaining at FTMM-08 is considered a low-level threat waste rather than a principal threat waste, with the exception of three areas encompassing four out of 293 soil borings that were advanced as part of a 1999 soil investigation that resulted in PCB concentrations greater than 50 mg/kg.

The NCP establishes the expectation to:

- Use treatment to address the principal threats posed by a site, wherever practicable;
- Use engineering controls (EC), such as containment, for wastes that pose a relatively low long-term threat or where treatment is impractical;
- Use a combination of methods, as appropriate to achieve protection of human health and the environment; and
- Use institutional controls (IC) such as limiting water use and deed restrictions to supplement EC as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances.

The presumptive remedy for municipal landfill sites is containment, which may include some or all of the following components as appropriate, based in site specific conditions:

- Excavation and off-site disposal of soil “hot spots”;
- Landfill cap;
- Source area groundwater control to contain a dissolved-phase plume;
- Leachate collection and treatment;
- Landfill gas collection and treatment; and
- Institutional controls to supplement engineering controls.

The USEPA established source containment as the presumptive remedy for municipal landfill sites regulated under CERCLA in September of 1993. The use of the presumptive remedy allows for a streamlined feasibility study that eliminates the technology screening step from the feasibility study process and analyzes only the alternatives consisting of appropriate component of the presumptive remedy and, as required by the NCP, the no action alternative. Use of the presumptive remedy for FTMM-08 is appropriate because of the following:

- High-level PCB contaminated (e.g., 25 mg/kg and greater) material would be removed to an off-site disposal facility; PCBs less than 50 mg/kg would be sent to a

non-hazardous landfill, and PCBs in exceedance of 50 mg/kg would be send to a hazardous landfill,

- Remaining risks to human health and the environment are low-level,
- The landfill wastes present are domestic and industrial wastes, which is consistent with the description of municipal waste landfills, and
- FTMM-08 does not include hazardous waste land application units, surface impoundments, injection wells or waste piles.

In addition to the bullets listed above, waste containment at FTMM-08 is compatible with future land use planned for the site. FTMM-08 and the other landfill areas at FTMM are designated as future passive open space areas. The following subsections will develop the components of the containment presumptive remedy that are appropriate for FTMM-08.

9.1 GENERAL RESPONSE ACTIONS

A GRA is a broadly defined group, class, or type of action that could possibly be used to achieve RAOs. The GRAs that were evaluated for soil and as part of this FS are:

- **No Action**: Contaminated media are left in place and nothing is done;
- **Risk and Hazard Management (Institutional and Engineering Controls)**: Contaminated media are left in place and institutional controls such as deed restrictions or EC such as signs and fences and are used to prevent receptors from being exposed to contamination at concentrations that could present a hazard;
- **Containment**: These technologies are generally appropriate for wastes that pose a relatively low-level threat or where treatment is impracticable. Containment technologies range from simple to complex depending on the risks and hazards identified at a site; and
- **Removal**: Contaminated media and solid wastes are physically removed from the subsurface and are either treated or properly disposed off site.

9.1.1 No Action

No action refers to a site remedy where no active remediation or risk and hazard management are implemented. Under DERP, evaluation of a no-action remedial alternative is required, pursuant to the NCP, 42 Code of Federal Regulations (CFR) 300.430 et seq., to provide a baseline for comparison with other remedial alternatives (Office of the Deputy Under Secretary of Defense-Installations and Environment, 2001). Existing groundwater monitoring wells would be abandoned, and no formal programs would be put into place to control potential receptor exposures to site COCs. The No Action alternative will not meet the RAOs.

9.1.2 Risk and Hazard Management

Risk and hazard management uses enforceable LUCs, including both ICs and/or ECs to prevent or limit exposure of receptors to solid waste and potentially harmful concentrations of COCs. Examples of ICs include deed notices, zoning ordinances, special use permits, restrictions on groundwater extraction, CEAs, and restrictions on excavation. Examples of ECs include physical barriers and access restrictions (e.g., fencing, locked gates, and warning signs). LUCs are cost-effective, reliable, and immediately effective; they can be implemented either alone or

with other remedial components. Inspections are typically required to document long-term effectiveness of LUCs. The administrative feasibility of and cost to implement LUCs depend on site-specific circumstances (e.g., whether a site is under the direct operational control of the federal government or has been transferred to non-federal ownership). Typically, this GRA is easily implemented.

To implement LUCs at FTMM-08, institutional controls in the form of a deed notice would be filed for the FTMM-08 property at the time the property is transferred out of federal control. The NJDEP's TRSR (7:26E) requires a property owner to file a deed notice pursuant to N.J.A.C. 7:26C-7.2 when implementing a soil remedial action where the residual contaminant concentrations remaining will exceed the RDCSRS. The deed notice would prevent residential use of the property and would prevent excavation of landfilled soils.

In addition, institutional controls in the form of a CEA would be established to prevent access to groundwater containing concentrations of benzene and PCE that exceed the GWQS. While manganese also exceeds the GWQS, and was not attributed to background, it has not been directly attributed to a release at the site. Rather, dissolved manganese concentrations are elevated due to the presence of fuel hydrocarbons such as benzene, and the resulting reducing groundwater environment that causes naturally occurring manganese in soil to partition into the groundwater. As the mass of bioavailable organic carbon (e.g., landfilled organic waste) in the reaction zone becomes depleted, the groundwater system will likely become more oxidizing, and concentrations of manganese in groundwater should decrease. Additionally, manganese is a "nuisance constituent" that has a secondary USEPA drinking water standard, and is not associated with a risk to a hypothetical residential user at the site. The CEA is a groundwater use restriction to protect a hypothetical residential user from potential risk associated with groundwater as a potable water source. The CEA would remain in place until NJDEP GWQS are achieved at the site.

9.1.3 Containment

Landfill containment is EPA's presumptive remedy for landfill remediation. In general, landfill containment has three primary objectives (AFCEE, 1999) including:

1. **Minimizing Infiltration**: Water that seeps through the waste may produce landfill leachate, which can potentially contaminate underlying soil and groundwater;
2. **Isolating Waste**: A landfill cover provides a barrier to prevent direct contact with exposed waste and receptors at the ground surface and prevents movement and future exposure of waste caused by wind and water erosion; and
3. **Controlling Landfill Gases**: The production of methane or other explosive or toxic gases poses a potential hazard in the landfill vicinity.

Containment technologies range from simple to complex depending on the risks and hazards identified at a site, whether the landfill has a bottom liner, waste types, climate, depth to groundwater, and age of the landfill. Landfill caps can range from a one-layer system of soil to a complex multi-layer system of soils and geosynthetics. In general, less complex systems are required in dry climates and more complex systems are required in wet climates. Examples of containment approaches include regrading of the site, soil covers, evapotranspiration covers,

asphalt/concrete cap, Resource Conservation and Recovery Act (RCRA) Subtitle D cap for non-hazardous waste landfills, and RCRA Subtitle C landfill cap for hazardous waste applications.

Based on preliminary screening of the applicable technologies at FTMM-08 (**Table 9.1**), the containment of buried solid waste using a vegetative soil cover or functional equivalent would significantly reduce the likelihood of exposure to buried landfill waste at the site. A layer of vegetative soil or functional equivalent would be placed over the landfill and graded to mitigate the effects of water and wind erosion, and would effectively manages risks and hazards. The use of a vegetative soil cover or functional equivalent would prevent future exposure to solid waste at the landfill, prevent exposure to COCs in soil, and control surface water runoff and erosion. Soil covers using geosynthetics, clay layers, have been rejected and were not evaluated in this feasibility study because of the lack of added protectiveness, high capital costs, and long-term maintenance requirements.

9.1.4 Removal

Landfill removal includes excavation of the landfill contents and disposing of the recovered materials in an existing off-site permitted facility. Landfill removal with off-site disposal reclamation, would involve the use of traditional earth moving equipment including front end loaders and backhoes to excavate the land fill contents. Recovered soil would be stockpiled on site and sampled. Soil that meets the cleanup standards could then be reused as backfill material, or taken to a sanitary landfill for use as daily cover. Recovered solid waste materials would be recycled if feasible or taken to a permitted municipal solid waste landfill. The objective of landfill reclamation for FTMM-08 would be to eliminate the need to implement LUCs and maintenance of the sites and therefore reduce the long-term management costs.

Because of the planned future land use for the site (passive open space) and the high relative cost and risk of removing the landfill debris, and relatively low risk of COCs in soil, full removal was not considered practicable for FTMM-08 and landfill removal was not carried through to the detailed analysis of alternatives.

Removal actions also include using engineered approaches to reduce toxicity, mobility, and volume (TMV) of contaminants in the subsurface, thereby preventing or minimizing exposure of receptors to concentrations of site contaminants that could pose an unacceptable risk or hazard. This technology would be used prior to installing a containment technology to remove isolated areas with concentrations of PCBs exceeding 25 mg/kg. Contaminated media would be transported off-site for treatment and/or disposal. The following rational was used to either rule out or recommend the use of limited removal actions at FTMM-08:

- Three areas were identified that have PCB concentrations in soil above the 1 mg/kg NJDEP non-residential direct contact standard (**Figure 9.1**). Concentrations at one of the three areas (Area A) had PCB concentrations that were >25 mg/kg and <100 mg/kg threshold that would require the area to be secured by a fence or covered with a low permeability cap. Two of the areas (Areas A and Area B) had at least one detection of total PCBs at concentrations greater than 100 mg/kg. Areas A and B are shown on **Figure 9.2**. Area C is shown on **Figure 9.3**. Because fencing or a low permeability cap over a small area of the site would not be desirable considering the future land use of the site, and because concentrations exceed the 100 mg/kg

threshold for the self-implementing cleanup guidance under TSCA, limited removal for PBCs concentrations greater than 25 mg/kg will be retained;

- Several SVOCs including PAHs were identified as COCs in soil, however they are relatively immobile in the environment and they were not identified as COCs in groundwater, therefore limited excavation is not recommended for these COCs; and
- The metal arsenic was identified as COCs in soil, however exceedances of background or the NJDEP NRDCSRS were detected infrequently (see Table 4.5) and were distributed throughout the site, therefore limited excavation is not recommended for arsenic.

9.2 IDENTIFICATION OF SPECIFIC RESPONSE ACTIONS

This section presents the SRAs that have been retained for further evaluation in this FS. Taken individually, the SRAs may not address all of the RAOs; however, SRAs that pass through the screening process can be combined into remedial alternatives that would achieve the RAOs (except for the "no action" alternative). Based on the evaluation presented in Section 9.1 and in **Table 9.1** the following SRAs were retained for assembly into remedial alternatives (Section 10) and subsequent detailed and comparative analysis, which is presented in Section 11:

1. No Action;
2. Risk and Hazard Management – ICs/ECs;
3. Removal – Limited removal of isolated areas with concentrations of PCBs exceeding 25 mg/kg; and
4. Containment - Vegetative soil cover or functional equivalent, revegetation, and grading.

SECTION 10
DESCRIPTION OF REMEDIAL ALTERNATIVES

Remedial alternatives were developed for FTMM-08 through assembly of SRAs to create remedies that are effective, implementable, and have reasonable costs to address site contamination and mitigate potential risks. SRAs were previously identified and screened to reduce the number of SRAs to be carried forward for further analysis.

This section develops remedial alternatives for FTMM-08 that are further evaluated in the following sections. The following remedial alternatives were developed for evaluation:

Alternative 1: No Action; and

Alternative 2: ICs/ECs, – Limited removal of isolated areas with concentrations of PCBs exceeding 25 mg/kg, and vegetative soil cover or functional equivalent with regrading.

Although no COCs were identified for groundwater, ICs in Alternative 2 will include a groundwater use restriction in the form of a CEA to protect a hypothetical residential user from potential risk associated with groundwater as a potable water source. The following text describes the two remedial alternatives being evaluated for FTMM-08**.** Estimates of the time frame required for each remedial alternative to meet the RAOs were based on site data, site conditions, and professional judgment. Cost estimates for each alternative (including summary and detailed cost information) are provided in **Appendix C**.

10.1 ALTERNATIVE 1 – NO ACTION

The 'No Action' alternative is included as required under the NCP to provide a baseline comparison with other actions (42 CFR 300.430(e)(6)). No formalized LUCs would be established or monitored to control potential receptor exposures to site-related COCs, and no active remediation would be performed.

The estimated cost of Alternative 1 is $28,000 (**Appendix C,** Table C.1A). Costs associated with abandonment of 16 groundwater monitoring wells are included as part of this remedial alternative, and the abandonment activities could be completed in less than a one-year time frame. Alternative 1 would not achieve the RAOs.

10.2 ALTERNATIVE 2 – INSTITUTIONAL/ENGINEERING CONTROLS – LIMITED REMOVAL OF ISOLATED AREAS WITH CONCENTRATIONS OF PCBS EXCEEDING 25 MG/KG, VEGETATIVE SOIL COVER OR FUNCTIONAL EQUIVALENT WITH REGRADING

Alternative 2 consists of limited removal of soil within the landfill that have PCB concentrations greater than 25 mg/kg, installation of a vegetative soil cover or functional equivalent, and implementing ICs/ECs to control exposure to COCs and landfill debris. ICs would also include a groundwater use restriction due to exceedances of NJDEP Ground Water Quality Standards. Periodic inspections and reporting would be conducted to document the continuing effectiveness of the remedy.

10.2.1 Description of Remedy Components

The remedial components are as follows:

- Establish a deed notice to document the location of the landfill, land use restrictions, and the requirements for inspection and maintenance of the site;
- Excavate three limited areas with PCB concentrations greater than 25 mg/kg. **Figures 9.1 through 9.3** show the location of areas that have detected greater than 1 mg/kg;
- Perform a PDI prior to completing the excavation to further delineate PCBs to 0.2 mg/kg., and to verify the lateral and vertical extent of PCBs above 25 mg/kg for removal purposes. Soil samples were only collected 12-inches bgs in Areas "A" and "B" shown in **Figures 9.1 and 9.2**. The investigation conducted to characterize PCBs near M8MW24 included sampling to a depth of approximately 12.5 feet bgs. For cost estimating purposes, it is assumed that Area A near soil boring B91 measures approximately 30 feet by 30 feet by 2 feet deep (900 square feet; 70 cubic yards), and Area B near soil boring B164 measures approximately 30 feet by 30 feet by 2 feet deep (900 square feet; 70 cubic yards). Area C (**Figure 9.3**), near abandoned well M8MW24 is assumed to be 60 feet by 30 feet, by 10 feet deep (1,800 square feet; 670 cubic yards). It is also assumed that 40 percent of the soil would be non-hazardous, and 60 percent disposed as hazardous material (PCB concentrations greater than 50 mg/kg).
- Install a vegetative soil cover or functional equivalent consistent with the NJDEP Solid Waste regulations (N.J.A.C. 7:26-2A). Additional soil would be added to the existing soil cover to provide a minimum of two feet of soil between the ground surface and landfilled debris. The use of a vegetative soil cover or functional equivalent would prevent COC exposure due to PAHs in soil, and would control surface water runoff and erosion; and
- Implement Land Use Controls (LUCs) to maintain the vegetative soil cover or functional equivalent, and to prevent residential land use. The Army would prepare a Land Use Control Implementation Plan (LUCIP) during the remedy design phase to implement the institutional controls, document the location of the engineering control and identify the procedural responsibilities including landfill cover inspections, monitoring and reporting, and long-term management requirements.
- Establish a CEA to address benzene and PCE, which exceed the NJDEP GWQS and were not attributed to background. Groundwater would be sampled biennially until the final year, when it would be sampled twice;
- Conduct operations and maintenance (O&M) in accordance with N.J.A.C. 7:26C, ARRCS.

10.2.2 Common Elements and Distinguishing Features

The common elements and distinguishing features are as follows:

- Alternative 2 is the presumptive remedy for landfills such as FTMM-08, where the landfilled waste, after limited PCB removal, poses a relatively low long-term threat and treatment is impracticable;
- Because this alternative includes groundwater sampling as part of the CEA, Alternative 2 does not include monitoring well abandonment; however, one well in Area C would be replaced during PCB removal activities; and

- The estimated total present value (TPV) of Remedial Alternative 2 is $2,858,000 (**Appendix C**, Table C.1A) based the initial capital costs for the removal of PCB-contaminated soils over 25 mg/kg, design and construction of the landfill cover and a 30-year life cycle for ICs and CEA.

10.2.3 Expected Outcome

This alternative allows reuse of the site as passive open space which is the consistent with the FTMM redevelopment plan. Because low-level threat landfill debris would remain in place and soil does not meet the standards for unlimited use and unrestricted exposure, a deed notice would be filed at the time the property is transferred out of federal control. The site would require periodic inspections to ensure that the vegetative soil cover or functional equivalent remains protective and the site would be included in future reviews. Groundwater monitoring wells, used for the CEA, may require periodic maintenance such as pad replacement, redevelopment, or lock replacement. A 30-year time period was used for estimating O&M costs.

SECTION 11
COMPARATIVE ANALYSIS OF ALTERNATIVES

This section summarizes information necessary to evaluate the remedial alternatives in accordance with CERCLA and NCP requirements and, to the extent possible, the substantive requirements of N.J.A.C. 7:26E, and presents a comparative analysis of the remedial alternatives.

11.1 EVALUATION CRITERIA

The two remedial alternatives were evaluated with respect to seven of the nine evaluation criteria outlined by the NCP (40 CFR 300.430) and USEPA (1988) guidance for conducting feasibility studies under CERCLA. The nine criteria are briefly described in **Table 11.1**. The remaining two criteria are State and community acceptance of the proposed remedial alternatives. These criteria are evaluated during the public review process.

11.1.1 Analysis of Remedial Alternatives Using NCP Criteria

A description of the nine NCP evaluation criteria is presented in **Table 11.1**. The first two criteria are Threshold Criteria, and must be satisfied for a remedial alternative to be acceptable. Criteria 3 through 7 are Primary Balancing Criteria, and are used to weigh major trade-offs among the remedial alternatives that meet the Threshold Criteria. Criteria 8 and 9 are Modifying Criteria and will be considered once state and community comments are received on the preferred remedial alternative. **Table 11.2** evaluates each remedial alternative with respect to the Threshold and Primary Balancing Criteria.

11.2 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

11.2.1 Threshold Criteria

The two threshold criteria (Overall Protection of Human Health and the Environment, and Compliance with ARARs) are used as pass/fail criteria to reflect the emphasis on these criteria over other evaluation criteria (USEPA, 1988). Remedial alternatives that fail to meet the threshold criteria were removed from further evaluation and not evaluated with respect to the balancing criteria.

11.2.1.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment is measured by whether the RAO is achieved. Achievement of the RAO could not be demonstrated by Alternative 1, and therefore this alternative fails to meet this threshold criterion. Alternative 2 would achieve the RAO and is considered protective of human health and the environment.

11.2.1.2 Compliance with ARARs

Alternative 1, ‘no action’, does not comply with ARARs while Alternative 2 does.

11.2.2 Primary Balancing Criteria

This subsection provides an evaluation of Alternative 2 relative to the five primary balancing criteria. Modifying criteria (state and community acceptance) are not included in this evaluation but will be considered in the selection of the final remedy.

11.2.2.1 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of the remedial alternative to maintain reliable protection of human health and the environment over time. This criterion includes the consideration of residual risk that would remain on-site following remediation (if any), and the adequacy and reliability of controls.

Alternative 1 was not evaluated for its long-term effectiveness and permanence because this alternative did not meet the threshold criteria.

Alternative 2 provides long-term effectiveness and permanence. Isolated removal of PCBs exceeding 25 mg/kg in soil and periodic inspections of the landfill cover and implementation of LUCs and deed restrictions would prevent exposure to COCs in soil.

11.2.2.2 Reduction in Toxicity, Mobility, or Volume through Treatment

Reduction in TMV through treatment refers to the anticipated performance of the treatment technologies that may be included as part of the remedial alternative. Alternative 1 was not evaluated for its reduction in TMV because this alternative did not meet the threshold criteria.

Because soils with PCB concentrations greater than 25 mg/kg would be excavated, reductions of TMV through treatment were not included in the remedy. Landfill wastes would remain in place beneath the soil cover.

11.2.2.3 Short-Term Effectiveness

Short-term effectiveness addresses the time needed to implement the remedy and any adverse impacts to workers, the community, and the environment during construction and operation of the remedy. Alternative 1 was not evaluated for its short-term effectiveness because this alternative did not meet the threshold criteria.

Alternative 2 provides short term effectiveness through the implementation of LUCs. Excavation of soil with PCB concentrations greater than 25 mg/kg presents a relatively low risk to workers and the surrounding community because of the small sizes of the limited excavations. Air monitoring and other safety measures will be implemented when completing the excavation tasks. Because the majority of the waste in place would not be excavated, there is a low risk of workers coming in to contact with the landfilled debris during the landfill cover construction. Additionally the landfill cover construction operation would involve conventional excavation equipment and is a relatively low risk activity.

11.2.2.4 Implementability

Implementability addresses the technical and administrative feasibility of a remedial alternative from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered. The implementability of Alternative 1 was not evaluated because this alternative did not meet the threshold criteria. As part of Alternative 2, both excavation activities and the installation of a vegetative soil cover or functional equivalent would involve the use of conventional excavation equipment and trucks and would be highly implementable.

11.2.2.5 Cost

The estimated TPV cost for remedial Alternative 2 is: $2,858,000. The TPV cost summaries for the remedial alternatives are provided in **Table 11.2**. Detailed cost estimates and the basis of the costs are provided in **Appendix C**.

SECTION 12
PREFERRED REMEDIAL ALTERNATIVE

This section describes the preferred alternative based on the comparative analysis presented in Section 11.

12.1 PREFERRED ALTERNATIVE

The preferred alternative for FTMM-08 is Alternative 2, the presumptive remedy of a vegetative soil cover or functional equivalent, limited excavation of PCBs in soil, and ICs/ECs. Alternative 2 consists of removing soil with PCB concentrations greater than 25 mg/kg, installation of a vegetative soil cover or functional equivalent, and implementing ICs and ECs to control exposure to COCs where unacceptable risk or hazard is possible. Although no COCs were identified for groundwater, ICs would include a groundwater use restriction in the form of a CEA to protect a hypothetical residential user from potential risk associated with groundwater as a potable water source. Periodic inspections and reporting would be conducted to document the continuing effectiveness of the remedy.

12.1.1 Description of Remedy Components

The remedial components are as follows:

- Establish a deed notice to document the location of the landfill, land use restrictions, and the requirements for inspection and maintenance of the site;
- Excavate three limited areas with PCB concentrations greater than 25 mg/kg. **Figures 9.1 through 9.3** show the location of areas that have detected greater than the NJDEP NRDCSRS 1 mg/kg cleanup level. A pre-design investigation (PDI) would be conducted prior to excavation to further delineate PCBs to 0.2 mg/kg and better determine the lateral and vertical extent of PCBs above 25 mg/kg for removal purposes. Soil with total PCB concentrations less than 50 mg/kg will be transported to an off-site municipal disposal facility; soil with concentrations greater than 50 mg/kg will be transported to a hazardous waste disposal facility;
- Install a vegetative soil cover or functional equivalent consistent with the NJDEP Solid Waste regulations (N.J.A.C. 7:26-2A). Additional soil would be added to the existing soil cover to provide a minimum of two feet of soil between the ground surface and landfilled debris. The use of a vegetative soil cover or functional would prevent COC exposure due to PAHs in soil, and would control surface water runoff and erosion; and
- Establish a CEA pursuant to NJDEP's TRSR (N.J.A.C. 7:26E) and ARRCS (N.J.A.C. 7:26C) to address benzene and PCE, which exceed the NJDEP GWQS and were not attributed to background. Groundwater would be sampled biennially until the final year, when it will be sampled twice;
- Conduct O&M in accordance with N.J.A.C. 7:26C, ARRCS.

Additional details on these components are provided below.

A PDI would be required prior to completing the excavation to determine lateral and vertical extent of PCB contamination. For cost estimating purposes, it is assumed that Area A near soil

boring B91 measures approximately 30 feet by 30 feet by 2 feet deep (900 square feet; 70 cubic yards), and Area B near soil boring B164 measures approximately 30 feet by 30 feet by 2 feet deep (900 square feet; 70 cubic yards) (**Figure 9.2**). Area C (**Figure 9.3**), near abandoned well M8MW24 is assumed to be 60 feet by 30 feet, by 10 feet deep (1,800 square feet; 670 cubic yards). It is also assumed that 40 percent of the soil would be non-hazardous, and 60 percent disposed as hazardous material (PCB concentrations greater than 50 mg/kg).

A vegetative soil cover or functional equivalent would be placed over the landfill area after the landfill is regraded to eliminate exposure to COCs in the soil and to improve surface runoff and drainage. The soil cap would be placed consistent with the NJDEP Solid Waste regulations (N.J.A.C. 7:26-2A). Additional soil would be added to the existing soil cover to provide a minimum of two feet of soil between the ground surface and landfilled debris.

LUCs to maintain the vegetative soil cover or functional equivalent and prevent residential land use would also be implemented at FTMM-08. The Army would prepare a LUCIP during the remedy design phase to implement the institutional controls, document the location of the engineering control and identify the procedural responsibilities including landfill cover inspections, monitoring and reporting, and long-term management requirements.

In addition, as part of the ICs, a CEA would be established and would remain in place until NJDEP GWQS are achieved at the Site.

The Army would be responsible for documenting and implementing the LUCs, which is expected to occur through the filing of a deed notice at the time of property transfer, and would also be responsible to conduct reviews to ensure that the LUCs remain protective of human health and the environment. When the property is transferred out of federal control, the LUCs would be incorporated into the title and the new owner would be responsible for complying with the LUCs. Although the Army may later transfer its procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army would retain ultimate responsibility for remedy integrity.

12.2 REMEDY COSTS

The TPV cost of Remedial Alternative 2, based on a discount rate of 1.9 percent, is $2,858,000. The costs associated with the limited removal action is $894,000 and includes a PDI to determine the vertical and lateral extent of PCB-impacted soils, replacement of one monitoring well, excavation and off-site disposal of approximately 810 cubic yards of PCB-impacted soil, and dewatering activities. Costs associated with ICs is $415,000, and include preparation of a LUC Implementation Plan (including the CEA), long term monitoring of the groundwater as part of the CEA, and IC inspection and reporting for a 30-year duration. Costs associated with the vegetative cover is $1,549,000, and include advancement of two geotechnical borings, placement of 18 inches of a soil cover or functional equivalent, followed by six inches of a vegetative cover, grading for runoff, and seeding. The cost estimate is provided in **Appendix C**.

12.3 EXPECTED OUTCOME

This alternative allows reuse of the site as passive open space which is the consistent with the FTMM redevelopment plan. Because low-level threat landfill debris would remain in place and soil does not meet the standards for unlimited use and unrestricted exposure, a deed notice

would be filed in accordance with the NJDEP requirements as defined in the TRSR, at 7:26E, and the ARRCS, at N.J.A.C. 7:26C. The site would require periodic inspections to ensure that the vegetative soil cover or functional equivalent remains protective and the site would be included in future reviews. Groundwater monitoring wells, used for the CEA, may require periodic maintenance such as pad replacement, redevelopment, or lock replacement. A 30-year time period was used for estimating O&M costs.

SECTION 13
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TABLES

Table 1.1 Chronology of Events
Table 2.1 Well Construction Details
Table 2.2 Groundwater Sampling Events
Table 2.3 Surface Water Sampling Events
Table 4.1 Soil Sampling Summary Results - Comparison to NJDEP Standards
Table 4.2 Soil Sampling Summary Results - Comparison to USEPA Criteria
Table 4.3 Results of Supplemental Soil Sampling Around M8MW24 - NJDEP Comparison
Table 4.4 Results of Supplemental Soil Sampling Around M8MW24 – USEPA Comparison
Table 4.5 Soil Sampling Summary of Exceedances
Table 4.6 Groundwater Sampling Summary Results – March 2008 to August 2011
Table 4.7 Groundwater Sampling Summary Results – August 2013 and October 2014
Table 4.8 Groundwater Sampling Summary of Exceedances
Table 4.9 Surface Water Sampling Summary Results
Table 4.10 Surface Water Sampling Summary of Exceedances
Table 4.11 Sediment PCB Results
Table 6.1 Risk Ratio Calculations for Potential Exposure to Soil by a Current/Future Outdoor Worker
Table 6.2 Risk Ratio Calculations for Potential Exposure to Soil by a Future Utility Worker
Table 6.3 Risk Ratio Calculations for Potential Exposure to Soil by a Future Recreational User
Table 6.4 Risk Ratio Calculations for Potential Exposure to Groundwater by a Current/Future Utility Worker
Table 8.1 Constituents of Concern and Cleanup Goals
Table 9.1 Screening of Specific Response Actions
Table 11.1 Criteria for Detailed Evaluation of Remedial Alternatives
Table 11.2 Evaluation of Remedial Alternatives

TABLE 1.1
CHRONOLOGY OF EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

1918 – Fort Monmouth (FTMM) was established.
1980 – William F. Cosulich performed a landfill study which identified major areas on the base where landfill activities occurred. FTMM-08 was not part of the study, but the surrounding area was included. Surface water samples were collected from Parkers Creek, Lafetra Brook, and Mill Creek (USATHAMA, 1988).
1988 – Update of the Initial Installation Assessment of FTMM and Subinstallations: Charles Wood Area and Evans Area. A survey was conducted to determine if any environmental/hazardous waste disposal conditions had changed since the Installation Assessment conducted in 1980 (USATHAMA, 1988).
1993 – An investigation of suspected hazardous waste sites at FTMM was conducted. FTMM-08 was identified, and quarterly surface water sampling results were summarized. Weston performed an investigation of 45 sites identified by FTMM and NJDEP. Additional remedial investigation was recommended for the FTMM-08 landfill (Weston, 1993).
1994 – One monitoring well, 697MW01, installed at the southeast boundary of FTMM-08 during underground storage tank (UST) closure activities performed at building 697.
1994 – Weston performed additional site investigation (SI) activities which included installation of four monitoring wells in 1994 and collection of two rounds of groundwater samples in 1995 (Weston, 1995).
1996 October – Beginning of surface water sampling to evaluate the surface water quality in Parkers Creek. Samples were collected from four locations along Parkers Creek, Lafetra Creek, and Mill Creek. Results are presented in ATC Associates Inc. (ATC, 2000a).
1997 June – Beginning of quarterly groundwater sampling program. Initially, samples were collected from four wells, and the program was later expanded when additional wells were added. Results are presented in ATC (2000a).
1997 – Groundwater and surface water sampling conducted. Results are presented in ATC (2000a).
1998 – Groundwater and surface water sampling conducted. Results are presented in ATC (2000a).
1998 – Seven additional monitoring wells installed in August and September.
1999 – Groundwater and surface water sampling conducted. Results are presented in ATC (2000a).
1999 – Three additional monitoring wells installed in March and November.
1999 – Polychlorinated biphenyls (PCBs) exceeding NJDEP groundwater quality standards (GWQS) were detected in well M8MW24. As a result, a PCB soil delineation investigation was conducted in the area surrounding this well in August through October 1999 (ATC, 2000a).
2000 – Sediment sampling performed to evaluate PCB concentrations in stream sediment (ATC, 2000a).
2000 September – Remedial Action Work Plan (RAWP) for FTMM-08 (ATC, 2000a) presented sampling results for 9 groundwater monitoring wells obtained between June 1997 and March 2000, 4 surface water sampling points between October 1996 and March 2000, and 22 soil borings advanced in 1999.
2000 – Groundwater and surface water sampling conducted. Results are presented in ATC (2000a).
2000 – Hydrogen Release Compound (HRC®) injection program initiated in two areas near the southern edge of FTMM-08, with additional applications in 2002, 2003, 2004, and 2005. Objective was to enhance reductive dechlorination of chlorinated solvents in groundwater.

TABLE 1.1
CHRONOLOGY OF EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

2001 – Groundwater and surface water sampling conducted. Results are presented in Versar (2004b).
2001 August – A groundwater Classification Exception Area Information report for chlorobenzene, tetrachloroethene (PCE), and benzene in groundwater at FTMM-08 was prepared (ATC, 2001).
2002 – Groundwater and surface water sampling conducted. Results through 3rd quarter are presented in Versar (2004b). Fourth quarter results are presented in Versar (2005).
2003 – Groundwater and surface water sampling conducted. Results are presented in Versar (2005).
2004 – Groundwater and surface water sampling conducted. Results are presented in Versar (2005).
2004 March – RI Report for Near-Surface Soils (Versar, 2004a) presented analysis results for near-surface soil samples collected from 250 borings in 1998 and 1999.
2004 May – Remedial Action Progress Report (RAPR) (Versar, 2004b). Presents results of 10 quarterly groundwater sampling events from June 2000 through September 2002, and 12 quarterly rounds of surface water sampling from December 1999 through September 2002.
2005 – FTMM (MP and Charles Wood Area [CWA]) was selected for closure by the Base Realignment and Closure Commission
2005 December – RAPR (Versar 2005) presents results of 8 quarterly groundwater sampling events from December 2002 through August 2004, and 8 quarterly rounds of surface water sampling from September 2002 through August 2004.
2006 – Groundwater and surface water sampling conducted (VEETech, 2010a, 2010b).
2007 – Groundwater and surface water sampling conducted (VEETech, 2010a, 2010b).
2008 – Groundwater and surface water sampling conducted (VEETech, 2010a, 2010b).
2008 June – A Classification Exception Area Information report was prepared for benzene, tetrachloroethylene (PCE), and degradation products of PCE (trichloroethene [TCE], *cis*-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride [VC]) in groundwater at FTMM-08 (Versar, 2008).
2008 August – FTMM submits proposal to NJDEP to conduct a landfill delineation study consisting of test pits and soil borings (U.S. Army, 2012). The request was approved by NJDEP on August 19, 2008.
2009 July – RAPR presents results of 4 quarterly rounds of groundwater sampling conducted from December 2004 through September 2005, and 4 quarterly rounds of surface water sampling conducted from November 2004 through September 2005 (VEETech, 2009).
2009 – Groundwater and surface water sampling conducted. Results are presented in U.S. Army (2012).
2009 – Landfill boundary delineation study performed using test pits (Brinkerhoff, 2011a).
2010 – Groundwater and surface water sampling conducted. Results are presented in U.S. Army (2012).
2010 September – RAPR presents results of 4 quarterly rounds of groundwater sampling conducted from December 2005 through September 2006, and 4 quarterly rounds of surface water sampling conducted from November 2005 through September 2006 (VEETech, 2010a).
2010 September – RAPR presents results of 9 quarterly rounds of groundwater sampling conducted from December 2006 through November 2008, and 9 quarterly rounds of surface water sampling conducted from December 2006 through December 2008 (VEETech, 2010b).
2010 – One additional monitoring well installed in October.
2010 June – Preliminary tidal evaluation of select monitoring wells throughout the Main Post including

TABLE 1.1
CHRONOLOGY OF EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

M8MW22 and M8MW23. FTMM-08 monitoring wells exhibited a rhythmic cycle of groundwater fluctuations indicative of tidal influence. Effects at M8MW23 appear to have been muted because of its distance from Parkers Creek (Brinkerhoff, 2010).
2011 – The base was officially closed on September 15, 2011.
2011 – A CEA was prepared by Brinkerhoff to address PCE, TCE, and VC in groundwater (Brinkerhoff, 2011b), and was subsequently withdrawn by FTMM and was never reviewed or approved by NJDEP.
2012 April – RAPR presents results of 6 quarterly rounds of groundwater sampling conducted from February 2009 through September 2010, and 7 quarterly rounds of surface water sampling conducted from March 2009 through September 2010 (U.S. Army, 2012).
2013 – Groundwater sampling was conducted at 21 FTMM sites including FTMM-08 in August 2013 to re-establish baseline groundwater conditions following the temporary suspension of groundwater sampling in late 2011.
2014 – Additional groundwater sampling was performed in October 2014 as recommended in the Final (2013) Baseline Groundwater Sampling Report (Parsons, 2014).
2015 – NJDEP agreed with the 2013 Baseline Groundwater Sampling Report recommendation to continue annual groundwater sampling for VOCs and lead in specific wells at FTMM-08 (NJDEP, 2015).

TABLE 2.1
WELL CONSTRUCTION DETAILS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Site	Well Permit #	Y Coord. (Northing)	X Coord. (Easting)	Installation Date	Depth (ft bgs)	Casing Length (ft)	Screen Length (ft)	Top of Casing (ft amsl)	Slot Size (inches)
697MW01	29-31776	540045.281	617862.736	9/13/1994	17.50	2.50	15.00	**16.85**	0.02
M8MW11	E201010528	540361.120	617765.502	10/18/2010	20.00	5.00	15.00	26.52	0.01
M8MW12	29-32560	539906.214	617853.002	12/20/1994	15.00	5.00	10.00	13.95	0.01
M8MW13	29-32561	540014.961	617348.986	1/17/1995	15.00	5.00	10.00	7.11	0.01
M8MW14	29-32562	540451.085	617548.164	1/16/1995	15.00	5.00	10.00	9.06	0.01
M8MW15	29-32563	540412.778	617974.375	1/17/1995	14.50	4.50	10.00	6.96	0.01
M8MW16	29-39146	540315.408	618083.299	9/10/1998	13.00	3.00	10.00	**9.62**	0.01
M8MW17	29-39147	540500.099	617872.407	8/31/1998	13.00	3.00	10.00	**8.15**	0.01
M8MW18	29-39148	540556.900	617597.857	8/22/1998	18.00	3.00	15.00	**7.75**	0.01
M8MW19	29-39149	540404.262	617517.429	8/22/1998	18.00	3.00	15.00	**8.62**	0.01
M8MW20	29-39150	540195.124	617424.235	8/22/1998	15.00	5.00	10.00	**8.01**	0.01
M8MW21	29-39151	540021.383	617350.274	8/20/1998	20.00	5.00	15.00	**6.95**	0.01
M8MW22	29-39152	539816.005	617344.315	8/20/1998	20.00	5.00	15.00	**7.23**	0.01
M8MW23	29-40128	539990.859	617686.599	3/30/1999	15.00	3.00	12.00	**10.73**	0.01
RM8MW24	29-41724	540219.813	617835.934	11/12/1999	38.00	13.00	25.00	20.39	0.01
M8MW24 (1)	29-40127	540206.882	617848.224	3/29/1999	18.00	3.00	15.00	20.76	0.01

Notes:
ft = feet
bgs = below ground surface
amsl = above mean sea level
Bolded top of casing elevations represent a mathematical adjustment between earlier North American Datum (NAD) systems and the NAD 88 spatial system; the adjusted monitoring wells will be resurveyed. The wells were reduced 1.09 feet to reflect the changes in the NAD systems.
(1) M8MW24 was sealed due to lack of water and replaced with RM8MW24

TABLE 2.2
GROUNDWATER SAMPLING EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

	Well ID																
Date	697MW01	M8MW11	M8MW12	M8MW13	M8MW14	M8MW15	697MW01	M8MW16	M8MW17	M8MW18	M8MW19	M8MW20	M8MW21	M8MW22	M8MW23	M8MW24
6/24/1997	--	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P		--	--	--	--	--	--	--	--	--
8/25/1997	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
10/29/1997	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
2/26/1998	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
6/4/1998	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
8/28/1998	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
9/23/1998	--	--	--	--	--	--	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--
10/20/1998	--	--	--	--	--	--	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--
11/4/1998	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--	--	--	--	--	--	--	--
1/27/1999	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--
4/14/1999	--	--	V,S,M,P	--	--	--	--	--	--	--	--	--	--	--	V,S,M,P	V,S,M,P
4/28/1999	--	--	V,S,M,P	--	--	--	--	--	--	--	--	--	--	--	V,S,M,P	V,S,M,P
6/22/1999	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--	--
9/23/1999	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
12/28/1999	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	--
3/15/2000	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
6/5/2000	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
9/6/2000	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
12/13/2000	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
3/20/2001	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
6/8/2001	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
9/24/2001	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
12/17/2001	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
3/21/2002	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
6/11/2002	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
9/23/2002	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
12/13/2002	V,S,M	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
3/21/2003	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
5/30/2003	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
8/22/2003	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
12/30/2003	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
3/9/2004	V,S,M,P	--	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P	V,S,M,P
6/28/2004	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
8/30/2004	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
12/21/2004	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
3/16/2005	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
6/7/2005	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
9/23/2005	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
12/28/2005	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
3/17/2006	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V

TABLE 2.2
GROUNDWATER SAMPLING EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

	Well ID															
Date	697MW01	M8MW11	M8MW12	M8MW13	M8MW14	M8MW15	697MW01	M8MW16	M8MW17	M8MW18	M8MW19	M8MW20	M8MW21	M8MW22	M8MW23	M8MW24
6/8/2006	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
9/27/2006	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
12/19/2006	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
3/30/2007	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
5/29/2007	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
8/30/2007	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
9/14/2007	P	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
12/28/2007	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
3/14/2008	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
6/5/2008	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
9/5/2008	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
11/21/2008	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V
2/9/2009	--	--	P	--	--	--	--	--	--	--	--	--	--	--	--	P
2/23/2009	V,P	--	V,P	V	V	V	V	V	V	V	V	V	V	V	V	V,P
6/27/2009	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V, P[1]
9/21/2009	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V, P[1]
12/8/2009	V	--	V	V	V	V	V	V	V	V	V	V	V	V	V	V, P[1]
3/19/2010	V,M	--	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
6/29/2010	V,M	--	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
9/29/2010	V,M	--	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
12/23/2010	V,M	--	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
3/9/2011	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
5/25/2011	V,M	--	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
8/11/2011	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M	V,M
8/15/2013	--	--	--	V,M,P	--	--	--	--	--	--	V,M,P	V,M,P	V,M,P	--	--	--
8/16/2013	--	--	V,M,P	--	V,M,P	--	--	--	V,M,P	--	--	--	--	V,M,P	--	--
8/19/2013	--	--	--	--	--	V,M,P	--	--	--	V,M,P	--	--	--	--	V,M,P	V,M,P
8/20/2013	--	--	--	--	--	--	--	V,M,P	--	--	--	--	--	--	--	--
10/1/2014	V,M,P	--	V	--	--	V	--	V	M	--	--	--	M	--	--	V

Notes:
V = volatile organic compounds + tentatively-identified compounds (TICs), S = semivolatile organic compounds + TICs, M = TAL metals,
P = pesticides and polychlorinated biphenyls (PCBs), dash (--) = not sampled.
[1] = limited list of pesticides sampled: 4,'4-DDE and 4,4'-DDE only.

TABLE 2.3
SURFACE WATER SAMPLING EVENTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

	Location				
Date	**SS-5**	**SS-7**	**SS-14**	**SS-15**	**SS-27**
10/8/96	V	V	V	V	--
11/25/96	V	V	V	V	--
12/12/96	V	V	V	V	--
1/29/97	V	V	V	V	--
2/26/97	V	V	V	V	--
3/10/97	V	V	V	V	--
4/8/97	V	V	V	V	--
7/17/97	V	V	V	V	--
10/30/97	V	V	V	V	--
2/10/98	V	V	V	V	--
4/21/98	V	V	V	V	--
8/19/98	V	V	V	V	--
11/17/98	V	V	V	V	--
11/17/98	V	V	V	V	--
2/25/99	V	V	V	V	--
6/29/99	V	V	V	V	--
9/22/99	V	V	V	V	--
12/8/99	V	V	V	V	--
3/1/00	V	V	V	V	--
6/12/00	V,P	V,P	V,P	V,P	V,P
8/24/00	V,P	V,P	V,P	V,P	V,P
11/20/00	V,P	V,P	V,P	V,P	V,P
3/8/01	V,P	V,P	V,P	V,P	V,P
5/16/01	V,P	V,P	V,P	V,P	V,P
9/25/01	V,P	V,P	V,P	V,P	V,P
11/14/01	V,P	V,P	V,P	V,P	V,P
2/11/02	V,P	V,P	V,P	V,P	V,P
6/18/02	V,P	V,P	V,P	V,P	V,P
9/18/02	V,P	V,P	V,P	V,P	V,P
11/4/02	V,P	V,P	V,P	V,P	V,P
3/13/03	V,P	V,P	V,P	V,P	V,P
5/21/03	V,P	V,P	V,P	V,P	V,P
9/17/03	V,P	V,P	V,P	V,P	V,P
11/4/03	V,P	V,P	V,P	V,P	V,P
3/17/04	V,P	V,P	V,P	V,P	V,P
6/29/04	V,P	V,P	V,P	V,P	V,P
8/26/04	V,P	V,P	V,P	V,P	V,P
11/23/04	V,P	--	V,P,M	V,P,M	V,P,M
3/3/05	V,P	--	V,P,M	V,P,M	V,P,M
6/15/05	V,P	--	V,P,M	V,P,M	V,P,M
9/13/05	V,P	--	V,P,M	V,P,M	V,P,M
12/1/05	V,P	--	V,P,M	V,P,M	V,P,M
2/22/06	V,P	--	V,P,M	V,P,M	V,P,M
5/31/06	V,P	--	V,P,M	V,P,M	V,P,M
9/20/06	V,P	--	V,P,M	V,P,M	V,P,M
12/11/06	V,P	--	V,P,M	V,P,M	V,P,M
3/13/07	V,P	--	V,P,M	V,P,M	V,P,M
6/26/07	V,P	--	V,P,M	V,P,M	V,P,M
9/13/07	V,P	--	V,P,M	V,P,M	V,P,M
12/19/07	V,P	--	V,M	V,P,M	V,P,M
3/25/08	V,P	--	V,M	V,P,M	V,P,M
6/26/08	V,P	--	V,M	V,P,M	V,P,M
9/30/08	V,P	--	V,M	V,P,M	V,P,M
12/29/08	V,P	--	V,M	V,P,M	V,P,M
3/24/09	V	--	V,M	V,M	V,M
6/29/09	V	--	V,M	V,M	V,M
9/25/09	V	--	V,M	V,M	V,M
12/7/09	V	--	V,M	V,M	V,M
3/28/10	V	--	V,M	V,M	V,M
6/22/10	V	--	V,M	V,M	V,M
9/21/10	V	--	V,M	V,M	V,M

Notes:
V = volatile organic compounds + tentatively-identified compounds (TICs),
M = TAL metals, P = pesticides and polychlorinated biphenyls (PCBs), dash (--) = not sampled.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	B-18	B-19	B-20
Sample Date					11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4045.03	4045.05	4045.07	4045.09	4045.11	4095.03	4095.05	4095.07	4095.09	4095.11	4095.13	4145.03	4145.05	4145.07	4145.09	4145.11	4145.13	4145.15	4145.17	4145.19
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 790	< 750	< 810	< 820	< 800	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
Acetone	70,000,000	NLE	19,000	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Methylene Chloride	34,000	97,000	10	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	**690**	**880**	**850**	**720**	**930**	**1500**	**1300**	**1300**	**1000**	**3900**	**4300**	**3000**	**320**
2-Butanone	3,100,000	44,000,000	900	--	< 790	**810**	< 810	**880**	**890**	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
Benzene	2,000	5,000	5	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
Toluene	6,300,000	91,000,000	7000	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Tetrachloroethene	2,000	5,000	5	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Chlorobenzene	510,000	7,400,000	600	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 790	< 750	< 810	< 820	< 800	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
TICs	NLE	NLE	NLE	--	**1700**	ND	ND	ND	ND	ND	ND	**1800**	**2100**	**13000**	ND	ND	**3200**	ND	**2900**	ND	**3500**	**2600**	**4300**	**2500**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4045.02	4045.04	4045.06	4045.08	4045.10	4095.02	4095.04	4095.06	4095.08	4095.10	4095.12	4145.02	4145.04	4145.06	4145.08	4145.10	4145.12	4145.14	4145.16	4145.18
Aniline	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**270** J	< 1200	< 1100	< 1300	< 1100	< 1000
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	**240** J	**200** J	**160** J	< 1100	**230** J	< 1100	< 1000
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**540** J	< 1200	< 1100	< 1300	< 1100	< 1000
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**260** J	< 1200	< 1100	< 1300	< 1100	< 1000
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	**3000** B	**2600** B	**1900** B	**1600** B	**1300** B	**1300** JB	**210** J	**170** J
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**450** J	< 1200	< 1100	< 1300	< 1100	< 1000
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Phenanthrene	NLE	300,000,000	NLE	--	< 1100	**1900**	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**1000** J	**330** J	**1800**	**5600**	**830** J	**460** J	**1100** J	**190** J	**140** J
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**230** J	< 1400	**330** J	**1100** J	**220** J	< 1100	**280** J	< 1100	< 1000
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**220** JB	**1100** B	**560** JB	**200** JB	**390** JB	< 11000	< 11000	< 12000	**1100** JBD	**1000** JBD	< 11000	**1300** B	**530** JB	**1300** JB	**1800** B	**1200** B	**420** JB	**430** JB	**1300** B	**1200** B
Fluoranthene	2,300,000	24,000,000	1,300,000	--	< 1100	**3400**	< 1000	**130** J	< 1100	**1400** JD	< 11000	< 12000	< 11000	< 12000	< 11000	**1500**	**800** J	**4000**	**8200**	**2000**	**670** J	**2800**	**330** J	**330** J
Benzidine	700	700	700	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Pyrene	1,700,000	18,000,000	840,000	--	< 1100	**2500**	< 1000	**240** J	< 1100	**1100** JD	< 11000	< 12000	< 11000	**1400** JD	< 11000	**1400**	**680** J	**3100**	**5700**	**1900**	**710** J	**3900**	**330** J	**350** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzo(a)anthracene	600	2,000	800	--	< 1100	**1200**	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**620** J	**300** J	**1400**	**2800**	**990** J	**270** J	**770** J	**160** J	**180** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Chrysene	62,000	230,000	80,000	--	< 1100	**2100**	< 1000	**410** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**730** J	**460** J	**2000**	**3500**	**1700**	**400** J	**2200**	**210** J	**260** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	**2600** JBD	< 11000	**290** JB	**270** JB	**160** JB	**410** JB	**210** JB	**140** JB	**390** JB	**290** J	**180** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	**1600** JD	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzo(b)fluoranthene	600	2,000	2,000	--	< 1100	**900** J	< 1000	**760** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**570** J	**400** J	**1600**	**3100**	**1400**	**360** J	**1600**	**170** J	**210** J
Benzo(k)fluoranthene	6,000	23,000	25,000	--	< 1100	**890** J	< 1000	**520** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**680** J	**420** J	**1600**	**2900**	**1400**	**420** J	**1600**	**190** J	**270** J
Benzo(a)pyrene	200	200	200	--	< 1100	**970** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**590** J	**340** J	**1500**	**2700**	**1000** J	**290** J	**1100** J	**190** J	**220** J
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	**540** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**180** J	**170** J	**600** J	**860** J	**350** J	< 1100	**310** J	< 1100	< 1000
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	**180** J	**250** J	**140** J	< 1100	< 1300	< 1100	< 1000
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1100	**530** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**210** J	**210** J	**680** J	**920** J	**380** J	< 1100	**340** J	**110** J	< 1000
TICs	NLE	NLE	NLE	--	**3770**	**16960**	**8300**	ND	**10330**	ND	ND	**19000**	ND	**66000**	ND	**8800**	**3100**	**4900**	**5800**	**10500**	**2400**	ND	**7400**	**5300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0043	< 0.0045	< 0.0046	< 0.0046	< 0.0048	< 0.0044	< 0.0022	< 0.0027	< 0.0028	< 0.0025	< 0.0024	< 0.0022	< 0.0026	< 0.0019	< 0.0022
Heptachlor	0.1	0.7	0.5	--	< 0.0016	< 0.0015	< 0.0016	< 0.0016	< 0.0016	< 0.0032	< 0.0033	< 0.0035	< 0.0034	< 0.0036	< 0.0033	< 0.0016	< 0.0020	< 0.0021	< 0.0019	< 0.0018	< 0.0016	< 0.0020	< 0.0014	< 0.0017
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0032	< 0.0031	< 0.0032	**0.014**	< 0.0032	< 0.0065	< 0.0067	< 0.0069	< 0.0068	< 0.0072	< 0.0066	< 0.0033	< 0.0041	< 0.0041	< 0.0038	< 0.0036	< 0.0033	**0.017**	< 0.0029	< 0.0033
Endosulfan I	470	6,800	4	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	< 0.0030	< 0.0027	< 0.0033	< 0.0024	< 0.0028
4,4'-DDE	2	9	18	--	**0.036**	**0.04**	**0.017**	**0.089**	**0.044**	**0.049**	**0.057**	**0.207**	**0.379**	**0.066**	**0.074**	**0.014**	**0.04**	**0.053**	**0.071**	**0.07**	**0.015**	**0.181**	**0.05**	**0.11**
Dieldrin	0.04	0.2	0.003	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	**0.023**	**0.006**	**0.023**	< 0.0024	< 0.0028
Endrin	23	340	1	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	< 0.0030	< 0.0027	< 0.0033	< 0.0024	< 0.0028
Endosulfan II	470	6,800	4	--	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0043	**0.057**	< 0.0046	< 0.0046	< 0.0048	< 0.0044	< 0.0022	< 0.0027	< 0.0028	< 0.0025	< 0.0024	< 0.0022	< 0.0026	< 0.0019	< 0.0022
4,4'-DDD	3	13	4	--	**0.046**	**0.051**	**0.033**	**0.427**	**0.07**	**0.066**	**0.094**	**2.123**	**0.364**	**0.089**	**0.176**	**0.027**	**0.131**	**0.191**	**0.307**	**0.268**	**0.04**	**0.604**	**0.041**	**0.071**
4,4'-DDT	2	8	11	--	**0.061**	**0.036**	**0.038**	**0.117**	**0.07**	**0.145**	**0.179**	**0.175**	**0.05**	**0.029**	**0.038**	**0.015**	**0.017**	**0.032**	**0.051**	**0.287**	**0.013**	**0.0073**	**0.021**	**0.044**
gamma-Chlordane	0.2	1	0.05	--	< 0.0026	**0.003**	**0.005**	**0.03**	**0.005**	< 0.0054	< 0.0056	**0.094**	**0.022**	< 0.0060	**0.024**	**0.011**	**0.009**	< 0.0035	< 0.0032	**0.056**	< 0.0027	**0.045**	**0.055**	< 0.0028
alpha-Chlordane	0.2	1	0.05	--	< 0.0026	< 0.0026	**0.005**	**0.02**	**0.003**	< 0.0054	< 0.0056	**0.11**	**0.017**	< 0.0060	**0.026**	**0.008**	< 0.0034	< 0.0035	< 0.0032	**0.071**	< 0.0027	**0.023**	**0.05**	< 0.0028
Aroclor 1016	0.2	1	0.2	--	< 0.0594	< 0.0575	< 0.0595	< 0.0598	< 0.0589	< 0.1211	< 0.1249	< 0.1289	< 0.1278	< 0.1346	< 0.1225	< 0.0612	< 0.0760	< 0.0774	< 0.0712	< 0.0678	< 0.0609	< 0.0738	< 0.0537	< 0.0623
Aroclor 1221	0.2	1	0.2	--	< 0.1092	< 0.1057	< 0.1095	< 0.1099	< 0.1084	< 0.2227	< 0.2298	< 0.2372	< 0.2351	< 0.2476	< 0.2253	< 0.1125	< 0.1398	< 0.1423	< 0.1309	< 0.1247	< 0.1120	< 0.1358	< 0.0988	< 0.1146
Aroclor 1242	0.2	1	0.2	--	< 0.0848	< 0.0821	< 0.0850	< 0.0854	< 0.0842	< 0.1730	< 0.1785	< 0.1842	< 0.1826	< 0.1923	< 0.1750	< 0.0874	< 0.1086	< 0.1105	< 0.1017	< 0.0968	< 0.0870	< 0.1055	< 0.0767	< 0.0890
Aroclor 1260	0.2	1	0.2	--	< 0.0191	< 0.0185	< 0.0191	< 0.0192	< 0.0189	< 0.0389	< 0.0402	< 0.0414	< 0.0411	< 0.0433	< 0.0394	< 0.0197	< 0.0244	< 0.0249	< 0.0229	< 0.0218	< 0.0196	< 0.0237	< 0.0173	< 0.0200

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	B-18	B-19	B-20
Sample Date					11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**5660**	**11200**	**12700**	**7380**	**5420**	**8130**	**9230**	**11300**	**9880**	**18500**	**10900**	**7970**	**13600**	**8860**	**8280**	**11300**	**8170**	**13900**	**4030**	**7590**
Antimony	31	450	6	ND	< 0.291	< 0.239	**14.7**	**2.53**	< 0.259	**0.742**	**0.846**	**14.1**	**2.22**	**0.253**	**3.28**	**0.532**	**1.3**	< 0.603	**1.91**	**1.77**	**1.36**	**1.88**	< 0.386	**0.468**
Arsenic	19	19	19	22.9	**8.08**	**10.8**	**14.7**	**8.78**	**8.39**	**8.12**	**9.85**	**10.9**	**14.8**	**15.4**	**9.07**	**7.36**	**19.8**	**17**	**19**	**23.7**	**8.88**	**21.4**	**4.01**	**6.68**
Barium	16,000	59,000	2,100	32.3	**26.4**	**42.4**	**42.9**	**67**	**31.3**	**31.5**	**287**	**44.7**	**90.7**	**90.3**	**62.8**	**61.4**	**54.7**	**23.7**	**36.6**	**32.6**	**28.6**	**51.4**	**18.1**	**27.4**
Beryllium	16	140	0.7	2	**0.762**	**1.43**	**1.59**	**0.788**	**0.659**	**0.999**	**1.52**	**1.43**	**1.21**	**1.82**	**1.1**	**0.673**	**1.63**	**0.897**	**0.822**	**1.62**	**0.805**	**1.1**	**0.362**	**0.645**
Cadmium	78	78	2	ND	**0.343**	**0.756**	**0.705**	**0.923**	**0.339**	**0.142**	**0.425**	**0.514**	**0.945**	**0.431**	**0.52**	**0.308**	**0.161**	**1.33**	**0.435**	**1.25**	**0.382**	**1.69**	**0.206**	**0.224**
Calcium	NLE	NLE	NLE	921	**459**	**1540**	**3810**	**1900**	**417**	**771**	**992**	**1140**	**3480**	**3450**	**2380**	**11300**	**1410**	**2170**	**1990**	**1190**	**2050**	**1670**	**3640**	**2230**
Chromium	NLE	NLE	NLE	269	**85.1**	**101**	**128**	**63.3**	**73.6**	**66.6**	**85.9**	**99.5**	**125**	**199**	**85.6**	**60.1**	**139**	**100**	**108**	**202**	**72.4**	**166**	**65.6**	**58.4**
Cobalt	1,600	590	90	2.5	**1.04**	**2.45**	**2.94**	**2.73**	**1**	**2.11**	**5.3**	**2.2**	**1.61**	**3.21**	**3.4**	**3.02**	**3.11**	**2.11**	**1.92**	**1.69**	**2.27**	**2.77**	**1.74**	**2.41**
Copper	3,100	45,000	11,000	8	**4.99**	**14.1**	**11.4**	**25**	**4.84**	**16.8**	**24.1**	**13.2**	**43.2**	**11.3**	**20**	**19.2**	**31.3**	**30.5**	**29.9**	**61.8**	**1160**	**74.6**	**10**	**14.9**
Iron	NLE	NLE	NLE	55,800	**21600**	**34600**	**42600**	**18800**	**17000**	**26300**	**27000**	**24000**	**29700**	**45000**	**31700**	**23600**	**46400**	**37500**	**35600**	**51000**	**25100**	**45200**	**13500**	**24300**
Lead	400	800	90	19.5	**8.34**	**52.5**	**45.5**	**445**	**16**	**74.4**	**223**	**104**	**52.5**	**24**	**585**	**104**	**193**	**32.3**	**115**	**115**	**54**	**269**	**39.8**	**25.9**
Magnesium	NLE	NLE	NLE	7,230	**2030**	**4180**	**4800**	**2050**	**1890**	**2780**	**3030**	**2880**	**3790**	**5780**	**3450**	**3400**	**4040**	**3320**	**3150**	**5430**	**2690**	**4630**	**1940**	**2540**
Manganese	11,000	5,900	65	90.7	**37.5**	**45.8**	**104**	**46.3**	**18.1**	**59.1**	**126**	**22.9**	**34.2**	**101**	**52.4**	**84.8**	**56.4**	**56**	**48.8**	**33.9**	**62.9**	**51.6**	**228**	**73.5**
Mercury	23	65	0.1	ND	**0.02**	**0.045**	**0.115**	**0.156**	**0.053**	**0.065**	**0.101**	**0.059**	**0.481**	**0.233**	**0.199**	**0.089**	**0.356**	**0.122**	**0.258**	**0.253**	**0.085**	**0.616**	**0.064**	**0.087**
Nickel	1,600	23,000	48	8.4	**4.33**	**10.7**	**15.2**	**8.52**	**3.43**	**8.22**	**14.2**	**12.5**	**10.9**	**13.1**	**12.7**	**8.93**	**12.4**	**7.83**	**7.48**	**8.94**	**7.49**	**11.6**	**5.18**	**7.23**
Potassium	NLE	NLE	NLE	15,400	**3590**	**8500**	**9500**	**2950**	**3310**	**6510**	**6970**	**6640**	**9030**	**14500**	**7150**	**4480**	**7990**	**6670**	**6660**	**12300**	**4990**	**9410**	**2560**	**4280**
Selenium	390	5,700	11	1.9	**0.847**	**0.8**	**0.842**	**0.903**	**1.02**	**0.706**	**0.613**	**1.38**	**1.35**	**1.31**	**0.763**	**0.915**	**2.07**	**1.2**	**1.95**	**2.1**	**0.986**	**2.09**	< 0.579	**0.678**
Silver	390	5,700	1	1.1	< 0.436	< 0.358	< 0.513	< 0.331	**0.893**	< 0.491	< 0.400	< 0.598	< 0.517	**2.36**	< 0.389	< 0.713	**3.15**	< 0.904	**4.17**	**4.93**	< 0.751	**6.13**	< 0.579	< 0.632
Sodium	NLE	NLE	NLE	51.6	**105**	**209**	**255**	**115**	**103**	**98.1**	**94.4**	**125**	**117**	**116**	**78.6**	**293**	**742**	**474**	**233**	**282**	**213**	**407**	**199**	**281**
Thallium	5	79	3	ND	< 0.436	< 0.358	< 0.513	< 0.331	< 0.388	< 0.491	< 0.400	< 0.598	< 0.517	< 0.347	< 0.389	< 0.713	< 0.756	< 0.904	< 0.852	< 0.742	< 0.751	< 0.839	< 0.579	< 0.632
Vanadium	78	1,100	NLE	94.1	**35.6**	**47.8**	**60.6**	**37.3**	**26.8**	**42.2**	**51.9**	**64**	**65.4**	**103**	**53.5**	**43.3**	**79**	**57**	**63.8**	**80.4**	**45.8**	**93.4**	**23.3**	**47**
Zinc	23,000	110,000	930	81.4	**47.1**	**95.7**	**113**	**329**	**65.7**	**71.3**	**306**	**111**	**252**	**135**	**216**	**123**	**76.5**	**76.3**	**68.7**	**84.7**	**100**	**110**	**155**	**69.6**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-21	B-22	B-23	B-23 Dup	B-24	B-25	B-26	B-27	B-28	B-29	B-30	B-31	B-32	B-33	B-34	B-35	B-36	B-37	B-38	B-39
Sample Date					12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4145.21	4145.23	4145.25	4145.37	4145.27	4145.29	4145.31	4145.33	4145.35	4194.03	4194.05	4194.07	4194.09	4194.11	4194.13	4194.15	4194.17	4194.19	4194.21	4194.23
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
Acetone	70,000,000	NLE	19,000	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Methylene Chloride	34,000	97,000	10	--	**3500**	**3000**	**5000**	**4400**	**3400**	**4900**	**4000**	**3100**	**3200**	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
2-Butanone	3,100,000	44,000,000	900	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
Benzene	2,000	5,000	5	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
Toluene	6,300,000	91,000,000	7000	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Tetrachloroethene	2,000	5,000	5	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Chlorobenzene	510,000	7,400,000	600	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
TICs	NLE	NLE	NLE	--	**5200**	**2100**	**8000**	**7100**	**5000**	**9000**	**6400**	**5400**	**5300**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4145.20	4145.22	4145.24	4145.36	4145.26	4145.28	4145.30	4145.32	4145.34	4194.02	4194.04	4194.06	4194.08	4194.10	4194.12	4194.14	4194.16	4194.18	4194.20	4194.22
Aniline	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	**130** J	**200** J	**200** J	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	**840** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	**150** J	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1200	< 1200	< 1200	**820** J	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	**210** J	< 7600	< 1100	**130** J	**110** J
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	**120** J	< 1100	< 1100	< 1200	< 1100	< 1100	**740** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	**190** J	**1200**	**1000** J	**980** J	**260** J	**650** J	**1400**	**150** J	**160** J	< 1200	< 1100	**420** J	**12000** D	**290** J	**1700** JD	**330** J	< 7600	**190** J	**290** J	**960** J
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	**320** J	**240** J	**1000** J	< 1200	**140** J	**320** J	**160** J	**160** J	< 1200	< 1100	< 1100	**1800** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	**170** J
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**2000** B	**1200** B	**1000** JB	**380** JB	**2000** B	**1100** JB	**1000** JB	**1400** B	**340** JB	**1600** B	**970** JB	**1400** B	**1100** JBD	**1800** B	**26000** BD	**1300** B	**1400** JBD	**350** JB	**1000** JB	**400** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**440** J	**2200**	**2600**	**2000**	**690** J	**1300**	**2100**	**1700**	**400** J	**190** J	< 1100	**700** J	**16000** D	**460** J	**3400** JD	**490** J	**1400** JD	**460** J	**600** J	**1300**
Benzidine	700	700	700	--	< 1100	< 1200	< 1200	**5800**	< 1200	**8300**	**8000**	**6500**	**8600**	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	**490** J	**2200**	**2300**	**2600**	**1000** J	**1800**	**2800**	**2200**	**550** J	**180** J	< 1100	**690** J	**11000** D	**430** J	**2700** JD	**470** J	**2100** JD	**360** J	**500** J	**1000** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(a)anthracene	600	2,000	800	--	**220** J	**940** J	**1200** J	**990** J	**450** J	**610** J	**900** J	**630** J	**230** J	< 1200	< 1100	**330** J	**5400** JD	**210** J	**1000** JD	**230** J	**880** JD	**240** J	**250** J	**460** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Chrysene	62,000	230,000	80,000	--	**270** J	**1200**	**1600**	**1400**	**520** J	**770** J	**1200**	**900** J	**290** J	**130** J	< 1100	**400** J	**5900** D	**270** J	**1400** JD	**310** J	**1100** JD	**280** J	**380** J	**610** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**180** J	**220** J	**510** J	**620** J	**260** J	**300** J	**260** J	**340** J	< 1100	**130** J	**620** J	**170** J	< 5500	**130** J	< 5900	**150** J	**1000** JD	< 1100	**130** J	< 1100
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	**330** J	**930** J	**1600**	**1200**	**790** J	**870** J	**1200**	**1000** J	< 1100	< 1200	< 1100	**320** J	**3700** JD	**170** J	**1200** JD	**190** J	< 7600	**280** J	**280** J	**350** J
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**340** J	**1000** J	**1600**	**1500**	**900** J	**930** J	**1600**	**550** J	< 1100	**120** J	< 1100	**320** J	**4800** JD	**160** J	**1300** JD	**220** J	< 7600	**280** J	**290** J	**440** J
Benzo(a)pyrene	200	200	200	--	**400** J	**790** J	**1300**	**1000** J	**590** J	**700** J	**1100** J	**850** J	< 1100	< 1200	< 1100	**350** J	**4100** JD	**180** J	**1100** JD	**220** J	< 7600	**230** J	**240** J	**370** J
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**140** J	**240** J	**360** J	**300** J	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	**1300** JD	< 1100	< 5900	**110** J	< 7600	< 1100	**150** J	**200** J
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**180** J	**260** J	**390** J	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	**140** J	**1400** JD	< 1100	< 5900	**150** J	< 7600	< 1100	**180** J	**250** J
TICs	NLE	NLE	NLE	--	**7100**	**10200**	**7100**	ND	ND	ND	ND	ND	ND	**4000**	**2700**	**4700**	ND	ND	ND	**2300**	ND	**8400**	**4700**	**5000**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0022	< 0.0088	< 0.0092	< 0.0094	< 0.0096	< 0.0096	< 0.0092	< 0.0094	< 0.0095	< 0.0092	< 0.0092	< 0.0091	< 0.0088	< 0.0091	< 0.0094	< 0.0087	< 0.0123	< 0.0090	< 0.0089	< 0.0086
Heptachlor	0.1	0.7	0.5	--	< 0.0016	< 0.0066	< 0.0069	< 0.0071	< 0.0072	< 0.0072	< 0.0069	< 0.0071	< 0.0071	< 0.0069	< 0.0069	< 0.0068	< 0.0066	< 0.0068	< 0.0071	< 0.0065	< 0.0092	< 0.0067	< 0.0067	< 0.0064
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0033	< 0.0132	< 0.0138	< 0.0141	< 0.0143	< 0.0144	< 0.0138	< 0.0141	< 0.0142	< 0.0138	< 0.0137	< 0.0136	< 0.0132	< 0.0136	< 0.0141	< 0.0130	< 0.0184	< 0.0135	< 0.0134	< 0.0128
Endosulfan I	470	6,800	4	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	< 0.0115	< 0.0118	< 0.0118	< 0.0115	< 0.0114	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
4,4'-DDE	2	9	18	--	**0.105**	**0.061**	**0.082**	**0.101**	**0.036**	**0.048**	**0.044**	**0.09**	< 0.0095	**0.065**	**0.023**	**0.207**	**0.141**	**0.141**	**0.088**	**0.136**	**0.081**	**0.064**	**0.072**	**0.097**
Dieldrin	0.04	0.2	0.003	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	**0.013**	< 0.0118	< 0.0118	**0.013**	**0.026**	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
Endrin	23	340	1	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	< 0.0115	< 0.0118	< 0.0118	< 0.0115	< 0.0114	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
Endosulfan II	470	6,800	4	--	< 0.0022	< 0.0088	< 0.0092	< 0.0094	< 0.0096	< 0.0096	< 0.0092	< 0.0094	< 0.0095	< 0.0092	< 0.0092	< 0.0091	< 0.0088	< 0.0091	< 0.0094	< 0.0087	< 0.0123	< 0.0090	< 0.0089	< 0.0086
4,4'-DDD	3	13	4	--	**0.187**	**0.16**	**0.199**	**0.25**	**0.08**	**0.099**	**0.128**	**0.215**	< 0.0142	**0.05**	**0.022**	**0.062**	**0.043**	**0.097**	**0.043**	**0.145**	**0.049**	**0.042**	**0.03**	**0.053**
4,4'-DDT	2	8	11	--	**0.04**	< 0.0241	**0.027**	**0.035**	**0.03**	**0.241**	< 0.0254	**0.086**	< 0.0260	**0.144**	**0.075**	**0.739**	**0.332**	**0.662**	**0.182**	**0.253**	**0.276**	**0.246**	**0.138**	**0.133**
gamma-Chlordane	0.2	1	0.05	--	**0.026**	**0.027**	**0.015**	**0.051**	**0.022**	**0.026**	**0.039**	**0.075**	< 0.0118	**0.032**	< 0.0114	< 0.0113	< 0.0110	< 0.0114	**0.025**	**0.02**	**0.015**	**0.02**	**0.013**	< 0.0107
alpha-Chlordane	0.2	1	0.05	--	**0.022**	**0.022**	**0.044**	**0.016**	**0.021**	**0.018**	**0.035**	**0.059**	< 0.0118	**0.024**	< 0.0114	< 0.0113	< 0.0110	< 0.0114	**0.025**	**0.017**	< 0.0154	**0.013**	< 0.0112	< 0.0107
Aroclor 1016	0.2	1	0.2	--	< 0.0612	< 0.2456	< 0.2574	< 0.2639	< 0.2677	< 0.2685	< 0.2581	< 0.2633	< 0.2648	< 0.2572	< 0.2564	< 0.2538	< 0.2456	< 0.2548	< 0.2637	< 0.2433	< 0.3439	< 0.2513	< 0.2501	< 0.2399
Aroclor 1221	0.2	1	0.2	--	< 0.1125	< 0.4518	< 0.4734	< 0.4854	< 0.4923	< 0.4939	< 0.4748	< 0.4843	< 0.4871	< 0.4731	< 0.4717	< 0.4669	< 0.4518	< 0.4686	< 0.4851	< 0.4474	< 0.4919	< 0.4622	< 0.4600	< 0.4412
Aroclor 1242	0.2	1	0.2	--	< 0.0874	< 0.3509	< 0.3677	< 0.3770	< 0.3824	< 0.3836	< 0.3688	< 0.3762	< 0.3783	< 0.3675	< 0.3664	< 0.3626	< 0.3509	< 0.3639	< 0.3768	< 0.3475	< 0.4913	< 0.3590	< 0.3573	< 0.3427
Aroclor 1260	0.2	1	0.2	--	< 0.0197	< 0.0789	< 0.0827	< 0.0848	< 0.0860	< 0.0863	< 0.0830	< 0.0846	< 0.0851	< 0.0827	< 0.0824	< 0.0816	< 0.0789	< 0.0819	< 0.0848	< 0.0782	< 0.1105	< 0.808	< 0.0804	< 0.0771

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-21	B-22	B-23	B-23 Dup	B-24	B-25	B-26	B-27	B-28	B-29	B-30	B-31	B-32	B-33	B-34	B-35	B-36	B-37	B-38	B-39
Sample Date					12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**10000**	**15800**	**13600**	**13800**	**9510**	**8990**	**12900**	**10600**	**13100**	**11100**	**10300**	**11400**	**9630**	**13000**	**7170**	**7240**	**8940**	**7840**	**10200**	**5410**
Antimony	31	450	6	ND	**1.63**	**30.7**	**1.39**	**0.599**	**7.64**	**0.956**	**2.13**	**3.72**	**1.07**	< 0.415	**1.53**	**7.02**	**0.89**	**26.1**	**0.78**	**0.545**	**30**	**4.78**	**0.846**	**0.909**
Arsenic	19	19	19	22.9	**12.9**	**14.6**	**18**	**15.4**	**7.31**	**8.82**	**20.9**	**7.77**	**17.2**	**7.23**	**5.26**	**7.28**	**6.77**	**6.94**	**7.37**	**6.89**	**10.6**	**10.2**	**11.6**	**6.79**
Barium	16,000	59,000	2,100	32.3	**48.3**	**72.5**	**52.8**	**41**	**40.4**	**31.1**	**44.1**	**66.1**	**37.4**	**46.6**	**35**	**69.8**	**44**	**57**	**45.1**	**36.8**	**282**	**135**	**61.4**	**31.6**
Beryllium	16	140	0.7	2	**1.13**	**1.29**	**1.1**	**1**	**0.96**	**0.66**	**1.02**	**1.02**	**1.58**	**0.872**	**0.608**	**0.726**	**0.782**	**0.734**	**0.814**	**0.768**	**0.76**	**0.851**	**1.06**	**0.557**
Cadmium	78	78	2	ND	**0.218**	**4.63**	**3.86**	**3.92**	**2.09**	**0.757**	**2.46**	**3.54**	**0.345**	**0.792**	**0.688**	**0.75**	**0.613**	**0.786**	**1.06**	**0.631**	**2.2**	**1.38**	**1.13**	**0.617**
Calcium	NLE	NLE	NLE	921	**1920**	**4940**	**2880**	**1520**	**1780**	**2960**	**1850**	**4490**	**2360**	**1560**	**4440**	**4540**	**1640**	**2420**	**2400**	**831**	**16600**	**2210**	**1300**	**246**
Chromium	NLE	NLE	NLE	269	**98.5**	**119**	**138**	**140**	**63.5**	**66.5**	**167**	**66**	**157**	**75.9**	**53.8**	**61**	**64.3**	**62.5**	**67.6**	**65.3**	**66**	**72.3**	**102**	**62.7**
Cobalt	1,600	590	90	2.5	**2.25**	**4.22**	**3.07**	**2.98**	**3.7**	**3.84**	**3.28**	**4**	**2.75**	**2.56**	**1.84**	**2.44**	**2.01**	**3.88**	**2.6**	**1.84**	**4.91**	**3.05**	**2.61**	**0.724**
Copper	3,100	45,000	11,000	8	**16.5**	**43.4**	**49.2**	**60.3**	**25.1**	**29.8**	**87.1**	**25.5**	**13.9**	**10.4**	**10.1**	**17.3**	**8.99**	**20.9**	**15.2**	**8.85**	**26.3**	**35.4**	**28.8**	**15.8**
Iron	NLE	NLE	NLE	55,800	**31700**	**43600**	**38400**	**35300**	**23200**	**26300**	**42400**	**26400**	**50400**	**20500**	**19900**	**20400**	**20600**	**22700**	**19300**	**18300**	**31600**	**25000**	**30300**	**19200**
Lead	400	800	90	19.5	**45.3**	**119**	**187**	**125**	**68.1**	**48.6**	**194**	**71.9**	**33.3**	**54.5**	**60.7**	**191**	**40**	**76.7**	**56.3**	**43.2**	**1990**	**528**	**62.7**	**45.9**
Magnesium	NLE	NLE	NLE	7,230	**3760**	**3730**	**3700**	**3770**	**2170**	**3100**	**3540**	**2070**	**5660**	**2160**	**1780**	**2560**	**1860**	**2100**	**1750**	**1790**	**2360**	**2360**	**3260**	**1680**
Manganese	11,000	5,900	65	90.7	**91.9**	**75.5**	**48.3**	**42.2**	**63.1**	**94.5**	**63.8**	**185**	**101**	**26.6**	**51.6**	**82.2**	**45.1**	**75.6**	**63**	**30.3**	**152**	**88.7**	**40.4**	**160**
Mercury	23	65	0.1	ND	**0.132**	**0.301**	**0.424**	**0.462**	**0.175**	**0.128**	**0.568**	**0.2**	**0.073**	**0.08**	**0.07**	**0.07**	**0.18**	**0.12**	**0.21**	**0.16**	**1.25**	**0.35**	**0.16**	**0.33**
Nickel	1,600	23,000	48	8.4	**7.28**	**13.2**	**10.6**	**11.6**	**9.47**	**9.97**	**13.3**	**11.7**	**11.1**	**11.4**	**6.71**	**14.9**	**12.6**	**10.5**	**7.51**	**5.87**	**15.5**	**8.44**	**8.91**	**3.64**
Potassium	NLE	NLE	NLE	15,400	**7500**	**7220**	**8270**	**7820**	**4060**	**4320**	**6840**	**4200**	**11800**	**4670**	**2560**	**4460**	**3900**	**3370**	**3770**	**3790**	**4000**	**4540**	**6570**	**4030**
Selenium	390	5,700	11	1.9	**0.905**	**1.12**	**1.73**	**1.41**	**0.579**	< 0.710	**1.74**	**0.678**	**1.3**	**0.648**	< 0.513	**1.05**	**1.19**	**0.837**	**1.2**	**0.957**	**2.32**	**1.61**	**1.07**	**1.03**
Silver	390	5,700	1	1.1	< 0.748	< 0.807	**5.31**	**5.07**	< 0.481	< 0.710	**7.58**	< 0.535	< 0.574	< 0.623	< 0.513	**0.821**	**3.57**	< 0.599	**5.88**	**4.42**	**1.42**	< 0.694	**2.38**	**1.07**
Sodium	NLE	NLE	NLE	51.6	**260**	**303**	**301**	**251**	**133**	**299**	**316**	**138**	**146**	**150**	**101**	**171**	**147**	**166**	**75.9**	**88.3**	**147**	**239**	**185**	**162**
Thallium	5	79	3	ND	< 0.748	< 0.807	< 0.880	< 0.851	< 0.481	< 0.710	< 0.757	< 0.535	< 0.574	< 0.623	< 0.513	< 0.531	< 0.681	< 0.599	< 0.696	< 0.696	< 0.862	< 0.694	< 0.546	< 0.684
Vanadium	78	1,100	NLE	94.1	**57.5**	**86.5**	**82.5**	**72.7**	**51.6**	**49.5**	**87.6**	**51.5**	**86.5**	**46**	**58.4**	**39.4**	**40.6**	**51.9**	**34.7**	**34.9**	**43.3**	**35.6**	**38.1**	**25.1**
Zinc	23,000	110,000	930	81.4	**124**	**250**	**96.6**	**99.2**	**141**	**140**	**128**	**183**	**95.3**	**59.9**	**83.1**	**237**	**67.7**	**127**	**106**	**58.3**	**904**	**262**	**75.1**	**41.3**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-40	B-41	B-1A	B-2B	B-3C	B-4D	B-5E	B-6F	B-7G	B-8H	B-9I	B-10J	B-11K	B-12L	B-13M	B-14N	B-15O	B-16P	B-17Q	B-18R
Sample Date					01/19/99	01/19/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4194.25	4194.27	4351.03	4351.05	4351.07	4351.09	4351.11	4351.13	4351.15	4351.17	4351.19	4351.21	4351.23	4351.25	4351.27	4354.03	4354.05	4354.07	4354.09	4354.11
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
Acetone	70,000,000	NLE	19,000	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	**600**	< 350
Methylene Chloride	34,000	97,000	10	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
2-Butanone	3,100,000	44,000,000	900	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
Benzene	2,000	5,000	5	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
Toluene	6,300,000	91,000,000	7000	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Tetrachloroethene	2,000	5,000	5	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Chlorobenzene	510,000	7,400,000	600	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	**620**	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8300**	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4194.24	4194.26	4351.02	4351.04	4351.06	4351.08	4351.10	4351.12	4351.14	4351.16	4351.18	4351.20	4351.22	4351.24	4351.26	4354.02	4354.04	4354.06	4354.08	4354.10
Aniline	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	**730** J	< 1100	< 1200	< 1400	< 1100	**780** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	**1600**	< 1000	< 1100	< 1100	< 1200
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	**310** J	< 1000	< 1100	< 1100	< 1200
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	**420** J	< 1100	< 1200	< 1400	< 1100	**240** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	**160** J
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	**130** J	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	**210** J	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	**250** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**210** J	< 1300	< 1100	< 1000	< 1100	< 1100	**590** J
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	**340** J
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	**140** J	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	**160** J	**160** J	**190** J	< 1100	< 1000	< 1100	< 1100	< 1200
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**230** J	< 1300	< 1100	< 1000	< 1100	< 1100	**670** J
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Phenanthrene	NLE	300,000,000	NLE	--	**350** J	**200** J	< 13000	**160** J	< 1100	**370** J	< 1400	< 1700	< 1100	**730** J	**680** J	< 1100	**230** J	**2700**	**270** J	< 1100	**390** J	< 1100	**130** J	**6100**
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	**140** J	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	**200** J	**180** J	< 1100	< 1400	**840** J	< 1300	< 1100	< 1000	< 1100	< 1100	**1900**
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**520** JB	**1300** B	< 13000	**1500** B	**1100** JB	**370** JB	**450** JB	< 1700	**270** JB	**610** JB	**320** JB	**310** JB	**1100** JB	**480** JB	**560** JB	**600** JB	**690** JB	**1500** B	**780** JB	**270** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**580** J	**560** J	< 13000	**310** J	< 1100	**650** J	**190** J	**290** J	< 1100	**1100** J	**1300** J	< 1100	**890** J	**4300**	**530** J	**150** J	**820** J	**210** J	**270** J	**6800**
Benzidine	700	700	700	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Pyrene	1,700,000	18,000,000	840,000	--	**770** J	**740** J	< 13000	**290** J	< 1100	**610** J	**200** J	**240** J	< 1100	**1000** J	**1200** J	< 1100	**1400** J	**3300**	**500** J	**140** J	**630** J	**200** J	**250** J	**4800**
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	**1200**	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzo(a)anthracene	600	2,000	800	--	**240** J	**390** J	< 13000	**160** J	< 1100	**320** J	**170** J	< 1700	< 1100	**480** J	**650** J	< 1100	**870** J	**1800**	**260** J	< 1100	**340** J	< 1100	**140** J	**2500**
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Chrysene	62,000	230,000	80,000	--	**310** J	**510** J	< 13000	**320** J	< 1100	**590** J	**270** J	**290** J	< 1100	**790** J	**1100** J	< 1100	**1800**	**2800**	**540** J	**160** J	**570** J	**210** J	**280** J	**3800**
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1100	**360** J	< 13000	**220** JB	**330** JB	**340** JB	**180** JB	**1400** JB	**220** JB	**300** JB	**190** JB	**260** JB	**340** JB	**180** JB	**160** JB	**170** JB	**460** JB	**170** JB	**210** JB	**140** JB
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzo(b)fluoranthene	600	2,000	2,000	--	**210** J	**360** J	< 13000	**180** J	< 1100	**340** J	**170** J	< 1700	< 1100	**330** J	**630** J	< 1100	**520** J	**1800**	**310** J	< 1100	**300** J	< 1100	**160** J	**2100**
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**260** J	**440** J	< 13000	**210** J	< 1100	**360** J	**160** J	< 1700	< 1100	**470** J	**750** J	< 1100	**770** J	**1600**	**330** J	< 1100	**360** J	< 1100	**220** J	**2000**
Benzo(a)pyrene	200	200	200	--	**350** J	**460** J	< 13000	**170** J	< 1100	**360** J	**180** J	< 1700	< 1100	**470** J	**750** J	< 1100	**760** J	**1700**	**300** J	< 1100	**340** J	**120** J	**150** J	**2500**
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	**140** J	< 13000	**130** J	< 1100	**230** J	< 1400	< 1700	< 1100	**260** J	**380** J	< 1100	**250** J	**660** J	**220** J	< 1100	**220** J	< 1100	< 1100	**1400**
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**250** J	< 1300	< 1100	< 1000	< 1100	< 1100	**390** J
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**290** J	**170** J	< 13000	**140** J	< 1100	**270** J	< 1400	< 1700	< 1100	**280** J	**370** J	< 1100	**290** J	**550** J	**260** J	< 1100	**180** J	< 1100	< 1100	**1300**
TICs	NLE	NLE	NLE	--	**3600**	**5700**	**139000**	**11500**	**10700**	**9210**	**9900**	**79200**	**7430**	**8400**	**10300**	**10000**	**52300**	**23200**	ND	**205900**	**3650**	**5200**	**9010**	**3300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0092	< 0.0094	< 0.0107	< 0.0096	< 0.0091	< 0.0089	< 0.0092	< 0.0140	< 0.0090	< 0.0095	< 0.0093	< 0.0093	< 0.0098	< 0.0093	< 0.0088	< 0.0092	< 0.0082	< 0.0079	< 0.0088	< 0.0089
Heptachlor	0.1	0.7	0.5	--	< 0.0069	< 0.0070	< 0.0080	< 0.0072	< 0.0069	< 0.0067	< 0.0069	< 0.0105	< 0.0067	< 0.0071	< 0.0070	< 0.0070	< 0.0073	< 0.0070	< 0.0066	< 0.0069	< 0.0062	< 0.0060	< 0.0066	< 0.0067
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0137	< 0.0140	< 0.0160	< 0.0144	< 0.0137	< 0.0134	< 0.0139	< 0.0211	< 0.0135	< 0.0143	< 0.0140	< 0.0140	< 0.0147	< 0.0140	< 0.0133	< 0.0138	< 0.0123	< 0.0119	< 0.0133	< 0.0134
Endosulfan I	470	6,800	4	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	< 0.0114	< 0.0111	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
4,4'-DDE	2	9	18	--	**0.011**	**0.021**	**0.022**	**0.02**	**0.054**	**0.073**	**0.058**	**0.046**	**0.021**	**0.033**	**0.065**	**0.022**	**0.134**	**0.062**	**0.039**	**0.019**	< 0.0082	**0.021**	**0.058**	< 0.0089
Dieldrin	0.04	0.2	0.003	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	**0.03**	**0.022**	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
Endrin	23	340	1	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	< 0.0114	< 0.0111	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
Endosulfan II	470	6,800	4	--	< 0.0092	< 0.0094	< 0.0107	< 0.0096	< 0.0091	< 0.0089	< 0.0092	< 0.0140	< 0.0090	< 0.0095	< 0.0093	< 0.0093	< 0.0098	< 0.0093	< 0.0088	< 0.0092	< 0.0082	< 0.0079	< 0.0088	< 0.0089
4,4'-DDD	3	13	4	--	< 0.0137	< 0.0140	**0.073**	< 0.0144	**0.043**	**0.351**	**0.268**	**0.07**	< 0.0135	**0.049**	**0.232**	**0.018**	**0.366**	**0.245**	**0.074**	**0.037**	< 0.0123	**0.088**	**0.0119**	< 0.0134
4,4'-DDT	2	8	11	--	< 0.0252	**0.051**	**0.1**	< 0.0263	**0.209**	**0.042**	**0.05**	< 0.0386	**0.049**	< 0.0262	**0.965**	**0.027**	< 0.0269	**0.032**	**0.065**	< 0.0253	**0.06**	**0.162**	**0.043**	< 0.0245
gamma-Chlordane	0.2	1	0.05	--	< 0.0114	**0.017**	**0.034**	< 0.0120	< 0.0114	**0.035**	**0.033**	< 0.0176	< 0.0112	< 0.0119	**0.04**	< 0.0117	**0.021**	**0.016**	**0.016**	< 0.0115	**0.011**	**0.201**	**0.045**	< 0.0111
alpha-Chlordane	0.2	1	0.05	--	< 0.0114	**0.017**	**0.021**	< 0.0120	< 0.0114	**0.023**	**0.019**	< 0.0176	< 0.0112	< 0.0119	**0.025**	< 0.0117	**0.016**	< 0.0116	< 0.0111	< 0.0115	< 0.0103	**0.171**	**0.036**	< 0.0111
Aroclor 1016	0.2	1	0.2	--	< 0.2564	< 0.2619	< 0.0149	< 0.2682	< 0.0128	< 0.2494	< 0.2589	< 0.3934	< 0.2512	< 0.2667	< 0.2616	< 0.2613	< 0.2743	< 0.2607	< 0.2476	< 0.2580	< 0.2300	< 0.2226	< 0.2476	< 0.2495
Aroclor 1221	0.2	1	0.2	--	< 0.4716	< 0.4817	< 0.0275	< 0.4933	< 0.0236	< 0.4587	< 0.4761	< 0.7235	< 0.4620	< 0.4905	< 0.4448	< 0.4807	< 0.4665	< 0.4434	< 0.4210	< 0.4745	< 0.4230	< 0.3786	< 0.4554	< 0.4589
Aroclor 1242	0.2	1	0.2	--	< 0.3663	< 0.3741	< 0.0213	< 0.3831	< 0.0183	< 0.3563	< 0.3698	< 0.5620	< 0.3588	< 0.3810	< 0.3736	< 0.3733	< 0.3919	< 0.3724	< 0.3537	< 0.3685	< 0.3285	< 0.3180	< 0.3537	< 0.3564
Aroclor 1260	0.2	1	0.2	--	< 0.0824	< 0.0842	< 0.0048	< 0.0862	**0.445**	< 0.0802	< 0.0832	< 0.1264	< 0.0807	< 0.0857	< 0.0841	< 0.0840	< 0.0882	< 0.0838	< 0.0796	< 0.0829	< 0.0739	< 0.0715	< 0.0796	< 0.0802

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-40	B-41	B-1A	B-2B	B-3C	B-4D	B-5E	B-6F	B-7G	B-8H	B-9I	B-10J	B-11K	B-12L	B-13M	B-14N	B-15O	B-16P	B-17Q	B-18R
Sample Date					01/19/99	01/19/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**9850**	**6960**	**12500**	**13600**	**7060**	**13300**	**8600**	**19700**	**13100**	**11700**	**12300**	**7480**	**13000**	**9700**	**14500**	**11700**	**6050**	**7470**	**7880**	**12300**
Antimony	31	450	6	ND	**1.21**	**2.14**	**7.28**	< 0.486	**1.21**	**2.52**	**22.6**	**4.47**	< 0.438	< 0.406	**2.88**	**0.89**	**30.1**	**9**	**1.25**	**0.608**	**0.669**	< 0.468	**0.936**	< 0.471
Arsenic	19	19	19	22.9	**7.46**	**8.35**	**10.4**	**18**	**11.7**	**16.1**	**9.48**	**13.5**	**9.24**	**13.4**	**11.1**	**10.8**	**8.18**	**7.6**	**15.1**	**14.8**	**5.2**	**10.2**	**4.82**	**12.3**
Barium	16,000	59,000	2,100	32.3	**39.5**	**41.8**	**35.6**	**55.5**	**47.4**	**61.4**	**101**	**78.6**	**51.7**	**68.8**	**63.9**	**27.1**	**185**	**87.9**	**61.9**	**80.4**	**19**	**38.4**	**22.7**	**40.4**
Beryllium	16	140	0.7	2	**0.96**	**0.742**	**1.18**	**1.97**	**0.657**	**1.33**	**0.83**	**1.73**	**0.952**	**1.73**	**1.53**	**0.885**	**1.05**	**0.823**	**1.29**	**1.62**	**0.544**	**0.803**	**0.598**	**1.28**
Cadmium	78	78	2	ND	**0.578**	**1.15**	**0.432**	**0.286**	< 0.110	**0.164**	**1.02**	**0.968**	**0.348**	**0.942**	< 0.110	< 0.108	**0.417**	**8.88**	**0.142**	< 0.125	< 0.110	< 0.117	< 0.122	< 0.118
Calcium	NLE	NLE	NLE	921	**10400**	**2460**	**3410**	**4540**	**1190**	**3710**	**2580**	**3780**	**622**	**3120**	**1740**	**526**	**13100**	**3490**	**2740**	**970**	**2050**	**1680**	**2020**	**1650**
Chromium	NLE	NLE	NLE	269	**203**	**58.4**	**103**	**217**	**73.5**	**97.7**	**69.7**	**122**	**66**	**155**	**136**	**88.4**	**76.6**	**70.8**	**154**	**173**	**51.8**	**73.1**	**61.5**	**114**
Cobalt	1,600	590	90	2.5	**3.97**	**3.14**	**2.26**	**3**	**1.63**	**5.17**	**3.3**	**3.91**	**2.34**	**2.62**	**2.33**	**1.65**	**3.31**	**2.57**	**2.41**	**1.24**	**2.36**	**1.74**	**3.13**	**0.849**
Copper	3,100	45,000	11,000	8	**354**	**80.6**	**26.3**	**46.1**	**66.2**	**34.8**	**38.1**	**56.1**	**19.3**	**19.5**	**33**	**12.4**	**19.8**	**20.5**	**34.7**	**20.9**	**17**	**22.9**	**26.6**	**8.46**
Iron	NLE	NLE	NLE	55,800	**22900**	**22800**	**41800**	**53600**	**25500**	**43400**	**25400**	**45800**	**23800**	**34300**	**39800**	**24500**	**27400**	**22800**	**45700**	**45300**	**18400**	**26200**	**17800**	**28800**
Lead	400	800	90	19.5	**27.7**	**81.9**	**115**	**52.9**	**125**	**136**	**468**	**236**	**17**	**17.8**	**55.4**	**10.7**	**672**	**334**	**160**	**35.1**	**58.1**	**74.7**	**47.7**	**9.58**
Magnesium	NLE	NLE	NLE	7,230	**2320**	**2110**	**3840**	**6760**	**2100**	**3780**	**2450**	**4910**	**2330**	**5150**	**4680**	**2760**	**4040**	**2920**	**4920**	**5500**	**2550**	**2540**	**2430**	**3810**
Manganese	11,000	5,900	65	90.7	**74.8**	**84.2**	**55.7**	**22.9**	**33**	**143**	**73.5**	**90.2**	**73**	**33.8**	**38.6**	**38.8**	**126**	**38.9**	**82.5**	**17.9**	**48.9**	**50.3**	**42.6**	**40.4**
Mercury	23	65	0.1	ND	**0.06**	**0.09**	**0.26**	**0.18**	**0.61**	**18.17**	**0.33**	**0.26**	**0.08**	**0.08**	**0.39**	**0.04**	**0.45**	**0.28**	**0.21**	**0.25**	**1.5**	**0.167**	**0.17**	**0.045**
Nickel	1,600	23,000	48	8.4	**12.2**	**40.4**	**7.76**	**8.67**	**5.37**	**20.3**	**8.91**	**16.4**	**5.85**	**11.9**	**12.6**	**4.4**	**11**	**9.72**	**8.9**	**7.19**	**6.05**	**7.85**	**10.6**	**4.36**
Potassium	NLE	NLE	NLE	15,400	**2820**	**3410**	**8640**	**17100**	**4530**	**7940**	**4770**	**10400**	**5540**	**11600**	**10400**	**6390**	**6490**	**5320**	**11200**	**14500**	**3630**	**5130**	**4100**	**7960**
Selenium	390	5,700	11	1.9	**1.09**	**1.36**	< 0.805	**1.99**	**0.75**	**1.18**	< 0.817	< 1.018	< 0.657	**1.23**	**1.09**	**0.988**	< 0.690	**0.335**	**1**	**3.51**	**0.9**	**1.86**	**0.973**	**1.45**
Silver	390	5,700	1	1.1	< 0.675	< 0.722	< 0.805	**1.19**	< 0.657	< 0.581	< 0.817	< 1.018	< 0.657	< 0.609	**2.76**	< 0.649	< 0.690	< 0.203	< 0.813	< 0.747	< 0.662	< 0.703	< 0.729	< 0.706
Sodium	NLE	NLE	NLE	51.6	**180**	**119**	**290**	**394**	**371**	**229**	**229**	**285**	**225**	**159**	**235**	**158**	**262**	**162**	**262**	**238**	**103**	**93.7**	**364**	**69**
Thallium	5	79	3	ND	< 0.675	< 0.722	< 0.805	< 0.729	< 0.657	< 0.581	< 0.817	< 1.018	< 0.657	< 0.609	< 0.658	< 0.649	< 0.690	< 0.203	< 0.813	< 0.747	< 0.662	< 0.703	< 0.729	< 0.706
Vanadium	78	1,100	NLE	94.1	**44.3**	**299**	**66.2**	**57.7**	**36.6**	**73.3**	**44.1**	**83.5**	**42.3**	**71.4**	**122**	**45.6**	**52.1**	**55.3**	**78.5**	**49.6**	**30.6**	**38.7**	**66.4**	**47.9**
Zinc	23,000	110,000	930	81.4	**79.9**	**197**	**361**	**166**	**61.2**	**197**	**345**	**222**	**53.4**	**80.7**	**151**	**37.5**	**346**	**181**	**313**	**83.3**	**47.6**	**73.4**	**47.3**	**41.3**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-19S	B-20T	B-21U	B-22V	B-23W	B-24X	B-25Y	B-26Z	B-27AA	B-28BB	B-29CC	B-30DD	B-31EE	B-32FF	B-33GG	B-34HH	B-35II	B-36JJ	B-37KK	B-38LL
Sample Date					03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4354.13	4354.15	4354.17	4354.19	4354.21	4354.23	4354.25	4354.27	4354.29	4357.03	4357.05	4357.07	4357.09	4357.11	4357.13	4357.15	4357.17	4357.19	4357.21	4357.23
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
Acetone	70,000,000	NLE	19,000	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	**260** J	< 370
Methylene Chloride	34,000	97,000	10	--	< 570	**670**	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
2-Butanone	3,100,000	44,000,000	900	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
Benzene	2,000	5,000	5	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
Toluene	6,300,000	91,000,000	7000	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Tetrachloroethene	2,000	5,000	5	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Chlorobenzene	510,000	7,400,000	600	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4354.12	4354.14	4354.16	4354.18	4354.20	4354.22	4354.24	4354.26	4354.28	4357.02	4357.04	4357.06	4357.08	4357.10	4357.12	4357.14	4357.16	4357.18	4357.20	4357.22
Aniline	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	**780** J	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	**7000**	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	**5200**	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	< 1200	**170** J	< 1000	< 1100	< 1100	**120** J	**160** J	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	**170** J	< 1100	< 1200	< 1200	< 1200	< 1200
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	**120** J	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Phenanthrene	NLE	300,000,000	NLE	--	**150** J	< 1200	**450** J	**570** J	< 1100	**290** J	**620** J	**150** J	**160** J	< 1300	**200** J	< 1100	**140** J	< 1200	**760** J	**180** J	< 1200	< 1200	< 1200	< 1200
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	< 1200	**150** J	**150** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**180** JB	**590** JB	**550** JB	**170** JB	**460** JB	**400** JB	**600** JB	**120** JB	**550** JB	**1100** JB	**130** JB	**400** JB	**130** JB	**390** JB	**850** JB	**140** JB	**160** JB	**420** JB	**530** JB	< 1200
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**240** J	< 1200	**1000** J	**1300**	**200** J	**340** J	**640** J	**290** J	**340** J	**270** J	**260** J	< 1100	**280** J	**270** J	**550** J	**1500**	< 1200	< 1200	< 1200	**140** J
Benzidine	700	700	700	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Pyrene	1,700,000	18,000,000	840,000	--	**260** J	< 1200	**1100** J	**1300**	**190** J	**280** J	**780** J	**380** J	**360** J	**200** J	**250** J	< 1100	**260** J	**270** J	**990** J	**1100** J	< 1200	< 1200	< 1200	**150** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	**770** J	< 1200	< 1100	< 1300	< 1300	**160** J	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(a)anthracene	600	2,000	800	--	**130** J	< 1200	**550** J	**690** J	**120** J	**180** J	**370** J	**260** J	**220** J	**160** J	**140** J	< 1100	**170** J	**170** J	**400** J	**370** J	< 1200	< 1200	< 1200	**130** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Chrysene	62,000	230,000	80,000	--	**260** J	< 1200	**1300**	**1500**	**210** J	**450** J	**740** J	**480** J	**450** J	**250** J	**340** J	< 1100	**290** J	**320** J	**810** J	**910** J	< 1200	< 1200	< 1200	**200** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**180** JB	**210** JB	**480** JB	**200** JB	**140** JB	**140** JB	< 1200	< 1100	**300** JB	**170** J	**470** J	< 1100	**160** J	**120** J	**250** J	**170** J	< 1200	< 1200	**140** J	**170** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(b)fluoranthene	600	2,000	2,000	--	**170** J	< 1200	**980** J	**1400**	**160** J	**270** J	**280** J	**310** J	**300** J	**170** J	**150** J	< 1100	**200** J	**190** J	**230** J	**350** J	< 1200	< 1200	< 1200	< 1200
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**140** J	< 1200	**900** J	**1000** J	**120** J	**320** J	**290** J	**330** J	**210** J	**170** J	**150** J	< 1100	**240** J	**210** J	**310** J	**280** J	< 1200	< 1200	< 1200	< 1200
Benzo(a)pyrene	200	200	200	--	**150** J	< 1200	**650** J	**1900**	**150** J	< 1100	**340** J	**380** J	**270** J	**170** J	**150** J	< 1100	**180** J	**190** J	**320** J	**240** J	< 1200	< 1200	< 1200	< 1200
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	< 1200	**270** J	**1500**	< 1100	< 1100	**180** J	**240** J	< 1300	< 1300	< 1100	< 1100	< 1200	**130** J	< 1400	**160** J	< 1200	< 1200	< 1200	< 1200
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1200	< 1100	**380** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1100	< 1200	< 1100	**1600**	< 1100	< 1100	**230** J	**280** J	< 1300	< 1300	< 1100	< 1100	< 1200	**150** J	< 1400	**180** J	< 1200	< 1200	< 1200	< 1200
TICs	NLE	NLE	NLE	--	**8500**	**5300**	**4500**	**4400**	**3900**	**17040**	**9700**	**3800**	**6100**	**21100**	**3600**	**4620**	**2800**	**4200**	**3500**	**6400**	**3700**	**3300**	**4900**	**3100**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0086	< 0.0089	< 0.0087	< 0.0083	< 0.0082	< 0.0084	< 0.0094	< 0.0093	< 0.0088	< 0.0091	< 0.0091	< 0.0088	< 0.0095	< 0.0092	< 0.0096	< 0.0093	< 0.0095	< 0.0095	< 0.0095	< 0.0090
Heptachlor	0.1	0.7	0.5	--	< 0.0064	< 0.0067	< 0.0065	< 0.0062	< 0.0062	< 0.0063	< 0.0070	< 0.0070	< 0.0066	< 0.0069	< 0.0068	< 0.0066	< 0.0071	< 0.0069	< 0.0072	< 0.0069	< 0.0071	< 0.0071	< 0.0071	< 0.0067
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0129	< 0.0133	< 0.0130	< 0.0124	< 0.0123	< 0.0127	< 0.0141	< 0.0139	< 0.0132	< 0.0137	< 0.0136	< 0.0132	< 0.0142	< 0.0138	< 0.0144	< 0.0139	< 0.0142	< 0.0143	< 0.0142	< 0.0134
Endosulfan I	470	6,800	4	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
4,4'-DDE	2	9	18	--	**0.206**	**0.035**	**0.096**	**0.083**	**0.054**	**0.033**	**0.147**	< 0.0093	**0.039**	**0.025**	**0.126**	**0.049**	**0.026**	**0.055**	**0.046**	**0.061**	< 0.0095	< 0.0095	**0.024**	**0.029**
Dieldrin	0.04	0.2	0.003	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
Endrin	23	340	1	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
Endosulfan II	470	6,800	4	--	< 0.0086	< 0.0089	< 0.0087	< 0.0083	< 0.0082	< 0.0084	< 0.0094	< 0.0093	< 0.0088	< 0.0091	< 0.0091	< 0.0088	< 0.0095	< 0.0092	< 0.0096	< 0.0093	< 0.0095	< 0.0095	< 0.0095	< 0.0090
4,4'-DDD	3	13	4	--	**0.077**	**0.06**	**0.083**	**0.018**	**0.029**	**0.047**	**0.167**	< 0.0139	**0.134**	**0.048**	**0.135**	**0.018**	**0.018**	**0.031**	**0.093**	**0.173**	< 0.0142	< 0.0143	**0.021**	**0.137**
4,4'-DDT	2	8	11	--	**0.409**	< 0.0244	**0.199**	**0.185**	**0.159**	**0.115**	**0.254**	< 0.0256	**0.134**	**0.07**	**0.34**	**0.161**	**0.085**	**0.099**	**0.217**	**0.038**	< 0.0261	< 0.0262	**0.051**	< 0.0246
gamma-Chlordane	0.2	1	0.05	--	**0.019**	< 0.0111	**0.03**	< 0.0104	**0.012**	< 0.0105	< 0.0117	< 0.0116	**0.034**	< 0.0114	**0.017**	< 0.0110	< 0.0118	< 0.0115	< 0.0120	**0.021**	< 0.0118	< 0.0119	< 0.0118	**0.018**
alpha-Chlordane	0.2	1	0.05	--	**0.015**	< 0.0111	**0.017**	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	**0.022**	< 0.0114	**0.012**	< 0.0110	< 0.0118	< 0.0115	< 0.0120	**0.016**	< 0.0118	< 0.0119	< 0.0118	**0.013**
Aroclor 1016	0.2	1	0.2	--	< 0.0120	< 0.2485	< 0.2428	< 0.2319	< 0.2302	< 0.2362	< 0.2630	< 0.2602	< 0.2459	< 0.2561	< 0.2543	< 0.2460	< 0.2648	< 0.2571	< 0.2679	< 0.2591	< 0.2653	< 0.2666	< 0.2651	< 0.2507
Aroclor 1221	0.2	1	0.2	--	< 0.0221	< 0.4570	< 0.4465	< 0.4265	< 0.4234	< 0.4345	< 0.4838	< 0.4786	< 0.4182	< 0.4711	< 0.4677	< 0.4524	< 0.4870	< 0.4729	< 0.4927	< 0.4765	< 0.4880	< 0.4903	< 0.4875	< 0.4610
Aroclor 1242	0.2	1	0.2	--	< 0.0171	< 0.3549	< 0.3468	< 0.3313	< 0.3288	< 0.3375	< 0.3758	< 0.3717	< 0.3513	< 0.3659	< 0.3632	< 0.3514	< 0.3782	< 0.3673	< 0.3827	< 0.3701	< 0.3791	< 0.3808	< 0.3787	< 0.3581
Aroclor 1260	0.2	1	0.2	--	< 0.0039	< 0.0799	< 0.0780	< 0.0745	< 0.0740	< 0.0759	< 0.0845	< 0.0836	< 0.0790	< 0.0823	< 0.0817	< 0.0791	< 0.0851	< 0.0826	< 0.0861	< 0.0833	< 0.0853	< 0.0857	< 0.0852	< 0.0806

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-19S	B-20T	B-21U	B-22V	B-23W	B-24X	B-25Y	B-26Z	B-27AA	B-28BB	B-29CC	B-30DD	B-31EE	B-32FF	B-33GG	B-34HH	B-35II	B-36JJ	B-37KK	B-38LL
Sample Date					03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**10400**	**11100**	**15400**	**9060**	**7560**	**9690**	**6450**	**10200**	**8410**	**12800**	**13500**	**6270**	**10500**	**10100**	**6890**	**10600**	**15400**	**10200**	**7400**	**8850**
Antimony	31	450	6	ND	**0.522**	**0.415**	< 0.456	< 0.430	< 0.443	**2.92**	< 0.474	< 0.448	**2.91**	**2.76**	**1.93**	< 0.428	**9.24**	< 0.479	**73.5**	< 0.438	< 0.486	< 0.431	**0.719**	**4.61**
Arsenic	19	19	19	22.9	**9.42**	**15.7**	**20.7**	**5.97**	**5.96**	**13.4**	**7.64**	**7.11**	**7.72**	**12.5**	**11.2**	**5.05**	**6.93**	**13.6**	**5.47**	**10**	**10.8**	**14.8**	**5.4**	**7.37**
Barium	16,000	59,000	2,100	32.3	**48.5**	**67.3**	**66.1**	**27.8**	**23.6**	**40.6**	**30.1**	**26**	**50.4**	**107**	**60.8**	**23.8**	**132**	**64.7**	**68.1**	**44.4**	**40**	**64.6**	**41.7**	**37.8**
Beryllium	16	140	0.7	2	**0.933**	**0.816**	**1.61**	**0.722**	**0.636**	**0.981**	**0.532**	**0.902**	**0.857**	**1.17**	**1.42**	**0.471**	**0.777**	**0.946**	**0.573**	**0.789**	**1.48**	**1.12**	**0.608**	**0.811**
Cadmium	78	78	2	ND	< 0.112	< 0.079	< 0.114	< 0.107	< 0.111	< 0.113	**0.316**	< 0.112	< 0.132	**1.96**	< 0.120	< 0.107	**2.43**	**1.33**	**0.542**	< 0.110	< 0.121	< 0.108	< 0.110	**0.129**
Calcium	NLE	NLE	NLE	921	**2060**	**882**	**1060**	**2420**	**2500**	**936**	**385**	**1720**	**2400**	**2860**	**2280**	**1940**	**2120**	**824**	**21100**	**1260**	**1780**	**691**	**1070**	**2340**
Chromium	NLE	NLE	NLE	269	**93.7**	**74.4**	**208**	**63.8**	**57.9**	**116**	**73.3**	**86.4**	**63.4**	**104**	**137**	**45.8**	**104**	**90.5**	**47**	**124**	**164**	**145**	**57.6**	**74.5**
Cobalt	1,600	590	90	2.5	**2.09**	**1.39**	**1.45**	**2.73**	**2.63**	**1.29**	**0.882**	**1.92**	**2.74**	**3.53**	**2.05**	**2.1**	**2.95**	**1.31**	**4.11**	**1.46**	**0.726**	**1.16**	**2.52**	**1.85**
Copper	3,100	45,000	11,000	8	**16.8**	**10.5**	**31.9**	**21.8**	**26.2**	**29.3**	**20.7**	**56.5**	**19.2**	**28.9**	**19.7**	**23.1**	**17.5**	**30**	**35.1**	**53.5**	**3.38**	**18.7**	**15.3**	**9.28**
Iron	NLE	NLE	NLE	55,800	**25500**	**14900**	**56400**	**25000**	**21100**	**35900**	**21600**	**27900**	**19800**	**36700**	**35200**	**16100**	**22500**	**28100**	**19500**	**28200**	**35800**	**40800**	**17000**	**23000**
Lead	400	800	90	19.5	**39.8**	**11.9**	**119**	**29.6**	**36.4**	**91.9**	**35**	**19.6**	**148**	**1060**	**240**	**45.1**	**686**	**68.3**	**1090**	**59.4**	**8.02**	**79.1**	**24**	**108**
Magnesium	NLE	NLE	NLE	7,230	**2840**	**2990**	**6420**	**3110**	**2820**	**3390**	**1870**	**3000**	**1950**	**3830**	**4220**	**2070**	**2530**	**2540**	**1910**	**2980**	**5300**	**3940**	**1490**	**2450**
Manganese	11,000	5,900	65	90.7	**43.6**	**26.5**	**30.7**	**66**	**56.5**	**25.9**	**18**	**54.5**	**31.2**	**112**	**38.8**	**49.4**	**138**	**25.7**	**110**	**27.1**	**23.5**	**18.1**	**79.1**	**27.3**
Mercury	23	65	0.1	ND	**0.195**	**0.049**	**0.271**	**0.127**	**0.125**	**0.33**	**0.103**	**0.067**	**0.705**	**0.286**	**0.152**	**0.148**	**0.2**	**0.082**	**0.318**	**0.127**	**0.025**	**0.121**	**0.131**	**0.096**
Nickel	1,600	23,000	48	8.4	**6.98**	**4.92**	**7.45**	**7.36**	**6.55**	**5.66**	**3.75**	**5.67**	**9.97**	**12.5**	**7.49**	**6.96**	**9.36**	**5.75**	**9**	**5.49**	**5.24**	**5.99**	**7.62**	**7.91**
Potassium	NLE	NLE	NLE	15,400	**6090**	**5270**	**15500**	**5170**	**4250**	**8160**	**4600**	**6600**	**4150**	**7930**	**9860**	**3210**	**4700**	**5980**	**3430**	**6320**	**12000**	**10500**	**3380**	**5310**
Selenium	390	5,700	11	1.9	**1.33**	**1.01**	**1.83**	**1.09**	**0.731**	**1.89**	**0.841**	**0.768**	**1.69**	**1.81**	**1.57**	< 0.643	**1.39**	**2.02**	**1.46**	**1.13**	**3.25**	**2.08**	**0.919**	**0.942**
Silver	390	5,700	1	1.1	**2.83**	< 0.471	**2.79**	< 0.645	< 0.665	**2.38**	**1.24**	< 0.672	< 0.792	< 0.787	< 0.714	< 0.643	< 0.720	< 0.718	< 0.877	< 0.657	< 0.729	**2.34**	< 0.660	< 0.763
Sodium	NLE	NLE	NLE	51.6	**89.3**	**76.2**	**405**	**208**	**137**	**508**	**217**	**90.3**	**126**	**163**	**149**	**176**	**177**	**256**	**206**	**160**	**141**	**198**	**105**	**136**
Thallium	5	79	3	ND	< 0.674	< 0.471	< 0.683	< 0.645	< 0.665	< 0.680	< 0.711	< 0.672	< 0.792	< 0.787	< 0.714	< 0.643	< 0.720	< 0.718	< 0.877	< 0.657	< 0.729	< 0.646	< 0.660	< 0.763
Vanadium	78	1,100	NLE	94.1	**48.2**	**40**	**95.3**	**44.1**	**36.5**	**48.1**	**33.2**	**44.6**	**40**	**73.9**	**63.3**	**34.3**	**48.8**	**40.7**	**38**	**52.8**	**71.5**	**46.5**	**44.1**	**48.5**
Zinc	23,000	110,000	930	81.4	**67.8**	**34.7**	**79**	**89.8**	**59.6**	**65.2**	**40.6**	**40.4**	**174**	**410**	**112**	**61.4**	**532**	**70.2**	**485**	**38.3**	**41.9**	**75.6**	**95.5**	**158**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-39MM	B-40NN	B-41OO	B-42PP	B-43	B-44	B-45	B-46	B-47	B-48	B-49	B-50	B-51	B-52	B-53	B-54	B-55	B-56	B-57	B-58
Sample Date					03/18/99	03/18/99	03/18/99	03/18/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4357.25	4357.27	4357.29	4357.31	4372.03	4372.05	4372.07	4372.09	4372.11	4372.13	4376.03	4376.05	4376.07	4376.09	4376.11	4376.13	4376.15	4376.17	4376.19	4376.21
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	< 930	< 960	< 1900	< 930	< 880	< 1100	< 870	< 850	< 800	< 880	< 1000	< 1200
Acetone	70,000,000	NLE	19,000	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	**1500**	**1200**	< 1300	< 620	< 590	< 710	< 580	< 570	< 530	< 590	< 680	< 820
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Methylene Chloride	34,000	97,000	10	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	**1200**	**1100**	**1100**	< 1300	< 620	< 590	< 710	**1300**	< 570	< 530	< 590	< 680	< 820
2-Butanone	3,100,000	44,000,000	900	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	< 930	< 960	< 1900	< 930	< 880	< 1100	< 870	< 850	< 800	< 880	< 1000	< 1200
Benzene	2,000	5,000	5	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	< 620	< 640	< 1300	< 620	< 590	< 710	< 580	< 570	< 530	< 590	< 680	< 820
Toluene	6,300,000	91,000,000	7000	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Tetrachloroethene	2,000	5,000	5	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Chlorobenzene	510,000	7,400,000	600	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	< 620	< 640	< 1300	< 620	< 590	**1300**	< 580	< 570	< 530	< 590	< 680	< 820
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	< 930	< 960	< 1900	< 930	< 880	**1600**	< 870	< 850	< 800	< 880	< 1000	< 1200
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	**2000**	**1900**	**2000**	**2000**	**4100**	**2100**	ND	**6200**	**1800**	**2000**	ND	ND	ND	**3600**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4357.24	4357.26	4357.28	4357.30	4372.02	4372.04	4372.06	4372.08	4372.10	4372.12	4376.02	4376.04	4376.06	4376.08	4376.10	4376.12	4376.14	4376.16	4376.18	4376.20
Aniline	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1200	**1200** J	< 1200	**200** J	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**350** J	< 1100	< 1100	< 1200	< 1100	< 1300	**1600** J
Benzyl alcohol	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
4-Methylphenol	31,000	340,000	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Nitrobenzene	31,000	340,000	200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzoic Acid	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Naphthalene	6,000	17,000	25,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**230** J	< 1100	< 1100	< 1200	< 1100	< 1300	**240** J
4-Chloroaniline	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**360** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Acenaphthylene	NLE	300,000,000	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**150** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**180** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Dibenzofuran	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	**130** J	< 1100	< 1200	< 1100	< 1300	< 2000
Fluorene	2,300,000	24,000,000	170,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**170** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Azobenzene	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Hexachlorobenzene	300	1,000	200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Phenanthrene	NLE	300,000,000	NLE	--	< 1200	< 1400	< 1200	**140** J	**170** J	< 1000	**540** J	**360** J	< 1200	< 1200	< 1500	**190** J	< 1100	**880** J	**140** J	**120** J	< 1200	**230** J	**290** J	**220** J
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**210** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**140** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**370** JB	**170** JB	**120** JB	**470** JB	**810** JB	**790** JB	**630** JB	**450** JB	**390** JB	**220** JB	**650** JB	**260** JB	**980** JB	**590** JB	**1100** B	**550** JB	**260** JB	**1300** B	**590** JB	**2500** B
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**420** J	**470** J	< 1200	**190** J	**390** J	< 1000	**1100** J	**460** J	< 1200	**210** J	< 1500	**290** J	< 1100	**530** J	**290** J	**260** J	**150** J	**430** J	**700** J	**210** J
Benzidine	700	700	700	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Pyrene	1,700,000	18,000,000	840,000	--	**360** J	**640** J	< 1200	**230** J	**340** J	< 1000	**1200**	**490** J	**170** J	**360** J	**340** J	**410** J	< 1100	**880** J	**160** J	**260** J	**160** J	**400** J	**660** J	**290** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	**160** J	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(a)anthracene	600	2,000	800	--	**210** J	**400** J	< 1200	< 1400	**250** J	< 1000	**580** J	**250** J	< 1200	**200** J	< 1500	**200** J	< 1100	**360** J	< 1100	**140** J	< 1200	**200** J	**400** J	< 2000
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Chrysene	62,000	230,000	80,000	--	**480** J	**660** J	< 1200	**200** J	**450** J	< 1000	**1000** J	**480** J	**180** J	**440** J	**350** J	**400** J	< 1100	**730** J	**230** J	**260** J	**170** J	**390** J	**630** J	**290** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**160** J	**500** J	**190** J	**660** J	**150** J	**130** J	**410** J	**190** J	**280** J	**260** J	**370** J	**150** J	**150** J	**340** J	< 1100	**200** J	< 1200	**220** J	< 1300	**3600**
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(b)fluoranthene	600	2,000	2,000	--	**150** J	**430** J	< 1200	< 1400	**260** J	< 1000	**560** J	**260** J	< 1200	**230** J	< 1500	**180** J	< 1100	**190** J	**110** J	**120** J	< 1200	**180** J	**310** J	< 2000
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**150** J	**430** J	< 1200	< 1400	**250** J	< 1000	**530** J	**220** J	< 1200	**210** J	< 1500	**180** J	< 1100	**200** J	**150** J	**140** J	< 1200	**180** J	**280** J	< 2000
Benzo(a)pyrene	200	200	200	--	**220** J	**390** J	< 1200	< 1400	**240** J	< 1000	**640** J	**250** J	< 1200	**210** J	< 1500	**210** J	< 1100	**310** J	**120** J	**130** J	< 1200	**190** J	**350** J	< 2000
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**220** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**170** J	< 1100	< 1100	< 1200	**170** J	**240** J	< 2000
Dibenz(a,h)anthracene	200	200	800	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**250** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**240** J	< 1100	< 1100	< 1200	**170** J	**250** J	< 2000
TICs	NLE	NLE	NLE	--	**12400**	**12200**	**3300**	**7800**	**29800**	**3900**	**3500**	**3300**	**2100**	**2500**	ND	ND	**6000**	**25850**	**235400**	**1000**	**3200**	**6360**	**4600**	**74300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0089	< 0.0096	< 0.0089	< 0.0096	< 0.0091	< 0.0087	< 0.0096	< 0.0090	< 0.0091	< 0.0093	< 0.0101	< 0.0091	< 0.0092	< 0.0088	< 0.0091	< 0.0088	< 0.0090	< 0.0092	< 0.0091	< 0.0164
Heptachlor	0.1	0.7	0.5	--	< 0.0066	< 0.0072	< 0.0066	< 0.0072	< 0.0069	< 0.0065	< 0.0072	< 0.0067	< 0.0068	< 0.0070	< 0.0076	< 0.0068	< 0.0069	< 0.0066	< 0.0068	< 0.0066	< 0.0067	< 0.0069	< 0.0068	< 0.0123
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0133	< 0.0144	< 0.0133	< 0.0143	< 0.0137	< 0.0131	< 0.0144	< 0.0135	< 0.0137	< 0.0139	< 0.0151	< 0.0136	< 0.0138	< 0.0133	< 0.0137	< 0.0133	< 0.0135	< 0.0138	< 0.0137	< 0.0246
Endosulfan I	470	6,800	4	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	< 0.0114	< 0.0116	< 0.0126	< 0.0114	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
4,4'-DDE	2	9	18	--	**0.078**	**0.056**	**0.014**	**0.042**	**0.097**	< 0.0087	**0.082**	**0.024**	**0.158**	**0.12**	**0.081**	**0.043**	**0.045**	< 0.0088	**0.073**	**0.015**	**0.022**	**0.13**	**0.093**	< 0.0164
Dieldrin	0.04	0.2	0.003	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	**0.011**	< 0.0116	< 0.0126	**0.022**	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
Endrin	23	340	1	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	< 0.0114	< 0.0116	< 0.0126	< 0.0114	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
Endosulfan II	470	6,800	4	--	< 0.0089	< 0.0096	< 0.0089	**0.042**	< 0.0091	< 0.0087	< 0.0096	< 0.0090	< 0.0091	< 0.0093	< 0.0101	< 0.0091	< 0.0092	< 0.0088	< 0.0091	< 0.0088	< 0.0090	< 0.0092	< 0.0091	< 0.0164
4,4'-DDD	3	13	4	--	**0.302**	**0.087**	< 0.0133	**0.119**	**0.35**	< 0.0131	**0.358**	**0.108**	**0.309**	**0.458**	**0.203**	**0.071**	**0.067**	**0.039**	**0.407**	< 0.0133	**0.043**	**0.101**	**0.414**	**0.087**
4,4'-DDT	2	8	11	--	**0.032**	< 0.0264	**0.036**	< 0.0263	**0.292**	< 0.0240	**0.042**	< 0.0247	**0.043**	< 0.0256	< 0.0278	**0.031**	**0.28**	< 0.0243	**0.047**	**0.055**	< 0.0247	**0.247**	**0.057**	< 0.0451
gamma-Chlordane	0.2	1	0.05	--	**0.024**	**0.021**	< 0.0111	< 0.0119	**0.02**	< 0.0109	**0.016**	**0.012**	**0.022**	**0.021**	**0.016**	**0.02**	< 0.0115	< 0.0110	**0.023**	**0.013**	< 0.0112	**0.012**	**0.028**	< 0.0205
alpha-Chlordane	0.2	1	0.05	--	**0.022**	**0.029**	< 0.0111	< 0.0119	**0.015**	< 0.0109	**0.013**	< 0.0112	**0.014**	**0.012**	< 0.0126	**0.018**	< 0.0115	< 0.0110	**0.016**	< 0.0110	< 0.0112	< 0.0115	**0.018**	< 0.0205
Aroclor 1016	0.2	1	0.2	--	< 0.2481	< 0.2688	< 0.2482	< 0.2675	< 0.2560	< 0.2443	< 0.2684	< 0.2519	< 0.2555	< 0.2603	< 0.2827	< 0.2543	< 0.2569	< 0.2474	< 0.2557	< 0.2474	< 0.2519	< 0.2583	< 0.2557	< 0.4591
Aroclor 1221	0.2	1	0.2	--	< 0.4563	< 0.4943	< 0.4565	< 0.4919	< 0.4708	< 0.4493	< 0.4936	< 0.4633	< 0.4700	< 0.4788	< 0.4922	< 0.4676	< 0.4724	< 0.4550	< 0.4704	< 0.4550	< 0.4632	< 0.4750	< 0.4703	< 0.8445
Aroclor 1242	0.2	1	0.2	--	< 0.3544	< 0.3839	< 0.3546	< 0.3821	< 0.3657	< 0.3490	< 0.3834	< 0.3598	< 0.3650	< 0.3719	< 0.4039	< 0.3632	< 0.3670	< 0.3534	< 0.3653	< 0.3534	< 0.3598	< 0.3689	< 0.3653	< 0.6559
Aroclor 1260	0.2	1	0.2	--	< 0.0797	< 0.0864	< 0.0798	< 0.0860	< 0.0823	< 0.0785	< 0.0863	< 0.0810	< 0.0821	< 0.0837	< 0.0909	< 0.0817	< 0.0826	< 0.0795	< 0.0822	< 0.0795	< 0.0810	< 0.0830	< 0.0822	< 0.1476

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-39MM	B-40NN	B-41OO	B-42PP	B-43	B-44	B-45	B-46	B-47	B-48	B-49	B-50	B-51	B-52	B-53	B-54	B-55	B-56	B-57	B-58
Sample Date					03/18/99	03/18/99	03/18/99	03/18/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**12100**	**9160**	**9440**	**7360**	**10600**	**8030**	**7910**	**9610**	**8180**	**15300**	**36900**	**13500**	**6650**	**17000**	**9670**	**7520**	**14800**	**11800**	**9840**	**9520**
Antimony	31	450	6	ND	**4.68**	**5.07**	**0.635**	**7.26**	**0.531**	**0.492**	**3.1**	**1.63**	**19.8**	**1.94**	**29.8**	**2.77**	**0.503**	< 0.424	**0.469**	< 0.440	**0.537**	< 0.463	**4.02**	< 0.741
Arsenic	19	19	19	22.9	**8.32**	**8.77**	**10.6**	**9.93**	**11.5**	**5.98**	**8.56**	**11.1**	**8.45**	**9.18**	**9.76**	**10.7**	**7.55**	**11.5**	**5.86**	**11.8**	**7.37**	**11.7**	**8.78**	**8.56**
Barium	16,000	59,000	2,100	32.3	**60.9**	**131**	**38.4**	**68.2**	**63.9**	**12**	**62.5**	**57.6**	**40.3**	**55.1**	**157**	**45**	**26.7**	**58.2**	**39.3**	**32.7**	**10.7**	**30.9**	**79.3**	**66.8**
Beryllium	16	140	0.7	2	**0.923**	**0.854**	**0.851**	**1.07**	**1**	**0.609**	**0.768**	**1.05**	**0.836**	**1.47**	**1.05**	**1.09**	**0.803**	**1.32**	**0.653**	**0.726**	**1.02**	**0.802**	**0.88**	**0.646**
Cadmium	78	78	2	ND	**0.246**	**5.29**	< 0.118	< 0.116	< 0.104	< 0.107	**0.526**	< 0.112	**0.228**	< 0.115	**0.488**	**0.546**	< 0.099	< 0.106	< 0.113	**0.39**	< 0.112	< 0.116	**1.26**	< 0.185
Calcium	NLE	NLE	NLE	921	**5270**	**4130**	**1810**	**1450**	**2420**	**716**	**3340**	**2560**	**1740**	**1550**	**4080**	**2640**	**620**	**2370**	**526**	**2480**	**824**	**748**	**2050**	**4140**
Chromium	NLE	NLE	NLE	269	**85.2**	**465**	**66.6**	**84.8**	**103**	**57.6**	**58.1**	**94.1**	**79.8**	**96.1**	**83.6**	**84.7**	**82.4**	**137**	**51.3**	**67.4**	**108**	**97.8**	**74.5**	**57.5**
Cobalt	1,600	590	90	2.5	**3.48**	**2.89**	**1.35**	**1.18**	**1.63**	**2.4**	**4.65**	**2.85**	**3**	**2.76**	**6.89**	**3.87**	**0.865**	**2.88**	**1.57**	**2.09**	**1.66**	**1.7**	**3**	**3.71**
Copper	3,100	45,000	11,000	8	**20.1**	**135**	**14**	**25.4**	**24.1**	**4.32**	**49.4**	**44.4**	**19.5**	**10.1**	**40.1**	**28.9**	**12.9**	**24.7**	**11.4**	**18.2**	**18.3**	**22.5**	**22.7**	**38.8**
Iron	NLE	NLE	NLE	55,800	**27600**	**27400**	**21700**	**28100**	**27200**	**21200**	**23100**	**31400**	**24200**	**31700**	**32200**	**27800**	**21800**	**38100**	**17500**	**24000**	**38800**	**32400**	**26600**	**34900**
Lead	400	800	90	19.5	**181**	**112**	**17.4**	**90.1**	**134**	**4.48**	**87.2**	**90.6**	**141**	**59.1**	**1490**	**188**	**21**	**30**	**17.3**	**49.2**	**8.41**	**50.4**	**883**	**187**
Magnesium	NLE	NLE	NLE	7,230	**3000**	**2530**	**1880**	**2670**	**3560**	**1450**	**2820**	**3290**	**2170**	**3490**	**3000**	**2780**	**2400**	**4490**	**1720**	**2880**	**3530**	**3380**	**2460**	**2380**
Manganese	11,000	5,900	65	90.7	**132**	**43.1**	**29.3**	**21**	**39.9**	**91.7**	**101**	**80.9**	**75.7**	**40.3**	**152**	**91.1**	**16.9**	**95.2**	**38.2**	**60.9**	**27.1**	**38.6**	**35.2**	**222**
Mercury	23	65	0.1	ND	**0.28**	**2.17**	**0.186**	**0.217**	**0.249**	**0.067**	**0.26**	**0.297**	**0.838**	**0.098**	**0.221**	**0.155**	**0.048**	**0.086**	**0.166**	**4.472**	**0.516**	**0.168**	**0.367**	**2.805**
Nickel	1,600	23,000	48	8.4	**17.3**	**15.4**	**5.91**	**6.73**	**7.54**	**3.99**	**12.6**	**17.9**	**12.7**	**12.3**	**19.4**	**15.3**	**3.94**	**14.4**	**5.29**	**7.6**	**9.07**	**6.45**	**11**	**16.1**
Potassium	NLE	NLE	NLE	15,400	**5970**	**5190**	**3620**	**5950**	**6710**	**3640**	**3530**	**6230**	**4600**	**7360**	**5170**	**4390**	**5820**	**10400**	**3240**	**5220**	**5180**	**7380**	**5110**	**3680**
Selenium	390	5,700	11	1.9	**1.04**	**1.45**	**1.29**	**1.18**	**0.752**	< 0.643	**1.16**	**0.698**	**0.722**	< 0.692	< 0.987	< 0.652	**0.648**	**0.896**	< 0.676	< 0.661	**0.995**	< 0.694	**0.847**	< 1.112
Silver	390	5,700	1	1.1	< 0.781	**124**	< 0.706	< 0.699	< 0.626	< 0.643	< 0.734	**1.93**	**1.71**	< 0.692	< 0.987	< 0.652	< 0.592	< 0.635	< 0.676	< 0.661	< 0.670	< 0.694	< 0.751	< 1.112
Sodium	NLE	NLE	NLE	51.6	**148**	**215**	**152**	**223**	**165**	**168**	**215**	**192**	**219**	**161**	**310**	**356**	**137**	**269**	**537**	**185**	**107**	**528**	**169**	**312**
Thallium	5	79	3	ND	< 0.781	< 0.862	< 0.706	< 0.699	< 0.626	< 0.643	< 0.734	< 0.670	< 0.599	< 0.692	< 0.987	< 0.652	< 0.592	< 0.635	< 0.676	< 0.661	< 0.670	< 0.694	< 0.751	< 1.112
Vanadium	78	1,100	NLE	94.1	**121**	**71.4**	**37.9**	**37.6**	**53**	**58.3**	**50.3**	**107**	**39.5**	**60.9**	**48.6**	**62.4**	**37.1**	**78.1**	**29.6**	**38.5**	**58.2**	**52**	**73**	**42.1**
Zinc	23,000	110,000	930	81.4	**249**	**518**	**37.6**	**125**	**81.6**	**25**	**320**	**221**	**231**	**129**	**651**	**360**	**32.2**	**85.7**	**30.9**	**91**	**72.7**	**44.3**	**249**	**189**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-59	B-60	B-61	B-62	B-63	B-64	B-65	B-66	B-67	B-68	B-69	B-70	B-71	B-72	B-73	B-74	B-75	B-76	B-77	B-78
Sample Date					03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4376.23	4376.25	4376.27	4376.29	4376.31	4376.33	4376.35	4376.37	4382.03	4382.05	4382.07	4382.09	4382.11	4382.13	4382.15	4382.17	4382.19	4382.21	4382.23	4382.25
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
Acetone	70,000,000	NLE	19,000	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Methylene Chloride	34,000	97,000	10	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
2-Butanone	3,100,000	44,000,000	900	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
Benzene	2,000	5,000	5	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
Toluene	6,300,000	91,000,000	7000	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Tetrachloroethene	2,000	5,000	5	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Chlorobenzene	510,000	7,400,000	600	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 640	< 620	< 680	< 610	< 590	< 710	**750** J	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
TICs	NLE	NLE	NLE	--	**4600**	**2100**	ND	ND	ND	ND	**38500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2200**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4376.22	4376.24	4376.26	4376.28	4376.30	4376.32	4376.34	4376.36	4382.02	4382.04	4382.06	4382.08	4382.10	4382.12	4382.14	4382.16	4382.18	4382.20	4382.22	4382.24
Aniline	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
1,4-Dichlorobenzene	5,000	13,000	2,000	--	**260** J	< 1200	< 1200	**610** J	< 1100	< 1300	**4200**	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	**230** J	< 1300	< 1100	< 1200	< 1100	**400** J
Benzyl alcohol	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
4-Methylphenol	31,000	340,000	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**1100** J	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Nitrobenzene	31,000	340,000	200	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzoic Acid	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Naphthalene	6,000	17,000	25,000	--	< 1300	< 1200	< 1200	**540** J	< 1100	< 1300	**10000**	**560** J	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	**300** J
4-Chloroaniline	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**520** J	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Acenaphthylene	NLE	300,000,000	NLE	--	< 1300	< 1200	< 1200	< 1400	**270** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	**180** J	< 1200	**490** J	< 1100	< 1200	< 1100	< 1400
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1300	< 1200	< 1200	< 1400	**560** J	< 1300	< 2000	**480** J	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Dibenzofuran	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	**330** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**220** J	< 1200	< 1200	**180** J	**150** J	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	**230** JB
Fluorene	2,300,000	24,000,000	170,000	--	< 1300	< 1200	< 1200	< 1400	**740** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Azobenzene	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Hexachlorobenzene	300	1,000	200	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Phenanthrene	NLE	300,000,000	NLE	--	**530** J	< 1200	< 1200	**180** J	**6300**	**260** J	< 2000	**270** J	**320** J	< 1200	**1000** J	**240** J	**150** J	**580** J	< 1200	**1300**	< 1100	< 1200	**140** J	**290** J
Anthracene	17,000,000	30,000,000	2,400,000	--	**150** J	< 1200	< 1200	< 1400	**1900**	< 1300	< 2000	< 1200	< 1200	<1200	**200** J	< 1100	< 1100	**250** J	< 1200	**510** J	< 1100	< 1200	< 1100	< 1400
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**630** JB	**320** JB	**170** JB	**210** JB	**420** JB	< 1300	**2700** B	**650** JB	**220** JB	**680** JB	**610** JB	**440** JB	**520** JB	**530** JB	**740** JB	**230** JB	**130** JB	**220** JB	**160** JB	**920** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**630** J	< 1200	< 1200	**310** J	**8000**	**410** J	< 2000	**960** J	**750** J	<1200	**2100**	**510** J	**760** J	**1400**	<1200	**2400**	< 1100	**200** J	**180** J	**400** J
Benzidine	700	700	700	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Pyrene	1,700,000	18,000,000	840,000	--	**630** J	< 1200	< 1200	**240** J	**6200**	**340** J	< 2000	**910** J	**680** J	< 1200	**1600**	**450** J	**700** J	**1300**	< 1200	**2400**	< 1100	**190** J	**190** J	**550** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzo(a)anthracene	600	2,000	800	--	**310** J	< 1200	< 1200	**240** J	**3600**	**220** J	< 2000	**290** J	**410** J	< 1200	**920** J	**260** J	**500** J	**780** J	< 1200	**1300**	< 1100	< 1200	< 1100	**160** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Chrysene	62,000	230,000	80,000	--	**580** J	< 1200	< 1200	**230** J	**5400**	**350** J	< 2000	**460** J	**700** J	< 1200	**1600**	**640** J	**810** J	**1400**	< 1200	**2300**	< 1100	**200** J	**200** J	**470** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**800** J	**160** J	**180** J	**28000** D	**170** JB	**490** JB	**4900** B	**1900** B	**230** JB	**160** JB	< 1200	**190** JB	**330** JB	**920** JB	**280** JB	**350** JB	< 1100	**180** JB	**270** JB	**5000**
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	**260** J	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzo(b)fluoranthene	600	2,000	2,000	--	**250** J	< 1200	< 1200	< 1400	**3400**	**170** J	< 2000	**300** J	**450** J	< 1200	**860** J	**400** J	**670** J	**880** J	< 1200	**1500**	< 1100	**130** J	< 1100	< 1400
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**230** J	< 1200	< 1200	< 1400	**2300**	**150** J	< 2000	**310** J	**400** J	< 1200	**860** J	**340** J	**490** J	**890** J	< 1200	**1400**	< 1100	< 1200	< 1100	< 1400
Benzo(a)pyrene	200	200	200	--	**270** J	< 1200	< 1200	< 1400	**3100**	**180** J	< 2000	**250** J	**450** J	< 1200	**960** J	**290** J	**480** J	**890** J	< 1200	**1500**	< 1100	< 1200	< 1100	< 1400
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**150** J	< 1200	< 1200	< 1400	**1700**	< 1300	< 2000	< 1200	**200** J	< 1200	**650** J	**240** J	**200** J	**450** J	< 1200	**750** J	< 1100	< 1200	< 1100	< 1400
Dibenz(a,h)anthracene	200	200	800	--	< 1300	< 1200	< 1200	< 1400	**820** J	< 1300	< 2000	< 1200	< 1200	< 1200	**220** J	< 1100	< 1100	< 1200	< 1200	**290** J	< 1100	< 1200	< 1100	< 1400
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**160** J	< 1200	< 1200	< 1400	**1500**	< 1300	< 2000	< 1200	**200** J	< 1200	**700** J	**250** J	**180** J	**430** J	< 1200	**700** J	< 1100	< 1200	< 1100	< 1400
TICs	NLE	NLE	NLE	--	**168400**	**1700**	**4100**	**53800**	**13200**	**34900**	**55400**	**1800**	**15800**	**8450**	**26700**	**9570**	**6860**	**33300**	**11200**	**140400**	**7620**	**59300**	**39400**	**79900**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0094	< 0.0090	< 0.0094	< 0.0092	< 0.0093	< 0.0101	< 0.0165	< 0.0092	< 0.0091	< 0.0087	< 0.0091	< 0.0085	< 0.0084	< 0.0094	< 0.0094	< 0.0093	< 0.0088	< 0.0092	< 0.0089	< 0.0113
Heptachlor	0.1	0.7	0.5	--	< 0.0070	< 0.0068	< 0.0070	< 0.0069	< 0.0070	< 0.0076	< 0.0124	< 0.0069	< 0.0068	< 0.0065	< 0.0068	< 0.0064	< 0.0063	< 0.0070	< 0.0071	< 0.0070	< 0.0066	< 0.0069	< 0.0067	< 0.0085
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0140	< 0.0135	< 0.0141	< 0.0138	< 0.0139	< 0.0152	< 0.0248	< 0.0138	< 0.0137	< 0.0131	< 0.0137	< 0.0128	< 0.0126	< 0.0140	< 0.0142	< 0.0139	< 0.0131	< 0.0138	< 0.0133	< 0.0169
Endosulfan I	470	6,800	4	--	< 0.0117	< 0.0113	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	< 0.0114	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	< 0.0116	< 0.0109	< 0.0115	< 0.0111	< 0.0141
4,4'-DDE	2	9	18	--	**0.077**	**0.072**	**0.045**	**0.054**	**0.08**	**0.073**	< 0.0165	**0.052**	**0.153**	**0.074**	< 0.0091	**0.04**	**0.01**	**0.045**	**0.023**	**0.2**	**0.02**	**0.198**	**0.208**	**0.122**
Dieldrin	0.04	0.2	0.003	--	< 0.0117	**0.022**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	**0.033**	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	**0.12**	< 0.0109	**0.121**	**0.128**	< 0.0141
Endrin	23	340	1	--	< 0.0117	< 0.0113	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	< 0.0114	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	< 0.0116	< 0.0109	< 0.0115	< 0.0111	< 0.0141
Endosulfan II	470	6,800	4	--	< 0.0094	< 0.0090	< 0.0094	< 0.0092	< 0.0093	< 0.0101	< 0.0165	< 0.0092	< 0.0091	< 0.0087	< 0.0091	< 0.0085	< 0.0084	< 0.0094	< 0.0094	< 0.0093	< 0.0088	< 0.0092	< 0.0089	< 0.0113
4,4'-DDD	3	13	4	--	**0.144**	**0.0135**	**0.0124**	**0.272**	**0.043**	**0.1**	**0.144**	**0.173**	**0.737**	**0.03**	< 0.0137	**0.058**	< 0.0126	**0.174**	**0.042**	**2.173**	**0.025**	**1.108**	**0.973**	**0.099**
4,4'-DDT	2	8	11	--	**0.078**	**0.0145**	< 0.0258	< 0.0254	**0.214**	< 0.0279	**0.658**	< 0.0253	**0.093**	**0.104**	< 0.0251	**0.029**	**0.048**	< 0.0257	< 0.0260	**0.121**	< 0.0241	**0.846**	**0.344**	**0.08**
gamma-Chlordane	0.2	1	0.05	--	< 0.0117	**0.0113**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	**0.014**	**0.08**	**0.021**	< 0.0114	**0.011**	< 0.0105	**0.022**	< 0.0118	**0.209**	< 0.0109	**0.065**	**0.045**	**0.043**
alpha-Chlordane	0.2	1	0.05	--	< 0.0117	**0.0113**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	**0.062**	**0.023**	< 0.0114	< 0.0107	< 0.0105	**0.018**	< 0.0118	**0.204**	< 0.0109	**0.042**	**0.034**	**0.034**
Aroclor 1016	0.2	1	0.2	--	< 0.2621	< 0.2526	< 0.2630	< 0.2584	< 0.2603	**4.763**	< 0.4624	**0.014**	< 0.2552	< 0.2438	< 0.2555	< 0.2388	< 0.2343	< 0.2621	< 0.2642	< 0.2595	< 0.2451	< 0.2572	< 0.2486	< 0.0158
Aroclor 1221	0.2	1	0.2	--	< 0.4820	< 0.4645	< 0.4837	< 0.4752	< 0.4787	< 0.0261	< 0.8504	< 0.4729	< 0.4693	< 0.4485	< 0.4699	< 0.4392	< 0.4310	< 0.4820	< 0.4860	< 0.4773	< 0.4507	< 0.4730	< 0.4573	< 0.0290
Aroclor 1242	0.2	1	0.2	--	< 0.3744	< 0.3608	< 0.3757	< 0.3691	< 0.3718	< 0.0203	< 0.6605	< 0.3673	< 0.3645	< 0.3483	< 0.3650	< 0.3411	< 0.3347	< 0.3744	< 0.3775	< 0.3707	< 0.3501	< 0.3674	< 0.3552	**21.554**
Aroclor 1260	0.2	1	0.2	--	< 0.0842	< 0.0812	< 0.0845	< 0.0831	< 0.0837	< 0.0046	< 0.1486	< 0.0826	< 0.0820	< 0.0784	< 0.0821	< 0.0768	< 0.0753	< 0.0842	< 0.0849	< 0.0834	< 0.0788	< 0.0827	< 0.0799	< 0.0051

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-59	B-60	B-61	B-62	B-63	B-64	B-65	B-66	B-67	B-68	B-69	B-70	B-71	B-72	B-73	B-74	B-75	B-76	B-77	B-78
Sample Date					03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**7790**	**15400**	**8470**	**12400**	**11200**	**13900**	**10200**	**8630**	**9030**	**11700**	**17500**	**18100**	**6300**	**10700**	**18500**	**12000**	**9690**	**15000**	**13600**	**9350**
Antimony	31	450	6	ND	**1.3**	**4.46**	**4.48**	**1.95**	**0.648**	**0.627**	**10.3**	< 0.464	**5.21**	**0.537**	< 0.489	< 0.397	**0.53**	**6.95**	< 0.477	**1.11**	< 0.444	**9.21**	**5.47**	**1.52**
Arsenic	19	19	19	22.9	**8.72**	**8.62**	**7.85**	**5.72**	**8.89**	**11.9**	**8.31**	**8.66**	**18.3**	**8.71**	**13.4**	**15.7**	**5.61**	**7.99**	**18.6**	**10.2**	**11.2**	**10.5**	**9.73**	**11**
Barium	16,000	59,000	2,100	32.3	**64.1**	**43.3**	**53.6**	**85**	**39.8**	**83.2**	**498**	**35.6**	**48.2**	**66.9**	**28**	**46.9**	**20.4**	**85.3**	**94.3**	**304**	**60.6**	**66.9**	**117**	**86.4**
Beryllium	16	140	0.7	2	**0.745**	**0.759**	**0.7**	**0.58**	**0.907**	**1.3**	**0.461**	**1.02**	**0.768**	**0.962**	**2.07**	**1.61**	**0.45**	**0.87**	**2.05**	**0.992**	**1.16**	**1.7**	**1.29**	**0.764**
Cadmium	78	78	2	ND	< 0.126	< 0.116	< 0.123	**2.25**	**0.124**	< 0.135	< 0.206	< 0.116	**5.63**	< 0.117	< 0.122	< 0.099	< 0.107	**0.751**	< 0.119	**1.67**	< 0.111	**0.152**	< 0.113	**0.27**
Calcium	NLE	NLE	NLE	921	**8930**	**1500**	**2460**	**3850**	**894**	**706**	**8150**	**431**	**4960**	**2150**	**1480**	**1760**	**5240**	**49400**	**4170**	**7270**	**765**	**1990**	**1020**	**2000**
Chromium	NLE	NLE	NLE	269	**75.4**	**62**	**61.5**	**107**	**69.1**	**119**	**90.7**	**99.2**	**92.2**	**80.8**	**194**	**196**	**48.4**	**76**	**254**	**89.7**	**110**	**103**	**101**	**74.9**
Cobalt	1,600	590	90	2.5	**3.06**	**4.93**	**3.56**	**4.81**	**3.02**	**2.48**	**5.68**	**1.42**	**6.07**	**2.4**	**1.76**	**2.73**	**2.18**	**2.96**	**0.695**	**5.47**	**1.72**	**3.21**	**1.97**	**4.69**
Copper	3,100	45,000	11,000	8	**63.5**	**12.6**	**16.1**	**91.7**	**16.6**	**72.5**	**145**	**18**	**69.9**	**10.6**	**7.53**	**36.6**	**23.5**	**23.4**	**28.2**	**115**	**3.76**	**15**	**13.4**	**58.5**
Iron	NLE	NLE	NLE	55,800	**80600**	**25600**	**23200**	**37700**	**30600**	**40600**	**69200**	**29200**	**80500**	**18000**	**61600**	**50000**	**26100**	**27300**	**68200**	**36000**	**31000**	**36600**	**33200**	**47100**
Lead	400	800	90	19.5	**169**	**666**	**352**	**199**	**37.1**	**117**	**222**	**20.3**	**342**	**25.1**	**29.2**	**69.2**	**46.1**	**353**	**47.5**	**137**	**8.35**	**549**	**255**	**145**
Magnesium	NLE	NLE	NLE	7,230	**2380**	**2090**	**2330**	**1460**	**2120**	**3600**	**1640**	**2840**	**2810**	**2110**	**7490**	**7990**	**3750**	**3550**	**7730**	**4220**	**3260**	**4450**	**3830**	**2500**
Manganese	11,000	5,900	65	90.7	**455**	**178**	**165**	**210**	**99.7**	**41.8**	**324**	**27.8**	**340**	**55.5**	**47.8**	**60.6**	**113**	**495**	**104**	**102**	**62.5**	**48.7**	**31.2**	**663**
Mercury	23	65	0.1	ND	**1.632**	**0.425**	**0.377**	**1.572**	**0.273**	**0.661**	**0.5**	**0.089**	**0.314**	**0.095**	**0.162**	**0.185**	**0.15**	**0.378**	**0.312**	**1.963**	**0.228**	**0.147**	**0.108**	**11.096**
Nickel	1,600	23,000	48	8.4	**12.7**	**11.3**	**9.06**	**56.7**	**11**	**10.9**	**27**	**7.08**	**22**	**8.05**	**8.48**	**11.6**	**8.26**	**11.7**	**6.96**	**29.1**	**6.82**	**16.6**	**9.07**	**27.8**
Potassium	NLE	NLE	NLE	15,400	**4350**	**3680**	**4030**	**2690**	**4670**	**8060**	**3290**	**6890**	**5610**	**3330**	**17900**	**14000**	**3140**	**5420**	**17600**	**5980**	**7430**	**8070**	**8300**	**4650**
Selenium	390	5,700	11	1.9	**0.882**	< 0.698	< 0.737	< 0.851	< 0.674	< 0.811	< 1.236	< 0.696	< 0.742	< 0.701	< 0.733	**1.08**	< 0.641	< 0.715	**4.02**	< 0.808	**0.732**	< 0.718	< 0.675	**0.965**
Silver	390	5,700	1	1.1	**3.49**	< 0.698	< 0.737	**2.93**	< 0.674	< 0.811	**5.8**	< 0.696	< 0.742	< 0.701	< 0.733	**1.36**	< 0.641	< 0.715	< 0.716	**35.6**	< 0.665	< 0.718	< 0.675	**2.58**
Sodium	NLE	NLE	NLE	51.6	**274**	**132**	**126**	**145**	**108**	**208**	**259**	**122**	**132**	**129**	**156**	**363**	**199**	**154**	**170**	**425**	**93**	**123**	**131**	**193**
Thallium	5	79	3	ND	< 0.754	< 0.698	< 0.737	< 0.851	< 0.674	< 0.811	< 1.236	< 0.696	< 0.742	< 0.701	< 0.733	< 0.595	< 0.641	< 0.715	< 0.716	< 0.808	< 0.665	< 0.718	< 0.675	< 0.828
Vanadium	78	1,100	NLE	94.1	**38.5**	**47.7**	**40.9**	**27.1**	**62.8**	**61.8**	**29.4**	**44.7**	**52.8**	**48.5**	**85.7**	**81.8**	**31.2**	**60**	**91.2**	**87.1**	**49.7**	**62**	**57.6**	**71.7**
Zinc	23,000	110,000	930	81.4	**327**	**544**	**380**	**2820**	**108**	**116**	**375**	**70.7**	**1710**	**82.5**	**82.5**	**122**	**66.6**	**362**	**82.5**	**553**	**35.2**	**383**	**114**	**663**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-78 Dup		B-79		B-80		B-81		B-82		B-82 Dup		B-83		B-84		B-85		B-86		B-87		B-88		B-89		B-90		B-91		B-92		B-93		B-94		B-95		B-96	
Sample Date					03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		03/30/99		04/01/99		04/01/99		04/01/99		04/01/99		04/01/99		04/01/99		04/01/99		04/01/99	
Volatile Organic Compounds (µg/kg)																																											
Lab Sample ID (VOCs only collected 24 in bgs)					4382.27		4382.29		4382.31		4382.33		4382.35		4382.37		4382.39		4382.41		4382.43		4382.45		4382.47		4382.49		4389.03		4389.05		4389.07		4389.09		4389.11		4389.13		4389.15		4389.17	
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 990		< 1000		< 840		< 1500		< 990		< 850		< 900		< 1300		< 920		< 1200		< 1700		< 990		< 930		< 950		< 890		< 840		< 940		< 980		< 980		< 880	
Acetone	70,000,000	NLE	19,000	--	< 660		< 690		< 560		< 980		< 660		< 560		< 600		< 840		< 610		< 800		< 1200		< 660		< 620		< 640		< 600		< 560		< 630		< 650		< 650		< 590	
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 330		< 340		< 280		< 490		< 330		< 280		< 300		< 420		< 310		< 400		< 580		< 330		< 310		< 320		< 300		< 280		< 310		< 330		< 330		< 290	
Methylene Chloride	34,000	97,000	10	--	< 660		< 690		< 560		< 980		< 660		< 560		< 600		< 840		< 610		< 800		< 1200		< 660		**470**		< 640		< 600		< 560		< 630		< 650		< 650		< 590	
2-Butanone	3,100,000	44,000,000	900	--	< 990		< 1000		< 840		< 1500		< 990		< 850		< 900		< 1300		< 920		< 1200		< 1700		< 990		< 930		< 950		< 890		< 840		< 940		< 980		< 980		< 880	
Benzene	2,000	5,000	5	--	< 330		< 340		< 280		< 490		< 330		< 280		< 300		< 420		< 310		< 400		< 580		< 330		< 310		< 320		< 300		< 280		< 310		< 330		< 330		< 290	
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 660		< 690		< 560		< 980		< 660		< 560		< 600		< 840		< 610		< 800		< 1200		< 660		< 620		< 640		< 600		< 560		< 630		< 650		< 650		< 590	
Toluene	6,300,000	91,000,000	7000	--	< 330		< 340		< 280		< 490		< 330		< 280		< 300		< 420		< 310		< 400		< 580		< 330		< 310		< 320		< 300		< 280		< 310		< 330		< 330		< 290	
Tetrachloroethene	2,000	5,000	5	--	< 330		< 340		< 280		< 490		< 330		< 280		< 300		< 420		< 310		< 400		< 580		< 330		< 310		< 320		< 300		< 280		< 310		< 330		< 330		< 290	
Chlorobenzene	510,000	7,400,000	600	--	< 330		< 340		< 280		**1400**		< 330		< 280		< 300		< 420		< 310		< 400		< 580		< 330		< 310		< 320		< 300		< 280		< 310		< 330		< 330		< 290	
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 660		< 690		< 560		< 980		< 660		< 560		< 600		< 840		< 610		< 800		< 1200		< 660		< 620		< 640		< 600		< 560		< 630		< 650		< 650		< 590	
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 990		< 1000		< 840		< 1500		< 990		< 850		< 900		< 1300		< 920		< 1200		< 1700		< 990		< 930		< 950		< 890		< 840		< 940		< 980		< 980		< 880	
TICs	NLE	NLE	NLE	--	ND		ND		ND		**55900**		ND		**1800**		ND		**2600**		**2300**		**22900**		**3900**		ND		ND		ND		**18400**		ND		ND		ND		ND		**2300**	
Semi-VOCs (µg/kg)																																											
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4382.26		4382.28		4382.30		4382.32		4382.34		4382.36		4382.38		4382.40		4382.42		4382.44		4382.46		4382.48		4389.02		4389.04		4389.06		4389.08		4389.10		4389.12		4389.14		4389.16	
Aniline	NLE	NLE	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		**410**	J	< 2600		< 11000		< 1200		< 1100		**3200**	JD	< 13000		< 1100		**270**	J	< 1100		< 1100	
Benzyl alcohol	NLE	NLE	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
4-Methylphenol	31,000	340,000	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Nitrobenzene	31,000	340,000	200	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Benzoic Acid	NLE	NLE	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Naphthalene	6,000	17,000	25,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		**210**	J	< 2600		< 11000		< 1200		< 1100		**3300**	JD	< 13000		< 1100		< 1200		< 1100		< 1100	
4-Chloroaniline	NLE	NLE	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		**1600**	JD	< 13000		< 1100		< 1200		< 1100		< 1100	
Acenaphthylene	NLE	300,000,000	NLE	--	**240**	J	**140**	J	**390**	J	**500**	J	< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		**1700**	JD	< 1200		< 1100		< 8700		**7900**	JD	**840**	J	**290**	J	< 1100		**310**	J
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Dibenzofuran	NLE	NLE	NLE	--	< 1300		< 1300		**170**	J	< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		**1400**	JD	< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Diethylphthalate	49,000,000	550,000,000	88,000	--	**170**	JB	< 1300		< 1100		< 1200		< 1100		< 1000		**140**	JB	**160**	JB	**180**	JB	< 1400		**400**	JB	< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Fluorene	2,300,000	24,000,000	170,000	--	< 1300		< 1300		**480**	J	< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		**3900**	JD	< 1200		< 1100		< 8700		< 13000		< 1100		**190**	J	< 1100		< 1100	
Azobenzene	NLE	NLE	NLE	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Hexachlorobenzene	300	1,000	200	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Phenanthrene	NLE	300,000,000	NLE	--	**400**	J	**150**	J	**3600**		**400**	J	< 1100		**190**	J	< 1200		**200**	J	**210**	J	**380**	J	**630**	J	**26000**	D	< 1200		< 1100		**1000**	JD	**9900**	JD	**770**	J	**830**	J	< 1100		**380**	J
Anthracene	17,000,000	30,000,000	2,400,000	--	**160**	J	< 1300		**1600**		**240**	J	< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		**8600**	JD	< 1200		< 1100		< 8700		**4700**	JD	**600**	J	**410**	J	< 1100		**170**	J
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**1100**	JB	**450**	JB	**320**	JB	**420**	JB	< 1100		**250**	JB	**220**	JB	**160**	JB	**690**	JB	**150**	JB	**1100**	JB	< 11000		**1000**	JB	**360**	JB	**1400**	JBD	< 13000		**680**	JB	**410**	JB	**860**	JB	**590**	JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**700**	J	**380**	J	**8900**		**740**	J	< 1100		**400**	J	**190**	J	**440**	J	**450**	J	**610**	J	< 2600		**39000**		< 1200		**180**	J	**1100**	JD	**16000**	D	**5200**		**1800**		< 1100		**660**	J
Benzidine	700	700	700	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Pyrene	1,700,000	18,000,000	840,000	--	**810**	J	**450**	J	**8000**		**1200**	J	< 1100		**330**	J	**160**	J	**430**	J	**420**	J	**520**	J	< 2600		**31000**	D	**150**	J	**190**	J	**1600**	JD	**20000**	D	**8200**		**2300**		< 1100		**840**	J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Benzo(a)anthracene	600	2,000	800	--	**460**	J	**260**	J	**5200**		**400**	J	< 1100		**150**	J	< 1200		**270**	J	**250**	J	**250**	J	< 2600		**19000**	D	< 1200		< 1100		**1300**	JD	**13000**	JD	**3200**		**1000**	J	< 1100		**530**	J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Chrysene	62,000	230,000	80,000	--	**940**	J	**480**	J	**7200**		**1100**	J	< 1100		**320**	J	**200**	J	**500**	J	**450**	J	**450**	J	< 2600		**28000**	D	**170**	J	**200**	J	**1600**	JD	**22000**	D	**6200**		**1900**		< 1100		**1700**	
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**14000**		< 1300		< 1100		**210**	J	< 1100		< 1000		< 1200		< 1200		< 1100		**580**	J	**9300**		< 11000		< 1200		**320**	J	**2000**	JD	< 13000		< 1100		**340**	J	< 1100		< 1100	
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1300		< 1300		< 1100		< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		< 11000		< 1200		< 1100		< 8700		< 13000		< 1100		< 1200		< 1100		< 1100	
Benzo(b)fluoranthene	600	2,000	2,000	--	**440**	J	**290**	J	**6000**		**700**	J	< 1100		**220**	J	< 1200		**230**	J	**220**	J	**240**	J	< 2600		**15000**	D	< 1200		**150**	J	< 8700		**11000**	JD	**7300**		**1200**	J	< 1100		**940**	J
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**470**	J	**280**	J	**4700**		**540**	J	< 1100		**190**	J	< 1200		**290**	J	**260**	J	**230**	J	< 2600		**15000**	D	< 1200		**140**	J	< 8700		**11000**	JD	**5000**		**970**	J	< 1100		**720**	J
Benzo(a)pyrene	200	200	200	--	**500**	J	**330**	J	**4800**		**890**	J	< 1100		**190**	J	< 1200		**270**	J	**270**	J	**250**	J	< 2600		**17000**	D	< 1200		< 1100		< 8700		**15000**	D	**7900**		**990**	J	< 1100		**780**	J
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**200**	J	< 1300		**2000**		< 1200		< 1100		< 1000		< 1200		**210**	J	**180**	J	< 1400		< 2600		**9200**	JD	< 1200		< 1100		< 8700		**7800**	JD	**2400**		**380**	J	< 1100		**420**	J
Dibenz(a,h)anthracene	200	200	800	--	< 1300		< 1300		**1000**	J	< 1200		< 1100		< 1000		< 1200		< 1200		< 1100		< 1400		< 2600		**4500**	JD	< 1200		< 1100		< 8700		**3100**	JD	**1200**		< 1200		< 1100		**240**	J
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1300		< 1300		**1700**		< 1200		< 1100		< 1000		< 1200		**230**	J	**200**	J	< 1400		< 2600		**9200**	JD	< 1200		< 1100		< 8700		**8500**	JD	**2000**		< 1200		< 1100		**440**	J
TICs	NLE	NLE	NLE	--	**90500**		**13000**		**26190**		**15000**		**4300**		**11970**		**3500**		**17400**		**8000**		**43800**		**17800**		**11000**		**14300**		**25740**		**382500**		**12000**		**3600**		**30550**		**13910**		**47800**	
Pesticides/PCBs (mg/kg)																																											
gamma-BHC	0.4	2	0.002	--	< 0.0094		< 0.0092		< 0.0084		< 0.0089		< 0.0078		< 0.0078		< 0.0088		< 0.0087		< 0.0093		< 0.0091		< 0.0204		< 0.0083		< 0.0099		< 0.0085		< 0.0140		< 0.0201		< 0.0091		< 0.0094		< 0.0089		< 0.0091	
Heptachlor	0.1	0.7	0.5	--	< 0.0071		< 0.0069		< 0.0063		< 0.0067		< 0.0059		< 0.0058		< 0.0066		< 0.0065		< 0.0070		< 0.0068		< 0.0153		< 0.0062		< 0.0074		< 0.0064		< 0.0105		< 0.0151		< 0.0068		< 0.0071		< 0.0067		< 0.0069	
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0141		< 0.0138		< 0.0125		< 0.0133		< 0.0117		< 0.0117		< 0.0133		< 0.0131		< 0.0139		< 0.0136		< 0.0306		< 0.0125		< 0.0148		< 0.0128		< 0.0210		< 0.0301		< 0.0136		< 0.0141		< 0.0134		< 0.0137	
Endosulfan I	470	6,800	4	--	< 0.0118		< 0.0115		< 0.0105		< 0.0111		< 0.0098		< 0.0097		< 0.0111		< 0.0109		< 0.0116		< 0.0113		< 0.0255		< 0.0104		< 0.0123		< 0.0107		< 0.0175		< 0.0251		< 0.0114		< 0.0118		< 0.0111		< 0.0114	
4,4'-DDE	2	9	18	--	**0.127**		**0.025**		**0.075**		**0.071**		**0.009**		**0.019**		**0.016**		**0.056**		**0.058**		**0.051**		< 0.0204		**0.069**		**0.29**		**0.023**		< 0.0140		**0.093**		**0.037**		**0.109**		**0.016**		**0.018**	
Dieldrin	0.04	0.2	0.003	--	< 0.0118		**0.015**		< 0.0105		< 0.0111		< 0.0098		< 0.0097		< 0.0111		< 0.0109		< 0.0116		**0.017**		< 0.0255		< 0.0104		**0.085**		< 0.0107		< 0.0175		< 0.0251		< 0.0114		**0.017**		< 0.0111		< 0.0114	
Endrin	23	340	1	--	< 0.0118		< 0.0115		< 0.0105		< 0.0111		< 0.0098		< 0.0097		< 0.0111		< 0.0109		< 0.0116		< 0.0113		< 0.0255		< 0.0104		< 0.0123		< 0.0107		< 0.0175		< 0.0251		< 0.0114		< 0.0118		< 0.0111		< 0.0114	
Endosulfan II	470	6,800	4	--	< 0.0094		< 0.0092		< 0.0084		< 0.0089		< 0.0078		< 0.0078		< 0.0088		< 0.0087		< 0.0093		< 0.0091		< 0.0204		< 0.0083		< 0.0099		< 0.0085		< 0.0140		< 0.0201		< 0.0091		< 0.0094		< 0.0089		< 0.0091	
4,4'-DDD	3	13	4	--	**0.16**		**0.037**		**0.102**		**0.306**		**0.012**		**0.018**		**0.021**		**0.09**		**0.069**		**0.096**		< 0.0306		**0.199**		**0.594**		**0.03**		**0.032**		**0.499**		**0.052**		**0.943**		**0.027**		**0.028**	
4,4'-DDT	2	8	11	--	**0.044**		**0.039**		**0.045**		**0.058**		**0.026**		**0.062**		**0.037**		**0.057**		< 0.0255		**0.029**		< 0.0560		**0.038**		**1.811**		**0.027**		< 0.0385		**0.159**		< 0.0250		**0.03**		< 0.0245		< 0.0251	
gamma-Chlordane	0.2	1	0.05	--	**0.072**		**0.02**		**0.031**		**0.016**		< 0.0098		**0.012**		< 0.0111		**0.018**		**0.02**		**0.012**		< 0.0255		**0.082**		**0.045**		**0.019**		< 0.0175		**0.039**		< 0.0114		**0.054**		< 0.0111		< 0.0114	
alpha-Chlordane	0.2	1	0.05	--	**0.045**		**0.016**		**0.019**		**0.018**		< 0.0098		< 0.0097		< 0.0111		**0.014**		**0.012**		< 0.0113		< 0.0255		**0.055**		**0.038**		**0.015**		< 0.0175		**0.032**		< 0.0114		**0.033**		< 0.0111		< 0.0114	
Aroclor 1016	0.2	1	0.2	--	< 0.2639		< 0.2573		< 0.2342		< 0.2490		< 0.2193		< 0.2182		< 0.2476		< 0.2437		< 0.2596		< 0.2537		< 0.0285		< 0.2326		< 0.0138		< 0.2392		< 0.0196		< 0.0281		< 0.2546		< 0.2634		< 0.2493		< 0.2557	
Aroclor 1221	0.2	1	0.2	--	< 0.4854		< 0.4732		< 0.4308		< 0.4580		< 0.4034		< 0.4012		< 0.4555		< 0.4482		< 0.4775		< 0.4666		< 0.0525		< 0.4278		< 0.0254		< 0.4399		< 0.0361		< 0.0517		< 0.4683		< 0.4845		< 0.4585		< 0.4704	
Aroclor 1242	0.2	1	0.2	--	**20.585**		< 0.3675		< 0.3346		< 0.3557		< 0.3133		< 0.3116		< 0.3538		< 0.3481		< 0.3709		< 0.3624		**12.604**		< 0.3323		< 0.0197		< 0.3417		**50.742**		< 0.0401		< 0.3637		< 0.3763		< 0.3561		< 0.3653	
Aroclor 1260	0.2	1	0.2	--	< 0.0848		< 0.0827		< 0.0753		< 0.0800		< 0.0705		< 0.0701		< 0.0796		< 0.0783		< 0.0835		< 0.0815		< 0.0092		< 0.0748		< 0.0044		< 0.0769		< 0.0063		< 0.0090		< 0.0818		< 0.0847		< 0.0801		< 0.0822	

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-78 Dup	B-79	B-80	B-81	B-82	B-82 Dup	B-83	B-84	B-85	B-86	B-87	B-88	B-89	B-90	B-91	B-92	B-93	B-94	B-95	B-96
Sample Date					03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**15100**	**9400**	**6640**	**13000**	**5160**	**4060**	**21600**	**9310**	**6870**	**7390**	**13400**	**5840**	**10600**	**8310**	**8260**	**19600**	**7630**	**17200**	**17200**	**8990**
Antimony	31	450	6	ND	**1.19**	< 0.492	< 0.432	**4.89**	**0.553**	< 0.403	< 0.512	**0.461**	**88.4**	**122**	**3**	< 0.434	**6.9**	**0.712**	**1.62**	**1.6**	< 0.489	**0.482**	**0.482**	< 0.429
Arsenic	19	19	19	22.9	**11**	**8.14**	**7.27**	**11.7**	**1.43**	**1.53**	**16.2**	**8.42**	**97.8**	**130**	**10.4**	**9.29**	**9.65**	**7.38**	**2.84**	**17.7**	**8.52**	**10.3**	**10.3**	**7.47**
Barium	16,000	59,000	2,100	32.3	**84**	**50.2**	**16.3**	**65**	**36.3**	**17.4**	**58.1**	**38.1**	**447**	**569**	**162**	**29.4**	**40.7**	**35.7**	**303**	**88.8**	**51.2**	**86.1**	**86.1**	**23.1**
Beryllium	16	140	0.7	2	**1.05**	**0.952**	**0.62**	**0.993**	**0.287**	**0.179**	**2.65**	**0.981**	**20**	**25.7**	**0.491**	**0.612**	**1.11**	**0.803**	< 0.168	**1.87**	**1.09**	**1.84**	**1.84**	**0.981**
Cadmium	78	78	2	ND	**0.217**	< 0.123	< 0.108	**0.42**	< 0.098	< 0.101	< 0.128	< 0.107	**9.24**	**12.7**	**1.25**	**0.241**	< 0.127	< 0.110	**8.99**	< 0.241	< 0.122	< 0.117	< 0.117	< 0.107
Calcium	NLE	NLE	NLE	921	**2270**	**1200**	**1790**	**2350**	**2420**	**2150**	**1510**	515	**2200**	**1280**	**3190**	**1580**	**2440**	**2470**	**4300**	**2350**	**2130**	**2740**	**2740**	**373**
Chromium	NLE	NLE	NLE	269	**146**	**88.8**	**68.4**	**106**	**20.9**	**17.1**	**325**	**92.2**	**104**	**141**	**69.6**	**48.4**	**85.1**	**73.2**	**31.4**	**162**	**104**	**168**	**168**	**101**
Cobalt	1,600	590	90	2.5	**4.63**	**2.34**	**1.1**	**2.79**	**2.88**	**2.11**	**1.05**	**1.22**	**94.4**	**130**	**6.1**	**2.28**	**3.06**	**2.74**	**1.64**	**4.49**	**1.37**	**3.64**	**3.64**	**0.984**
Copper	3,100	45,000	11,000	8	**53.6**	**13.1**	**9.16**	**20.6**	**18.6**	**13.2**	**13.2**	**8.4**	**136**	**162**	**1030**	**24.9**	**14.5**	**16.9**	**321**	**38.6**	**10**	**10.3**	**10.3**	**3.52**
Iron	NLE	NLE	NLE	55,800	**48800**	**26000**	**18700**	**38700**	**10700**	**8140**	**72400**	**26300**	**23600**	**22400**	**40200**	**22200**	**31600**	**24400**	**14200**	**51100**	**27100**	**36200**	**36200**	**26600**
Lead	400	800	90	19.5	**400**	**44.3**	**18.8**	**235**	**62.9**	**43.6**	**25**	**39.8**	**314**	**158**	**300**	**68.5**	**298**	**94.4**	**118**	**118**	**30.9**	**49.2**	**49.2**	**9.51**
Magnesium	NLE	NLE	NLE	7,230	**2940**	**3050**	**2530**	**3520**	**1160**	**1360**	**10700**	**2960**	**1760**	**2080**	**1630**	**2000**	**3470**	**2930**	**486**	**5650**	**3240**	**5390**	**5390**	**3210**
Manganese	11,000	5,900	65	90.7	**713**	**57.7**	**24.4**	**70.2**	**46.5**	**57.2**	**21.7**	**27.7**	**172**	**171**	**204**	**218**	**89.7**	**72.1**	**87.6**	**82.5**	**38.2**	**51.8**	**51.8**	**22.5**
Mercury	23	65	0.1	ND	**2.654**	**0.949**	**0.112**	**0.495**	**0.07**	**0.028**	**0.062**	**0.097**	**0.348**	**0.182**	**3.361**	**2.213**	**0.154**	**0.109**	**21.9**	**0.801**	**0.111**	**0.246**	**0.246**	< 0.022
Nickel	1,600	23,000	48	8.4	**24.2**	**12.6**	**3.86**	**11.7**	**10.5**	**5.94**	**6.7**	**6.52**	**103**	**138**	**43.1**	**8.43**	**12.3**	**10.2**	**7.6**	**20.2**	**7.48**	**13.3**	**13.3**	**4.05**
Potassium	NLE	NLE	NLE	15,400	**5730**	**6610**	**5120**	**7950**	**1370**	**1100**	**26400**	**7010**	**3960**	**4810**	**1780**	**3650**	**6620**	**4980**	**820**	**11200**	**7430**	**11800**	**11800**	**7510**
Selenium	390	5,700	11	1.9	< 0.856	**0.906**	< 0.647	< 0.731	< 0.586	< 0.605	< 0.768	< 0.642	**87.7**	**119**	< 1.671	< 0.651	< 0.761	< 0.650	< 1.007	< 1.449	< 0.734	**0.73**	**0.73**	< 0.643
Silver	390	5,700	1	1.1	**1.97**	**1.74**	< 0.647	**1.73**	< 0.586	< 0.605	< 0.768	< 0.642	**15.3**	**19.8**	**5.6**	< 0.651	< 0.761	< 0.650	**8.37**	**2.22**	< 0.734	**2.38**	**2.38**	< 0.643
Sodium	NLE	NLE	NLE	51.6	**223**	**145**	**108**	**223**	**236**	**261**	**107**	**108**	**89.6**	**200**	**241**	**177**	**133**	**126**	**266**	**772**	**100**	**117**	**117**	**107**
Thallium	5	79	3	ND	< 0.856	< 0.737	< 0.647	< 0.731	< 0.586	< 0.605	< 0.768	< 0.642	**86.9**	**119**	< 1.671	< 0.651	< 0.761	< 0.650	< 1.007	< 1.449	< 0.734	< 0.703	< 0.703	< 0.643
Vanadium	78	1,100	NLE	94.1	**81.7**	**65**	**40.5**	**59.8**	**16.4**	**12.4**	**105**	**44.4**	**128**	**157**	**42.6**	**29.4**	**47.9**	**46.8**	**13.1**	**98.8**	**43.4**	**74.7**	**74.7**	**46.7**
Zinc	23,000	110,000	930	81.4	**803**	**77.3**	**37.2**	**146**	**63.9**	**37.3**	**85.7**	**54**	**311**	**330**	**851**	**358**	**302**	**99.4**	**9550**	**159**	**71.9**	**180**	**180**	**39.3**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-97	B-98	B-99	B-100	B-101	B-102	B-103	B-104	B-105	B-106	B-107	B-107 Dup	B-108	B-109	B-110	B-111	B-112	B-113	B-114	B-115
Sample Date					04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4389.19	4389.21	4389.23	4389.25	4389.27	4389.29	4389.31	4394.03	4394.05	4394.07	4394.09	4394.25	4394.11	4394.13	4394.15	4394.17	4394.19	4394.21	4394.23	4394.27
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
Acetone	70,000,000	NLE	19,000	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Methylene Chloride	34,000	97,000	10	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
2-Butanone	3,100,000	44,000,000	900	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
Benzene	2,000	5,000	5	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
Toluene	6,300,000	91,000,000	7000	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Tetrachloroethene	2,000	5,000	5	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	**1600**	< 280	< 360	< 340	< 360
Chlorobenzene	510,000	7,400,000	600	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
TICs	NLE	NLE	NLE	--	ND	**8200**	ND	**542400**	**7400**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4389.18	4389.20	4389.22	4389.24	4389.26	4389.28	4389.30	4394.02	4394.04	4394.06	4394.08	4394.24	4394.10	4394.12	4394.14	4394.16	4394.18	4394.20	4394.22	4394.26
Aniline	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzyl alcohol	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
4-Methylphenol	31,000	340,000	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Nitrobenzene	31,000	340,000	200	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzoic Acid	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	**950** J	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Naphthalene	6,000	17,000	25,000	--	**170** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
4-Chloroaniline	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Acenaphthylene	NLE	300,000,000	NLE	--	**420** J	< 1100	< 1300	**110** J	< 1200	< 1100	**740** J	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**420** J
Dibenzofuran	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**180** J
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	**140** JB	< 1200	< 1100	< 1300	**290** JB	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Fluorene	2,300,000	24,000,000	170,000	--	**290** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**380** J
Azobenzene	NLE	NLE	NLE	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Hexachlorobenzene	300	1,000	200	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Phenanthrene	NLE	300,000,000	NLE	--	**1700**	**200** J	< 1300	**340** J	**150** J	< 1100	**270** J	< 16000	< 23000	**150** J	< 1200	< 1100	**400** J	**410** J	**610** J	**180** J	**210** J	**210** J	< 1100	**3900**
Anthracene	17,000,000	30,000,000	2,400,000	--	**460** J	< 1100	< 1300	**140** J	< 1200	< 1100	**190** J	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	**180** J	< 1000	< 1000	< 1100	< 1100	**1200** J
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**1200** JB	**1500** B	**390** JB	**350** JB	**660** JB	**600** JB	**1300** JB	< 16000	< 23000	**21000** BD	**900** JB	**290** JB	**300** JB	**240** JB	**220** JB	**610** JB	**310** JB	**280** JB	**660** JB	**940** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**1900**	**410** J	**240** J	**690** J	**360** J	**150** J	**390** J	< 16000	< 23000	**330** J	< 1200	< 1100	**590** J	**650** J	**1500**	**380** J	**570** J	**420** J	**230** J	**5400**
Benzidine	700	700	700	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Pyrene	1,700,000	18,000,000	840,000	--	**2000**	**500** J	**250** J	**710** J	**350** J	**180** J	**990** J	< 16000	< 23000	**310** J	< 1200	< 1100	**550** J	**550** J	**1300**	**330** J	**590** J	**380** J	**210** J	**3600**
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	**120** J	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzo(a)anthracene	600	2,000	800	--	**1100** J	**260** J	< 1300	**370** J	**200** J	< 1100	**380** J	< 16000	< 23000	**170** J	< 1200	< 1100	**280** J	**320** J	**760** J	**170** J	**270** J	**190** J	**120** J	**1600**
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Chrysene	62,000	230,000	80,000	--	**1900**	**490** J	**230** J	**670** J	**330** J	**190** J	**800** J	< 16000	< 23000	**320** J	**130** J	< 1100	**560** J	**600** J	**1300**	**370** J	**700** J	**440** J	**260** J	**2800**
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**580** J	**250** J	< 1300	**260** J	< 1200	**160** J	< 1400	< 16000	< 23000	**140** J	< 1200	< 1100	**210** J	**150** J	**190** J	**120** J	< 1000	**180** J	< 1100	**500** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzo(b)fluoranthene	600	2,000	2,000	--	**810** J	**310** J	< 1300	**450** J	**190** J	< 1100	**440** J	< 16000	< 23000	**190** J	< 1200	< 1100	**290** J	**320** J	**880** J	**250** J	**380** J	**260** J	**140** J	**2100**
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**960** J	**290** J	< 1300	**430** J	**210** J	< 1100	**440** J	< 16000	< 23000	**170** J	< 1200	< 1100	**280** J	**290** J	**790** J	**220** J	**320** J	**230** J	**120** J	**1600**
Benzo(a)pyrene	200	200	200	--	**1100** J	**280** J	< 1300	**410** J	**210** J	**120** J	**760** J	< 16000	< 23000	**200** J	< 1200	< 1100	**300** J	**330** J	**890** J	**180** J	**240** J	**230** J	**120** J	**1900**
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**510** J	< 1100	< 1300	< 1100	< 1200	< 1100	**280** J	< 16000	< 23000	**140** J	< 1200	< 1100	**180** J	**220** J	**420** J	< 1000	**160** J	**190** J	< 1100	**780** J
Dibenz(a,h)anthracene	200	200	800	--	**210** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**360** J
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**520** J	< 1100	< 1300	< 1100	**120** J	< 1100	**400** J	< 16000	< 23000	**150** J	< 1200	< 1100	**190** J	**240** J	**410** J	< 1000	**170** J	**210** J	< 1100	**700** J
TICs	NLE	NLE	NLE	--	**20450**	**30500**	**50300**	**109000**	**8390**	**4290**	**7100**	**9900**	ND	**23500**	**37000**	**6500**	**49900**	**16000**	**13900**	**14200**	**37940**	**20160**	**8740**	**114500**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0094	< 0.0091	< 0.0103	< 0.0087	< 0.0089	< 0.0089	< 0.0110	< 0.0125	< 0.0092	< 0.0088	< 0.0096	< 0.0094	< 0.0098	< 0.0089	< 0.0092	< 0.0090	< 0.0087	< 0.0090	< 0.0090	< 0.0101
Heptachlor	0.1	0.7	0.5	--	< 0.0070	< 0.0068	< 0.0078	< 0.0065	< 0.0067	< 0.0067	< 0.0083	< 0.0094	< 0.0069	< 0.0066	< 0.0072	< 0.0071	< 0.0073	< 0.0067	< 0.0069	< 0.0068	< 0.0066	< 0.0067	< 0.0068	< 0.0076
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0140	< 0.0137	< 0.0155	< 0.0130	< 0.0134	< 0.0134	< 0.0166	< 0.0187	< 0.0138	< 0.0132	< 0.0143	< 0.0141	< 0.0147	< 0.0134	< 0.0138	< 0.0135	< 0.0131	< 0.0135	< 0.0135	< 0.0151
Endosulfan I	470	6,800	4	--	< 0.0117	< 0.0114	< 0.0129	< 0.0109	< 0.0112	< 0.0111	< 0.0138	< 0.0156	< 0.0115	< 0.0110	< 0.0120	< 0.0118	< 0.0122	< 0.0112	< 0.0115	< 0.0113	< 0.0109	< 0.0112	< 0.0113	< 0.0126
4,4'-DDE	2	9	18	--	**0.031**	**0.122**	< 0.0103	**0.025**	**0.029**	**0.012**	**0.107**	**0.013**	**0.074**	**0.129**	< 0.0096	**0.03**	**0.171**	**0.04**	**0.031**	**0.04**	**0.379**	**0.076**	**0.053**	**0.069**
Dieldrin	0.04	0.2	0.003	--	< 0.0117	**0.016**	< 0.0129	< 0.0109	< 0.0112	**0.026**	**0.019**	< 0.0156	**0.02**	**0.014**	< 0.0120	< 0.0118	< 0.0122	< 0.0112	**0.017**	< 0.0113	**0.034**	< 0.0112	**0.019**	**0.018**
Endrin	23	340	1	--	< 0.0117	< 0.0114	< 0.0129	< 0.0109	< 0.0112	< 0.0111	< 0.0138	< 0.0156	< 0.0115	< 0.0110	< 0.0120	< 0.0118	< 0.0122	< 0.0112	< 0.0115	< 0.0113	< 0.0109	< 0.0112	< 0.0113	< 0.0126
Endosulfan II	470	6,800	4	--	< 0.0094	< 0.0091	< 0.0103	< 0.0087	< 0.0089	< 0.0089	< 0.0110	< 0.0125	< 0.0092	< 0.0088	< 0.0096	< 0.0094	< 0.0098	< 0.0089	< 0.0092	< 0.0090	< 0.0087	< 0.0090	< 0.0090	< 0.0101
4,4'-DDD	3	13	4	--	**0.06**	**0.172**	< 0.0155	**0.049**	**0.024**	< 0.0134	**0.118**	< 0.0187	**0.054**	**0.071**	< 0.0143	**0.022**	**0.156**	**0.046**	**0.089**	**0.043**	**0.213**	**0.089**	**0.039**	**0.035**
4,4'-DDT	2	8	11	--	< 0.0257	**0.081**	< 0.0284	**0.024**	< 0.0245	< 0.0245	**0.131**	**0.066**	**0.191**	**0.169**	**0.029**	**0.065**	**0.244**	**0.078**	**0.052**	**0.036**	**0.12**	< 0.0247	**0.11**	**0.039**
gamma-Chlordane	0.2	1	0.05	--	**0.015**	**0.031**	< 0.0129	< 0.0109	< 0.0112	< 0.0111	**0.019**	< 0.0156	**0.04**	**0.024**	**0.013**	**0.018**	**0.026**	**0.027**	**0.018**	< 0.0113	**0.025**	**0.016**	**0.018**	< 0.0126
alpha-Chlordane	0.2	1	0.05	--	**0.014**	**0.028**	< 0.0129	< 0.0109	< 0.0112	< 0.0111	**0.016**	< 0.0156	**0.035**	**0.021**	< 0.0120	< 0.0118	**0.025**	**0.021**	< 0.0115	< 0.0113	**0.022**	< 0.0112	**0.014**	< 0.0126
Aroclor 1016	0.2	1	0.2	--	< 0.2622	< 0.2549	< 0.0145	< 0.2432	< 0.2498	< 0.2493	< 0.0155	< 0.0874	< 0.2575	< 0.2470	< 0.0069	< 0.2637	< 0.0686	< 0.2499	< 0.2571	< 0.2527	< 0.2449	< 0.2511	< 0.2521	< 0.0706
Aroclor 1221	0.2	1	0.2	--	< 0.4822	< 0.4689	< 0.0266	< 0.4472	< 0.4595	< 0.4586	< 0.0284	< 0.1607	< 0.4736	< 0.4543	< 0.1231	< 0.4850	< 0.1261	< 0.4597	< 0.4729	< 0.4649	< 0.4504	< 0.4619	< 0.4637	< 0.1298
Aroclor 1242	0.2	1	0.2	--	< 0.3745	< 0.3642	< 0.0207	< 0.3474	< 0.3569	< 0.3562	< 0.0221	< 0.1248	< 0.3678	< 0.3529	< 0.0956	< 0.3767	< 0.0979	< 0.3571	< 0.3673	< 0.3611	< 0.3498	< 0.3588	< 0.3601	< 0.1008
Aroclor 1260	0.2	1	0.2	--	< 0.0843	< 0.0819	< 0.0047	< 0.0782	< 0.0803	< 0.0801	< 0.0050	< 0.0281	< 0.0828	< 0.0794	< 0.0215	< 0.0848	< 0.0220	< 0.0803	< 0.0826	< 0.0812	< 0.0787	< 0.0807	< 0.0810	< 0.0227

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-97	B-98	B-99	B-100	B-101	B-102	B-103	B-104	B-105	B-106	B-107	B-107 Dup	B-108	B-109	B-110	B-111	B-112	B-113	B-114	B-115
Sample Date					04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**11300**	**8190**	**8450**	**9740**	**11300**	**8510**	**9250**	**15800**	**18500**	**12500**	**11700**	**16800**	**11300**	**7480**	**9860**	**15100**	**8570**	**13400**	**11300**	**9530**
Antimony	31	450	6	ND	< 0.431	**0.539**	**152**	**0.975**	< 0.440	< 0.443	**3.13**	**16.4**	< 0.485	< 0.497	**2.37**	< 0.476	< 0.439	< 0.480	**1.04**	< 0.419	**0.496**	< 0.466	< 0.463	**0.865**
Arsenic	19	19	19	22.9	**11.2**	**9.81**	**12.6**	**7.94**	**10.9**	**8.28**	**12.7**	**11.4**	**15.4**	**7.56**	**10.4**	**13.2**	**7.67**	**4.87**	**12.3**	**12.4**	**8.65**	**16**	**7.84**	**12.6**
Barium	16,000	59,000	2,100	32.3	**67.4**	**47.2**	**42.4**	**43.7**	**34.2**	**30.3**	**57.1**	**135**	**123**	**79.7**	**48.7**	**35.1**	**59.6**	**35.1**	**67.2**	**64.4**	**32.3**	**61.2**	**36**	**82.9**
Beryllium	16	140	0.7	2	**1.41**	**0.947**	**0.824**	**1.24**	**0.932**	**0.961**	**0.89**	**0.971**	**1.7**	**0.855**	**0.807**	**1.06**	**0.896**	**0.569**	**0.591**	**1.4**	**0.789**	**1.45**	**0.734**	**0.561**
Cadmium	78	78	2	ND	< 0.108	< 0.115	< 0.132	< 0.119	< 0.110	< 0.111	**0.309**	**0.589**	< 0.121	**0.316**	**0.761**	< 0.119	< 0.110	< 0.120	**0.814**	< 0.105	**0.156**	< 0.116	< 0.116	**0.584**
Calcium	NLE	NLE	NLE	921	**2490**	**1590**	**2390**	**876**	**1700**	**1380**	**5510**	**17200**	**1560**	**1650**	**1940**	**1770**	**1860**	**2660**	**3590**	**1360**	**810**	**1210**	**618**	**4530**
Chromium	NLE	NLE	NLE	269	**137**	**83**	**71.6**	**92.7**	**82.7**	**94.3**	**88.4**	**99.4**	**208**	**81.1**	**92.3**	**114**	**80.7**	**115**	**60.4**	**157**	**74.9**	**172**	**77**	**114**
Cobalt	1,600	590	90	2.5	**2.14**	**2.09**	**4.73**	**2.61**	**3.24**	**1.69**	**2.98**	**6.85**	**1.96**	**2.31**	**2.25**	**2**	**2.47**	**2.45**	**2.83**	**1.52**	**2.68**	**1.73**	**2**	**6.71**
Copper	3,100	45,000	11,000	8	**12.5**	**23.5**	**17.5**	**11.8**	**11.2**	**4.88**	**31.1**	**88.3**	**33.5**	**15.1**	**35.4**	**16**	**34.4**	**15.2**	**24.6**	**25.6**	**31.3**	**21.3**	**9.57**	**50.6**
Iron	NLE	NLE	NLE	55,800	**34300**	**30000**	**47000**	**25800**	**36200**	**25300**	**27400**	**29000**	**52200**	**22900**	**26000**	**31600**	**22700**	**17600**	**33000**	**39900**	**24100**	**43700**	**24100**	**89300**
Lead	400	800	90	19.5	**26.6**	**50.3**	**298**	**79.7**	**129**	**17.9**	**637**	**1010**	**146**	**65.7**	**158**	**63.6**	**58.2**	**293**	**266**	**44.1**	**50.9**	**47.7**	**33.9**	**170**
Magnesium	NLE	NLE	NLE	7,230	**4400**	**2550**	**2390**	**3000**	**1520**	**3000**	**2910**	**3420**	**6690**	**2300**	**2950**	**4170**	**2490**	**1920**	**1980**	**5270**	**2180**	**5620**	**2370**	**1790**
Manganese	11,000	5,900	65	90.7	**53.4**	**112**	**168**	**41.2**	**127**	**30.6**	**86.7**	**141**	**40.4**	**73.1**	**74.6**	**106**	**49.9**	**63.9**	**86.9**	**27.4**	**66.3**	**33.2**	**57.3**	**779**
Mercury	23	65	0.1	ND	**0.183**	**0.508**	**0.177**	**0.105**	**0.154**	**0.058**	**0.362**	**0.826**	**0.259**	**0.195**	**0.098**	**0.079**	**0.145**	**0.103**	**0.192**	**0.128**	**4.776**	**0.171**	**0.132**	**0.361**
Nickel	1,600	23,000	48	8.4	**9.6**	**8.47**	**21.4**	**9.37**	**12.3**	**7.53**	**14**	**13.1**	**8.59**	**10.1**	**8.26**	**6.36**	**8.22**	**6.19**	**10.6**	**6.28**	**7.24**	**7.13**	**5.56**	**21.3**
Potassium	NLE	NLE	NLE	15,400	**9320**	**5790**	**4530**	**6500**	**3380**	**6790**	**5560**	**8110**	**18400**	**5470**	**6010**	**7810**	**4950**	**3730**	**4490**	**13700**	**5650**	**13800**	**5870**	**3900**
Selenium	390	5,700	11	1.9	< 0.646	< 0.692	< 0.794	< 0.714	< 0.660	< 0.665	< 0.866	**1.09**	**1.1**	< 0.745	< 0.677	**0.719**	< 0.658	< 0.720	**0.772**	**1.2**	< 0.678	**1.14**	< 0.695	**0.841**
Silver	390	5,700	1	1.1	**2.03**	**2.43**	< 0.794	< 0.714	< 0.660	< 0.665	**1.16**	**27**	**6.5**	**4.54**	**1.19**	< 0.714	**5.28**	**1.58**	< 0.724	< 0.628	< 0.678	< 0.699	< 0.695	**6.58**
Sodium	NLE	NLE	NLE	51.6	**158**	**131**	**123**	**116**	**150**	**220**	**145**	**7940**	**3170**	**1570**	**932**	**276**	**1020**	**602**	**647**	**507**	**339**	**581**	**265**	**310**
Thallium	5	79	3	ND	< 0.646	< 0.692	< 0.794	< 0.714	< 0.660	< 0.665	< 0.866	< 0.972	< 0.728	< 0.745	< 0.677	< 0.714	< 0.658	< 0.720	< 0.724	< 0.628	< 0.678	< 0.699	< 0.695	< 0.675
Vanadium	78	1,100	NLE	94.1	**64.4**	**48.2**	**75.1**	**53.1**	**105**	**41.3**	**77.1**	**62**	**96**	**49**	**57.2**	**58.4**	**45.2**	**34.4**	**45.6**	**71.7**	**47.9**	**69.7**	**54.2**	**36.9**
Zinc	23,000	110,000	930	81.4	**143**	**204**	**622**	**110**	**281**	**55.9**	**424**	**1010**	**133**	**108**	**166**	**60**	**56.1**	**51.5**	**185**	**58.6**	**71.4**	**59.2**	**37.3**	**449**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-116	B-117	B-118	B-119	B-120	B-121	B-122	B-123	B-124	B-124 Dup	B-125	B-126	B-127	B-128	B-129	B-130	B-131	B-132	B-133	B-133 Dup
Sample Date					04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4394.29	4394.31	4394.33	4394.35	4394.37	4394.39	4394.41	4394.43	4394.45	4394.47	4401.03	4401.05	4401.07	4401.09	4401.11	4401.13	4401.15	4401.17	4401.19	4401.39
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
Acetone	70,000,000	NLE	19,000	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Methylene Chloride	34,000	97,000	10	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
2-Butanone	3,100,000	44,000,000	900	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
Benzene	2,000	5,000	5	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	**2500**	< 330	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
Toluene	6,300,000	91,000,000	7000	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	**1500**	< 330	< 340
Tetrachloroethene	2,000	5,000	5	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Chlorobenzene	510,000	7,400,000	600	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**42400**	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4394.28	4394.30	4394.32	4394.34	4394.36	4394.38	4394.40	4394.42	4394.44	4394.46	4401.02	4401.04	4401.06	4401.08	4401.10	4401.12	4401.14	4401.16	4401.18	4401.38
Aniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	**150** J	< 1100	**220** J	**400** J	**600** J	< 1100	< 1100	< 1300	< 11000	< 1100	**260** J	**190** J	**300** J	**180** J	**240** J	< 1100	< 1100	< 1300	< 1100	< 1100
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	< 1100	< 1100	**120** J	**150** J	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**410** JB	**490** JB	**680** JB	**1400** B	**490** JB	**1100** JB	**620** JB	**550** JB	< 11000	**360** JB	**620** JB	**360** JB	**720** JB	**130** JB	**480** JB	**430** JB	< 1100	**180** JB	**150** JB	**120** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**280** J	**240** J	**390** J	**1000** J	**840** J	**150** J	< 1100	< 1300	< 11000	**140** J	**520** J	**390** J	**620** J	**320** J	**560** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzidine	700	700	700	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	**240** J	**430** J	**390** J	**920** J	**880** J	**170** J	< 1100	**180** J	< 11000	**200** J	**470** J	**350** J	**490** J	**330** J	**480** J	< 1100	< 1100	< 1300	< 1100	< 1100
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(a)anthracene	600	2,000	800	--	**130** J	**160** J	**200** J	**510** J	**450** J	< 1100	< 1100	< 1300	< 11000	< 1100	**270** J	**190** J	**280** J	**160** J	**250** J	< 1100	< 1100	< 1300	< 1100	< 1100
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Chrysene	62,000	230,000	80,000	--	**260** J	**340** J	**410** J	**960** J	**740** J	**250** J	< 1100	**190** J	< 11000	**170** J	**530** J	**400** J	**460** J	**380** J	**610** J	< 1100	< 1100	< 1300	< 1100	< 1100
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**140** J	**290** J	**170** J	**670** J	**650** J	**190** J	**130** J	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	**200** J	**240** J	< 1100	< 1100	**220** J	< 1100	< 1100
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	**160** J	< 1100	**200** J	**590** J	**480** J	**170** J	< 1100	< 1300	< 11000	**120** J	**270** J	**230** J	**210** J	**190** J	**340** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**120** J	< 1100	**210** J	**550** J	**470** J	**120** J	< 1100	< 1300	< 11000	**120** J	**250** J	**220** J	**260** J	**190** J	**300** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(a)pyrene	200	200	200	--	**140** J	< 1100	**230** J	**520** J	**420** J	**170** J	< 1100	< 1300	< 11000	**130** J	**260** J	**220** J	**270** J	**170** J	**280** J	< 1100	< 1100	< 1300	< 1100	< 1100
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	< 1100	**150** J	**240** J	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	**150** J	**180** J	**160** J	**120** J	**230** J	< 1100	< 1100	< 1300	< 1100	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**120** J	< 1100	**170** J	**230** J	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	**160** J	**190** J	**180** J	**140** J	**240** J	< 1100	< 1100	< 1300	< 1100	< 1100
TICs	NLE	NLE	NLE	--	**10900**	**12210**	**26950**	**24500**	**10070**	**17700**	**2900**	**5480**	ND	**1830**	**25000**	**23300**	**8700**	**20100**	**18200**	**10600**	**2370**	**14900**	**5710**	**2030**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0092	**0.013**	< 0.0090	< 0.0088	< 0.0087	< 0.0090	< 0.0087	< 0.0105	< 0.0090	< 0.0086	< 0.0089	< 0.0088	< 0.0087	< 0.0090	< 0.0090	< 0.0091	< 0.0088	< 0.0101	< 0.0084	< 0.0084
Heptachlor	0.1	0.7	0.5	--	< 0.0069	**1.267**	< 0.0068	< 0.0066	< 0.0065	< 0.0068	< 0.0065	< 0.0078	< 0.0067	< 0.0064	< 0.0067	< 0.0066	< 0.0065	< 0.0068	< 0.0068	< 0.0068	< 0.0066	< 0.0076	< 0.0063	< 0.0063
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0138	**0.482**	< 0.0135	< 0.0132	< 0.0131	< 0.0135	< 0.0130	< 0.0157	< 0.0134	< 0.0129	< 0.0133	< 0.0132	< 0.0130	< 0.0135	< 0.0135	< 0.0136	< 0.0131	< 0.0152	< 0.0126	< 0.0126
Endosulfan I	470	6,800	4	--	< 0.0115	< 0.0115	< 0.0113	< 0.0110	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
4,4'-DDE	2	9	18	--	**0.032**	**0.071**	**0.197**	**0.044**	< 0.0087	**0.03**	**0.022**	**0.036**	**0.027**	**0.019**	**0.079**	**0.119**	**0.042**	**0.275**	**0.071**	**0.093**	**0.041**	**0.011**	**0.017**	**0.01**
Dieldrin	0.04	0.2	0.003	--	< 0.0115	< 0.0115	< 0.0113	< 0.0110	< 0.0109	**0.012**	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
Endrin	23	340	1	--	< 0.0115	**0.29**	< 0.0113	< 0.0110	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
Endosulfan II	470	6,800	4	--	< 0.0092	< 0.0092	< 0.0090	< 0.0088	< 0.0087	< 0.0090	< 0.0087	< 0.0105	< 0.0090	< 0.0086	< 0.0089	< 0.0088	< 0.0087	< 0.0090	< 0.0090	< 0.0091	< 0.0088	< 0.0101	< 0.0084	< 0.0084
4,4'-DDD	3	13	4	--	**0.015**	**0.156**	**0.056**	**0.08**	< 0.0131	**0.026**	**0.022**	**0.059**	**0.02**	**0.015**	**0.031**	**0.05**	< 0.0130	**0.0184**	**0.096**	**0.038**	**0.025**	< 0.0152	< 0.0126	< 0.0126
4,4'-DDT	2	8	11	--	**0.048**	**1.025**	**0.257**	**0.181**	< 0.0240	< 0.0248	**0.074**	**0.075**	**0.062**	**0.025**	**0.162**	**0.194**	**0.029**	**0.394**	**0.04**	< 0.0250	< 0.0241	< 0.0279	**0.025**	< 0.0231
gamma-Chlordane	0.2	1	0.05	--	< 0.0115	**7.144**	**0.021**	**0.028**	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	**0.019**	< 0.0108	**0.027**	**0.031**	< 0.0113	**0.089**	< 0.0127	< 0.0105	< 0.0105
alpha-Chlordane	0.2	1	0.05	--	< 0.0115	**7.929**	**0.02**	**0.018**	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	**0.019**	< 0.0108	**0.022**	**0.016**	< 0.0113	**0.087**	< 0.0127	< 0.0105	< 0.0105
Aroclor 1016	0.2	1	0.2	--	< 0.2571	< 0.2571	< 0.2521	< 0.2468	< 0.0122	< 0.2528	< 0.2434	< 0.0733	< 0.0125	< 0.2405	< 0.2486	< 0.2466	< 0.2425	< 0.2527	< 0.2527	< 0.2542	< 0.2452	< 0.0710	< 0.2361	< 0.2356
Aroclor 1221	0.2	1	0.2	--	< 0.4728	< 0.4729	< 0.4637	< 0.4540	< 0.0225	< 0.4650	< 0.4477	< 0.1347	< 0.0231	< 0.4423	< 0.4572	< 0.4536	< 0.4461	< 0.4648	< 0.4647	< 0.4675	< 0.4510	< 0.1306	< 0.4342	< 0.4333
Aroclor 1242	0.2	1	0.2	--	< 0.3673	< 0.3673	< 0.3602	< 0.3526	< 0.0175	< 0.3612	< 0.3477	< 0.1046	< 0.0179	< 0.3435	< 0.3551	< 0.3523	< 0.3465	< 0.3610	< 0.3609	< 0.3631	< 0.3503	< 0.1014	< 0.3372	< 0.3365
Aroclor 1260	0.2	1	0.2	--	< 0.0826	< 0.0826	< 0.0810	< 0.0793	**3.406**	< 0.0813	< 0.0782	< 0.0235	**0.665**	< 0.0773	< 0.0799	< 0.0793	< 0.0780	< 0.0812	< 0.0812	< 0.0817	< 0.0788	< 0.0228	< 0.0759	< 0.0757

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-116	B-117	B-118	B-119	B-120	B-121	B-122	B-123	B-124	B-124 Dup	B-125	B-126	B-127	B-128	B-129	B-130	B-131	B-132	B-133	B-133 Dup
Sample Date					04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**13900**	**14300**	**6990**	**11600**	**6710**	**11600**	**13300**	**15000**	**10100**	**14500**	**12200**	**8630**	**8800**	**7380**	**11900**	**16100**	**12600**	**8370**	**14300**	**8280**
Antimony	31	450	6	ND	< 0.456	**1.8**	< 0.469	**1.08**	**0.821**	< 0.458	< 0.439	< 0.552	**3.26**	< 0.460	< 0.387	< 0.425	< 0.455	< 0.442	< 0.458	**0.804**	< 0.434	< 0.517	< 0.413	< 0.437
Arsenic	19	19	19	22.9	**11.3**	**12.5**	**9.08**	**13.9**	**7.83**	**9.84**	**7.08**	**8.79**	**8.04**	**12.2**	**9.27**	**7.91**	**6.24**	**7.68**	**12.6**	**21.7**	**14**	**4.56**	**8.66**	**6.33**
Barium	16,000	59,000	2,100	32.3	**51.4**	**78.1**	**38.9**	**50.6**	**11.2**	**56.2**	**55**	**77.2**	**51.4**	**43.6**	**40.3**	**27.2**	**13.7**	**47.2**	**53**	**41.4**	**50.6**	**28.3**	**19**	**20**
Beryllium	16	140	0.7	2	**1.26**	**1.54**	**0.737**	**0.948**	**0.529**	**1.08**	**1.34**	**1.23**	**0.62**	**1.19**	**0.969**	**0.78**	**0.482**	**0.724**	**1.21**	**1.24**	**0.861**	**0.699**	**1.62**	**1.1**
Cadmium	78	78	2	ND	**0.641**	**1.68**	< 0.117	**0.255**	**0.935**	< 0.115	< 0.110	< 0.138	**1.67**	< 0.115	**0.155**	< 0.106	< 0.114	< 0.110	< 0.115	< 0.107	**1.78**	< 0.129	< 0.103	**0.411**
Calcium	NLE	NLE	NLE	921	**2780**	**10400**	**1170**	**1600**	**1530**	**2810**	**2380**	**2930**	**5090**	**3170**	**1080**	**668**	**479**	**811**	**1570**	**2200**	**1700**	**334**	**111**	**215**
Chromium	NLE	NLE	NLE	269	**123**	**95.7**	**66.4**	**115**	**76.7**	**77.8**	**75.7**	**78.1**	**50.4**	**117**	**88.6**	**88.3**	**62.9**	**66**	**132**	**109**	**76**	**69.1**	**141**	**82.4**
Cobalt	1,600	590	90	2.5	**3.39**	**2.58**	**1.71**	**2.13**	**1.8**	**2.79**	**3.8**	**3.03**	**2.75**	**2.62**	**2.96**	**1.24**	**1.01**	**2.11**	**2.05**	**6.01**	**2.42**	**1.25**	**1.46**	**1.09**
Copper	3,100	45,000	11,000	8	**20.6**	**28.7**	**10.9**	**70.4**	**19.9**	**45.4**	**12**	**11.1**	**10.7**	**13.6**	**14.2**	**16.6**	**0.718**	**10.8**	**25**	**5.07**	**4.94**	< 0.775	**4.13**	< 0.656
Iron	NLE	NLE	NLE	55,800	**34700**	**27800**	**18900**	**47000**	**26600**	**32900**	**27900**	**34000**	**24600**	**36600**	**27400**	**25700**	**18700**	**20100**	**36400**	**84400**	**19700**	**15200**	**43800**	**21500**
Lead	400	800	90	19.5	**56.6**	**77.6**	**43.8**	**126**	**23.7**	**159**	**96.8**	**270**	**85.5**	**35.6**	**125**	**56.5**	**6.93**	**43.1**	**54.7**	**58.4**	**128**	**6.89**	**5.61**	**6.43**
Magnesium	NLE	NLE	NLE	7,230	**4020**	**7320**	**1860**	**3650**	**1400**	**2930**	**3250**	**3530**	**1430**	**4350**	**2330**	**2490**	**1130**	**1830**	**4070**	**2220**	**2170**	**1690**	**4630**	**2260**
Manganese	11,000	5,900	65	90.7	**85.6**	**136**	**21.6**	**76.4**	**41.9**	**54**	**183**	**101**	**82.3**	**85.1**	**98.4**	**22.5**	**26.2**	**40.9**	**44.9**	**233**	**81.6**	**13.8**	**20.3**	**13.5**
Mercury	23	65	0.1	ND	**0.078**	**0.13**	**0.13**	**0.209**	**0.025**	**0.121**	**0.089**	**0.132**	**0.099**	**0.083**	**0.189**	**0.066**	< 0.023	**0.105**	**0.122**	**0.064**	**0.085**	< 0.027	< 0.023	**0.027**
Nickel	1,600	23,000	48	8.4	**9.49**	**9.24**	**6.05**	**9.79**	**8.7**	**7.69**	**11.3**	**10.8**	**8.04**	**7.86**	**8.33**	**4.79**	**3.68**	**6.01**	**7.11**	**14.4**	**6.47**	**4.39**	**5.85**	**5.18**
Potassium	NLE	NLE	NLE	15,400	**9450**	**7530**	**4860**	**8570**	**4520**	**7210**	**6770**	**6770**	**2080**	**10500**	**5660**	**6140**	**3320**	**4640**	**10400**	**4880**	**4580**	**4380**	**12900**	**5900**
Selenium	390	5,700	11	1.9	**0.943**	< 0.709	< 0.703	**0.986**	< 0.693	**0.72**	< 0.658	< 0.827	< 0.635	< 0.690	**0.802**	**0.759**	< 0.682	< 0.663	**0.924**	**1.09**	< 0.652	< 0.775	< 0.619	< 0.656
Silver	390	5,700	1	1.1	< 0.685	< 0.709	< 0.703	< 0.670	< 0.693	< 0.687	< 0.658	< 0.827	< 0.635	< 0.690	< 0.581	< 0.638	< 0.682	**5.91**	**1.84**	< 0.642	< 0.652	< 0.775	< 0.619	< 0.656
Sodium	NLE	NLE	NLE	51.6	**311**	**346**	**178**	**297**	**182**	**180**	**172**	**197**	**267**	**301**	**130**	**142**	**77.9**	**74.1**	**248**	**216**	**139**	**197**	**99.5**	**75.9**
Thallium	5	79	3	ND	< 0.685	< 0.709	< 0.703	< 0.670	< 0.693	< 0.687	< 0.658	< 0.827	< 0.635	< 0.690	< 0.581	< 0.638	< 0.682	< 0.663	< 0.688	< 0.642	< 0.652	< 0.775	< 0.619	< 0.656
Vanadium	78	1,100	NLE	94.1	**60.3**	**50**	**34.9**	**55.7**	**100**	**44.7**	**47**	**44.9**	**52.4**	**61.3**	**51.6**	**44.4**	**85.3**	**35.1**	**49.7**	**165**	**41.6**	**37.1**	**70.8**	**38.7**
Zinc	23,000	110,000	930	81.4	**78.4**	**146**	**63.4**	**356**	**68.6**	**139**	**231**	**252**	**137**	**87.8**	**64.1**	**37.1**	**20.2**	**52.8**	**71.5**	**96.1**	**54.2**	**27**	**47.8**	**34.8**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-134	B-135	B-136	B-137	B-138	B-139	B-140	B-141	B-142	B-143	B-144	B-145	B-145 Dup	B-146	B-147	B-148	B-149	B-150	B-151	B-152
Sample Date					04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4401.21	4401.23	4401.25	4401.27	4401.29	4401.31	4401.33	4401.35	4401.37	4401.43	4401.45	4401.47	4401.41	4405.03	4405.05	4405.07	4405.09	4405.11	4405.13	4405.15
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
Acetone	70,000,000	NLE	19,000	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Methylene Chloride	34,000	97,000	10	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	**2300**	**570** J	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
2-Butanone	3,100,000	44,000,000	900	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
Benzene	2,000	5,000	5	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
Toluene	6,300,000	91,000,000	7000	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Tetrachloroethene	2,000	5,000	5	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Chlorobenzene	510,000	7,400,000	600	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4401.20	4401.22	4401.24	4401.26	4401.28	4401.30	4401.32	4401.34	4401.36	4401.42	4401.44	4401.46	4401.40	4405.02	4405.04	4405.06	4405.08	4405.10	4405.12	4405.14
Aniline	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**8800** JD	< 1100	< 1100	**13000** JD	< 54000	**2000** J	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	**8900** JD	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	**400** J	< 1300	**720000** D	< 1100	< 1100	**950000** D	< 54000	**150000** JD	< 1100	< 1400	**130** J	< 1100	< 1100	**330** J	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**230000** D	< 1100	< 1100	**380000** D	< 54000	**48000**	< 1100	< 1400	< 1200	< 1100	< 1100	**130** J	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	**270** J	< 58000	< 1100	< 1100	**6000** JD	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**1300000** D	< 1100	< 1100	**1700000** D	**5800** JD	**230000** JD	< 1100	< 1400	**350** J	< 1100	< 1100	**790** J	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**600000** D	< 1100	< 1100	**910000** D	< 54000	**120000**	< 1100	< 1400	**120** J	< 1100	< 1100	**380** J	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1200	< 1400	**130** JB	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**970000** D	< 1100	< 1100	**1500000** D	< 54000	**170000** JD	< 1100	< 1400	**270** J	< 1100	< 1100	**670** J	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	< 1200	**210** J	< 1100	< 14000	**430** J	**360** J	**440** J	**4900000** D	**510** J	< 1100	**8000000** D	**37000** JD	**1200000** D	< 1100	**750** J	**2600**	**1200**	**340** J	**7400**	**590** J
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	**140** J	**2000000** D	**130** J	< 1100	**4000000** D	**9800** JD	**280000** JD	< 1100	**180** J	**600** J	< 1100	< 1100	**1400**	**150** J
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**630** JB	< 1400	**710** JB	< 14000	**330** JB	**420** JB	**270** JB	< 58000	**260** JB	**220** JB	< 55000	< 54000	< 11000	**630** JB	**590** JB	**470** JB	**800** JB	**220** JB	**900** JB	**690** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**240** J	**280** J	< 1100	< 14000	**880** J	**410** J	**880** J	**4500000** D	**520** J	< 1100	**7200000** D	**39000** JD	**1100000** D	**140** J	**1200** J	**4000**	**2100**	**480** J	**7900**	**820** J
Benzidine	700	700	700	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	**220** J	**380** J	< 1100	< 14000	**800** J	**550** J	**1200** J	**2900000** D	**490** J	< 1100	**7400000** D	**47000** JD	**1100000** D	**210** J	**1600**	**3900**	**2000**	**520** J	**8600**	**1200**
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(a)anthracene	600	2,000	800	--	< 1200	**170** J	< 1100	< 14000	**470** J	**220** J	**570** J	**1900000** D	**250** J	< 1100	**2500000** JD	**22000** JD	**390000** JD	< 1100	**700** J	**1700**	**660** J	**260** J	**2900**	**450** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Chrysene	62,000	230,000	80,000	--	**260** J	**340** J	< 1100	< 14000	**720** J	**460** J	**1100** J	**2400000** D	**410** J	**120** J	**3800000** JD	**31000** JD	**570000** D	**190** J	**1100** J	**2800**	**1400**	**450** J	**4800**	**700** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1200	< 1400	**140** J	< 14000	**130** J	< 1100	**160** J	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	**360** J	< 1200	**140** J	**260** J	< 1100	**310** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	**140** J	**170** J	< 1100	< 14000	**410** J	**160** J	**570** J	**2500000** D	**270** J	< 1100	**5400000** D	**15000** JD	**240000** JD	< 1100	**790** J	**1400**	**520** J	**180** J	**2600**	**500** J
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**120** J	**180** J	< 1100	< 14000	**400** J	**190** J	**760** J	**2200000** D	**200** J	< 1100	**3100000** D	**18000** JD	**240000** JD	< 1100	**790** J	**1300**	**650** J	**250** J	**2700**	**520** J
Benzo(a)pyrene	200	200	200	--	**130** J	**180** J	< 1100	< 14000	**430** J	**180** J	**590** J	**2500000** D	**230** J	< 1100	**4500000** D	**18000** JD	**300000** JD	**120** J	**750** J	**1600**	**490** J	**230** J	**2700**	**500** J
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1200	< 1400	< 1100	< 14000	**150** J	**170** J	< 1300	**670000** D	< 1100	< 1100	**1200000** D	**8200** JD	**190000** JD	< 1100	< 1400	**570** J	**300** J	**130** J	**800** J	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**410000** D	< 1100	< 1100	**850000** D	< 54000	**100000**	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1200	< 1400	< 1100	< 14000	**170** J	**210** J	< 1300	**520000** D	< 1100	< 1100	**940000** D	< 54000	**120000**	**160** J	< 1400	**530** J	**330** J	**150** J	**770** J	< 1100
TICs	NLE	NLE	NLE	--	**12700**	**8790**	**9100**	ND	**25380**	**5170**	**9350**	**4326000**	**1500**	**3100**	**5810000**	ND	**781460**	**7090**	**3660**	**5790**	**11590**	**4440**	**13170**	**1400**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0097	< 0.0109	< 0.0087	< 0.0111	< 0.0091	< 0.0087	< 0.0098	< 0.0092	< 0.0091	< 0.0086	< 0.0089	< 0.0085	< 0.0092	< 0.0090	< 0.0110	< 0.0090	< 0.0095	< 0.0088	< 0.0091	< 0.0087
Heptachlor	0.1	0.7	0.5	--	< 0.0073	< 0.0082	< 0.0065	< 0.0083	< 0.0068	< 0.0066	< 0.0074	< 0.0069	< 0.0069	< 0.0061	< 0.0067	< 0.0064	< 0.0069	< 0.0067	< 0.0082	< 0.0068	< 0.0071	< 0.0066	< 0.0068	< 0.0065
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0146	< 0.0164	< 0.0130	< 0.0167	< 0.0136	< 0.0131	< 0.0148	< 0.0139	< 0.0137	< 0.0129	< 0.0134	< 0.0127	< 0.0137	< 0.0134	< 0.0165	< 0.0135	< 0.0142	< 0.0132	< 0.0137	< 0.0130
Endosulfan I	470	6,800	4	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	< 0.0107	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	< 0.0113	< 0.0119	< 0.0110	< 0.0114	< 0.0108
4,4'-DDE	2	9	18	--	**0.078**	**0.697**	**0.01**	**0.402**	**0.061**	**0.113**	**0.064**	< 0.0092	**0.061**	**0.02**	**0.287**	**0.032**	< 0.0092	**0.052**	**0.487**	**0.039**	**0.273**	**0.202**	**0.039**	**0.012**
Dieldrin	0.04	0.2	0.003	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	**0.017**	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	**0.025**	**0.019**	**0.015**	< 0.0114	**0.016**
Endrin	23	340	1	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	< 0.0107	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	< 0.0113	< 0.0119	< 0.0110	< 0.0114	< 0.0108
Endosulfan II	470	6,800	4	--	< 0.0097	< 0.0109	< 0.0087	< 0.0111	< 0.0091	< 0.0087	< 0.0098	< 0.0092	< 0.0091	< 0.0086	< 0.0089	< 0.0085	< 0.0092	< 0.0090	< 0.0110	< 0.0090	< 0.0095	< 0.0088	< 0.0091	< 0.0087
4,4'-DDD	3	13	4	--	**0.06**	**3.857**	< 0.0130	**1.179**	**0.067**	**0.194**	< 0.0148	< 0.0139	**0.066**	**0.021**	< 0.0134	**0.054**	< 0.0137	**0.031**	**0.616**	**0.035**	**0.267**	**0.135**	**0.091**	< 0.0130
4,4'-DDT	2	8	11	--	**0.091**	**1.261**	< 0.0239	**1.381**	**0.027**	**0.045**	**0.341**	< 0.0254	**0.056**	< 0.0236	< 0.0245	**0.102**	< 0.0252	**0.136**	**0.343**	**0.097**	**0.219**	**0.39**	**0.038**	**0.04**
gamma-Chlordane	0.2	1	0.05	--	**0.018**	**0.296**	< 0.0108	**0.075**	< 0.0113	< 0.0109	< 0.0123	< 0.0116	**0.038**	**0.044**	< 0.0111	**0.018**	< 0.0115	< 0.0112	< 0.0137	**0.018**	**0.042**	**0.029**	**0.018**	< 0.0108
alpha-Chlordane	0.2	1	0.05	--	**0.014**	**0.2**	< 0.0108	**0.055**	< 0.0113	< 0.0109	< 0.0123	< 0.0116	**0.027**	**0.038**	< 0.0111	**0.024**	< 0.0115	< 0.0112	< 0.0137	**0.018**	**0.046**	**0.036**	**0.016**	< 0.0108
Aroclor 1016	0.2	1	0.2	--	< 0.0679	< 0.0765	< 0.2429	< 0.0779	< 0.2535	< 0.2448	< 0.0138	< 0.2588	< 0.2558	< 0.2401	< 0.2495	< 0.2371	< 0.2566	< 0.2510	< 0.0769	< 0.2529	< 0.2655	< 0.2457	< 0.2551	< 0.2430
Aroclor 1221	0.2	1	0.2	--	< 0.1249	< 0.1408	< 0.4468	< 0.1433	< 0.4662	< 0.4503	< 0.0253	< 0.4761	< 0.4705	< 0.4417	< 0.4589	< 0.4362	< 0.4719	< 0.4617	< 0.1415	< 0.4651	< 0.4883	< 0.4520	< 0.4693	< 0.4470
Aroclor 1242	0.2	1	0.2	--	< 0.0970	< 0.1093	< 0.3470	< 0.1113	< 0.3621	< 0.3497	< 0.0197	< 0.3698	< 0.3654	< 0.3431	< 0.3564	< 0.3388	< 0.3665	< 0.3586	< 0.1099	< 0.3613	< 0.3792	< 0.3511	< 0.3645	< 0.3472
Aroclor 1260	0.2	1	0.2	--	< 0.0218	< 0.0246	< 0.0781	< 0.0250	< 0.0815	< 0.0787	< 0.0044	< 0.0832	< 0.0822	< 0.0772	< 0.0802	< 0.0762	< 0.0825	< 0.0807	< 0.0247	< 0.0813	< 0.0853	< 0.0790	< 0.0820	< 0.0781

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-134	B-135	B-136	B-137	B-138	B-139	B-140	B-141	B-142	B-143	B-144	B-145	B-145 Dup	B-146	B-147	B-148	B-149	B-150	B-151	B-152
Sample Date					04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**12100**	**8960**	**5180**	**11800**	**5850**	**7720**	**8850**	**18900**	**13100**	**5890**	**9190**	**5200**	**16100**	**13700**	**8750**	**14000**	**9920**	**9490**	**7670**	**8010**
Antimony	31	450	6	ND	< 0.477	**46.9**	< 0.426	**23.5**	**0.464**	**2.22**	**5.93**	**1.07**	< 0.445	< 0.402	< 0.457	< 0.398	**2.02**	< 0.432	**62.3**	**0.86**	< 0.474	< 0.432	**0.572**	< 0.461
Arsenic	19	19	19	22.9	**11.1**	**10.1**	**4.38**	**15.7**	**8.31**	**11.3**	**9.38**	**7.03**	**9.69**	**6.27**	**8.11**	**5.03**	**9.78**	**8.3**	**7.49**	**13.4**	**13.2**	**6.97**	**2.21**	**2.74**
Barium	16,000	59,000	2,100	32.3	**60.5**	**783**	**11.2**	**208**	**27.8**	**46.9**	**58.5**	**984**	**74.6**	**17.9**	**37.3**	**13.9**	**558**	**53.8**	**112**	**39.8**	**51.5**	**43.1**	**50.3**	**17.1**
Beryllium	16	140	0.7	2	**1.19**	**1.02**	**0.51**	**1.26**	**0.579**	**0.75**	**0.706**	**2.4**	**0.815**	**0.573**	**0.677**	**0.405**	**1.78**	**1.16**	**0.672**	**0.903**	**0.918**	**0.766**	**0.325**	**0.261**
Cadmium	78	78	2	ND	< 0.119	**2.67**	< 0.107	**0.499**	**0.207**	< 0.117	**0.131**	**3.27**	< 0.111	< 0.101	< 0.114	< 0.100	**0.929**	< 0.108	**0.484**	< 0.119	**0.371**	< 0.108	< 0.099	**0.152**
Calcium	NLE	NLE	NLE	921	**829**	**8310**	**589**	**3470**	**1110**	**686**	**2730**	**57700**	**5320**	**522**	**949**	**536**	**41900**	**21400**	**4210**	**2460**	**1270**	**1340**	**50500**	**23500**
Chromium	NLE	NLE	NLE	269	**137**	**84.8**	**45.2**	**127**	**67**	**87**	**62.6**	**24.9**	**81.3**	**53.1**	**74**	**65**	**57.6**	**325**	**107**	**81.2**	**78.8**	**71.9**	**23.4**	**28.1**
Cobalt	1,600	590	90	2.5	**1.5**	**5.71**	**0.938**	**3.93**	**1.15**	**1.2**	**3.12**	**3.92**	**1.62**	**1.24**	**1.86**	**0.758**	**4.48**	**5.64**	**4.07**	**2.22**	**2.54**	**2.22**	**2.29**	**4**
Copper	3,100	45,000	11,000	8	**18.8**	**81.2**	< 0.639	**36.8**	**18.1**	**24.6**	**19.6**	**25.5**	**4.59**	**8.95**	**6.96**	**1.36**	**15.6**	**692**	**129**	**11.1**	**23**	**11.4**	**15.9**	**16.8**
Iron	NLE	NLE	NLE	55,800	**34700**	**25100**	**12500**	**43100**	**23500**	**27500**	**25300**	**5060**	**22100**	**15900**	**19900**	**15900**	**13800**	**25600**	**19900**	**30700**	**27700**	**22100**	**9540**	**13600**
Lead	400	800	90	19.5	**56.8**	**4000**	**4.94**	**808**	**33.6**	**91.5**	**521**	**64.3**	**63.3**	**15.1**	**35.3**	**12.5**	**201**	**35.8**	**645**	**65.7**	**59.9**	**41.7**	**12.1**	**9.11**
Magnesium	NLE	NLE	NLE	7,230	**3910**	**2950**	**964**	**3920**	**1310**	**1980**	**2190**	**17100**	**2930**	**1190**	**1670**	**969**	**13700**	**4170**	**2000**	**3210**	**2150**	**1960**	**2660**	**5280**
Manganese	11,000	5,900	65	90.7	**23.7**	**255**	**13.7**	**143**	**25.5**	**20.1**	**74.1**	**1910**	**42.2**	**18.5**	**49.7**	**14.5**	**1530**	**94.1**	**78.4**	**46.2**	**55.7**	**53.2**	**81.1**	**95.1**
Mercury	23	65	0.1	ND	**0.105**	**0.37**	< 0.025	**0.371**	**0.068**	**0.149**	**0.211**	**0.078**	**0.059**	**0.034**	**0.259**	**0.058**	**0.261**	**0.11**	**0.488**	**0.082**	**0.229**	**0.144**	**0.065**	**0.062**
Nickel	1,600	23,000	48	8.4	**6.5**	**22.4**	**4.83**	**10.9**	**4.59**	**5.57**	**6.99**	**7.61**	**5.53**	**5.91**	**5.32**	**3.02**	**11.7**	**15.6**	**10.9**	**6.44**	**8.36**	**7.53**	**4.3**	**14.1**
Potassium	NLE	NLE	NLE	15,400	**9980**	**4940**	**2680**	**8880**	**3380**	**5320**	**4210**	**2060**	**5210**	**2980**	**4250**	**2830**	**4730**	**5120**	**4180**	**7050**	**5240**	**4810**	**1660**	**1620**
Selenium	390	5,700	11	1.9	**1.24**	**1.26**	< 0.639	**1.86**	< 0.681	**1.13**	**0.879**	**2.36**	**0.695**	< 0.603	< 0.686	< 0.597	**1.67**	< 0.648	< 0.799	< 0.712	< 0.711	< 0.648	< 0.597	< 0.691
Silver	390	5,700	1	1.1	**6.67**	< 0.758	< 0.639	< 0.891	**0.978**	**2.89**	< 0.743	< 0.724	< 0.668	< 0.603	**1.26**	< 0.597	< 0.691	< 0.648	**1.45**	< 0.712	< 0.711	**2.06**	< 0.597	< 0.691
Sodium	NLE	NLE	NLE	51.6	**178**	**198**	**109**	**207**	**79.1**	**216**	**103**	**16700**	**108**	**96.7**	**248**	**79.3**	**13400**	**231**	**192**	**177**	**157**	**146**	**123**	**365**
Thallium	5	79	3	ND	< 0.715	< 0.758	< 0.639	< 0.891	< 0.681	< 0.704	< 0.743	< 0.724	< 0.668	< 0.603	< 0.686	< 0.597	< 0.691	< 0.648	< 0.799	< 0.712	< 0.711	< 0.648	< 0.597	< 0.691
Vanadium	78	1,100	NLE	94.1	**43.8**	**42.9**	**23.6**	**52.3**	**46.2**	**36.4**	**43.8**	**18.4**	**46.5**	**33**	**59**	**70.9**	**45.9**	**63.5**	**51.5**	**52.2**	**47.9**	**42.8**	**15.3**	**92.8**
Zinc	23,000	110,000	930	81.4	**67.7**	**1020**	**20.3**	**478**	**94**	**46.9**	**509**	**385**	**59.3**	**33.9**	**46.4**	**24.9**	**120**	**432**	**412**	**58.4**	**90**	**60.3**	**41.3**	**96.5**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-153	B-154	B-155	B-156	B-157	B-157 Dup	B-158	B-159	B-160	B-161	B-162	B-163	B-164	B-165	B-166	B-166 Dup	B-167	B-168	B-169	B-170
Sample Date					04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4405.17	4405.19	4405.21	4405.23	4405.25	4405.27	4413.03	4413.05	4413.07	4413.09	4413.11	4413.13	4413.15	4413.17	4413.19	4413.29	4413.21	4413.23	4413.25	4413.27
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	**66** J	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
Acetone	70,000,000	NLE	19,000	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	**1100**	< 720	< 680	< 660	< 680	< 550	< 620	< 670
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Methylene Chloride	34,000	97,000	10	--	< 550	< 630	**4100**	**400**	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
2-Butanone	3,100,000	44,000,000	900	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	< 1500	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
Benzene	2,000	5,000	5	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
Toluene	6,300,000	91,000,000	7000	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Tetrachloroethene	2,000	5,000	5	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Chlorobenzene	510,000	7,400,000	600	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	< 1500	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	**3000**	**5200**	**4900**	**10000**	ND	**3800**	ND	ND	**7000**	ND	ND	ND	ND	**2000**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4405.16	4405.18	4405.20	4405.22	4405.24	4405.26	4413.02	4413.04	4413.06	4413.08	4413.10	4413.12	4413.14	4413.16	4413.18	4413.28	4413.20	4413.22	4413.24	4413.26
Aniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**7500**	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	**650** J	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**2600**	< 2100	**21000** JD	< 1200	< 1200	< 1200	< 1200	< 1200
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	**730** J	**210** J	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**4300**	< 2100	**9700**	< 1200	< 1200	< 1200	< 1200	< 1200
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	**220** J	**220** J	< 1200	< 1200	< 1200	< 1200	< 1200
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	**210** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**3800**	< 2100	**34000** D	**220** J	< 1200	< 1200	< 1200	< 1200
Dibenzofuran	NLE	NLE	NLE	--	< 1100	**130** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**850** J	< 2100	**14000** JD	< 1200	< 1200	< 1200	< 1200	< 1200
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	**300** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**1300**	< 2100	**28000** JD	**160** J	< 1200	< 1200	< 1200	< 1200
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Phenanthrene	NLE	300,000,000	NLE	--	**170** J	**1400**	**680** J	**390** J	**250** J	< 1200	< 1200	**350** J	**220** J	< 1200	< 1200	< 1200	< 1200	**710** J	**230000** D	**2200**	**220** J	< 1200	**350** J	< 1200
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	**380** J	**160** J	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**1600**	< 2100	**58000** D	**520** J	< 1200	< 1200	< 1200	< 1200
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**460** JB	**600** JB	**390** JB	**440** JB	**1300** B	**640** JB	**240** JB	**950** JB	**540** JB	**290** JB	**720** JB	**410** JB	< 1200	**860** JB	**850** JB	**650** JB	**1200** B	**360** JB	**690** JB	**640** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**300** J	**2100**	**1100** J	**750** J	**600** J	**150** J	< 1200	**630** J	**410** J	**350** J	**290** J	**350** J	< 1200	**1400** J	**190000** D	**6100**	**430** J	< 1200	**600** J	< 1200
Benzidine	700	700	700	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Pyrene	1,700,000	18,000,000	840,000	--	**320** J	**2700**	**1200**	**840** J	**540** J	**260** J	**130** J	**770** J	**450** J	**320** J	**260** J	**280** J	**4300**	**1500** J	**210000** D	**6300**	**380** J	< 1200	**550** J	**130** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzo(a)anthracene	600	2,000	800	--	**190** J	**480** J	**530** J	**410** J	**330** J	**160** J	< 1200	**400** J	**210** J	**180** J	**160** J	**200** J	**1900**	**700** J	**80000** D	**2700**	**220** J	< 1200	**290** J	< 1200
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**380** J	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Chrysene	62,000	230,000	80,000	--	**310** J	**800** J	**780** J	**650** J	**590** J	**230** J	< 1200	**740** J	**400** J	**340** J	**290** J	**340** J	**2800**	**1500** J	**130000** D	**4700**	**390** J	< 1200	**570** J	< 1200
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1100	< 1100	< 1100	< 1100	**190** J	**190** J	**130** J	**130** J	**170** J	< 1200	< 1200	< 1200	**810** J	**270** J	**2300**	< 1200	< 1200	< 1200	< 1200	< 1200
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzo(b)fluoranthene	600	2,000	2,000	--	**140** J	**370** J	**450** J	**450** J	**330** J	< 1200	< 1200	**350** J	**200** J	**200** J	**200** J	**150** J	**180** J	**1100** J	**740** J	**44000** D	**2700**	**170** J	< 1200	**290** J	< 1200
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**160** J	**410** J	**500** J	**420** J	**370** J	< 1200	< 1200	**360** J	**200** J	**180** J	**150** J	**190** J	**1200**	**920** J	**50000** D	**2400**	**210** J	< 1200	**270** J	< 1200
Benzo(a)pyrene	200	200	200	--	**160** J	**390** J	**470** J	**450** J	**380** J	< 1200	< 1200	**390** J	**200** J	**190** J	**170** J	**200** J	**1400**	**740** J	**65000** D	**3000**	**210** J	< 1200	**330** J	< 1200
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	< 1100	< 1100	< 1100	**260** J	< 1200	< 1200	**280** J	**140** J	**160** J	< 1200	**140** J	**530** J	**390** J	**35000** D	**1100** J	< 1200	< 1200	**220** J	< 1200
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**180** J	< 2100	**14000**	**330** J	< 1200	< 1200	< 1200	< 1200
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**120** J	< 1100	< 1100	< 1100	**260** J	< 1200	< 1200	**330** J	**170** J	**170** J	< 1200	< 1200	**510** J	**460** J	**37000** D	**1100** J	< 1200	< 1200	**250** J	< 1200
TICs	NLE	NLE	NLE	--	**13020**	**5650**	**3680**	**4000**	**66650**	**7720**	**11520**	**14490**	**7730**	**26540**	**37270**	**64540**	**452800**	**30500**	**138400**	**13580**	**44800**	**31940**	**51000**	**11290**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0093	< 0.0090	< 0.0088	< 0.0092	< 0.0094	< 0.0094	< 0.0099	< 0.0094	< 0.0110	< 0.0093	< 0.0095	< 0.0097	< 0.0102	< 0.0180	< 0.0095	< 0.0096	< 0.0094	< 0.0095	< 0.0092	< 0.0092
Heptachlor	0.1	0.7	0.5	--	< 0.0070	< 0.0067	< 0.0066	< 0.0069	< 0.0071	< 0.0071	< 0.0074	< 0.0071	< 0.0083	< 0.0070	< 0.0071	< 0.0072	< 0.0077	< 0.0135	< 0.0071	< 0.0072	< 0.0071	< 0.0071	< 0.0069	< 0.0069
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0139	< 0.0135	< 0.0132	< 0.0139	< 0.0141	< 0.0142	< 0.0148	< 0.0142	< 0.0165	< 0.0140	< 0.0143	< 0.0145	< 0.0153	< 0.0270	< 0.0142	< 0.0114	< 0.0141	< 0.0142	< 0.0139	< 0.0138
Endosulfan I	470	6,800	4	--	< 0.0116	< 0.0112	< 0.0110	< 0.0115	< 0.0118	< 0.0118	< 0.0123	< 0.0118	< 0.0138	< 0.0117	< 0.0119	< 0.0121	< 0.0128	< 0.0225	< 0.0119	< 0.0120	< 0.0118	< 0.0118	< 0.0116	< 0.0115
4,4'-DDE	2	9	18	--	< 0.0093	**0.077**	**0.063**	**0.057**	**0.137**	**0.098**	< 0.0099	**0.077**	**0.034**	**0.025**	**0.032**	**0.033**	< 0.0102	**0.118**	**0.049**	**0.029**	**0.072**	**0.035**	**0.035**	**0.028**
Dieldrin	0.04	0.2	0.003	--	< 0.0116	**0.014**	**0.016**	< 0.0115	< 0.0118	**0.027**	< 0.0123	**0.021**	< 0.0138	< 0.0117	**0.018**	**0.055**	< 0.0128	**0.027**	**0.031**	< 0.0120	< 0.0118	< 0.0118	**0.027**	< 0.0115
Endrin	23	340	1	--	< 0.0116	< 0.0112	< 0.0110	< 0.0115	< 0.0118	< 0.0118	< 0.0123	< 0.0118	< 0.0138	< 0.0117	< 0.0119	< 0.0121	< 0.0128	< 0.0225	< 0.0119	< 0.0120	< 0.0118	< 0.0118	< 0.0116	< 0.0115
Endosulfan II	470	6,800	4	--	< 0.0093	< 0.0090	< 0.0088	< 0.0092	< 0.0094	< 0.0094	< 0.0099	< 0.0094	< 0.0110	< 0.0093	< 0.0095	< 0.0097	< 0.0102	< 0.0180	< 0.0095	< 0.0096	< 0.0094	< 0.0095	< 0.0092	< 0.0092
4,4'-DDD	3	13	4	--	< 0.0139	**0.181**	**0.028**	**0.032**	**0.153**	**0.104**	**0.099**	**0.147**	**0.082**	**0.031**	**0.049**	**0.085**	< 0.0153	**0.201**	**0.134**	**0.089**	**0.078**	**0.026**	**0.055**	**0.027**
4,4'-DDT	2	8	11	--	< 0.0255	**0.028**	**0.154**	**0.193**	**0.057**	**0.044**	< 0.0271	**0.073**	< 0.0303	**0.048**	< 0.0262	< 0.0265	< 0.0281	**0.063**	**0.069**	**0.036**	< 0.0259	< 0.0260	< 0.0254	< 0.0252
gamma-Chlordane	0.2	1	0.05	--	< 0.0116	**0.014**	**0.012**	< 0.0115	**0.083**	**0.046**	< 0.0123	**0.088**	**0.015**	< 0.0117	**0.051**	**0.014**	< 0.0128	**0.045**	**0.04**	**0.034**	< 0.0118	< 0.0118	< 0.0116	< 0.0115
alpha-Chlordane	0.2	1	0.05	--	< 0.0116	**0.013**	**0.013**	< 0.0115	**0.068**	**0.027**	< 0.0123	**0.046**	< 0.0138	< 0.0117	**0.032**	< 0.0121	< 0.0128	**0.026**	**0.025**	**0.019**	< 0.0118	< 0.0118	< 0.0116	< 0.0115
Aroclor 1016	0.2	1	0.2	--	< 0.0130	< 0.2513	< 0.2473	< 0.2587	< 0.2639	< 0.2642	< 0.0138	< 0.0132	< 0.0772	< 0.2610	< 0.2663	< 0.0676	< 0.0143	< 0.1258	< 0.2657	< 0.0673	< 0.2636	< 0.2647	< 0.2588	< 0.2567
Aroclor 1221	0.2	1	0.2	--	< 0.0239	< 0.4622	< 0.4549	< 0.4758	< 0.4853	< 0.4859	< 0.0254	< 0.0243	< 0.1419	< 0.4800	< 0.4898	< 0.1243	< 0.0263	< 0.2314	< 0.4887	< 0.1238	< 0.4848	< 0.4869	< 0.4759	< 0.4721
Aroclor 1242	0.2	1	0.2	--	< 0.0186	< 0.3590	< 0.3533	< 0.3696	< 0.3769	< 0.3774	**0.0197**	**6.71**	< 0.1102	< 0.3728	< 0.3805	< 0.0965	**5654.281**	< 0.1798	< 0.3796	< 0.0962	< 0.3766	< 0.3782	< 0.3697	< 0.3667
Aroclor 1260	0.2	1	0.2	--	**20.06**	< 0.0808	< 0.0795	< 0.0831	< 0.0848	< 0.0849	< 0.0044	< 0.0042	< 0.0248	< 0.0839	< 0.0856	< 0.0217	< 0.0046	< 0.0404	< 0.0854	< 0.0216	< 0.0847	< 0.0851	< 0.0832	< 0.0825

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-153	B-154	B-155	B-156	B-157	B-157 Dup	B-158	B-159	B-160	B-161	B-162	B-163	B-164	B-165	B-166	B-166 Dup	B-167	B-168	B-169	B-170
Sample Date					04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**13800**	**11900**	**5400**	**15400**	**10400**	**12300**	**12100**	**13400**	**15200**	**15600**	**13900**	**10200**	**10600**	**17900**	**8800**	**12800**	**11300**	**12500**	**8590**	**13400**
Antimony	31	450	6	ND	< 0.447	< 0.429	< 0.466	< 0.447	< 0.431	< 0.467	**1.12**	**1.16**	**0.668**	< 0.480	< 0.480	**0.546**	< 0.524	< 0.924	< 0.418	< 0.414	< 0.478	< 0.496	< 0.471	< 0.488
Arsenic	19	19	19	22.9	**10.4**	**11.2**	**4.1**	**11.8**	**14.3**	**29.2**	**15.3**	**15.4**	**16**	**9.79**	**11.8**	**16.7**	**12.6**	**18.9**	**7.72**	**12.2**	**28**	**19.4**	**11.9**	**13.4**
Barium	16,000	59,000	2,100	32.3	**57.5**	**89**	**12.8**	**56.9**	**87.4**	**66.6**	**87.7**	**50.2**	**86.1**	**16.9**	**88.4**	**129**	**39.2**	**53.3**	**40.8**	**51.3**	**78.3**	**60.2**	**68.8**	**70.6**
Beryllium	16	140	0.7	2	**0.895**	**1.86**	**0.413**	**0.985**	**1.31**	**1.57**	**1.06**	**1.35**	**1.44**	**2.09**	**1.97**	**1.26**	**1.56**	**1.7**	**0.766**	**1.32**	**1.36**	**1.79**	**1.19**	**1.99**
Cadmium	78	78	2	ND	< 0.112	**1.69**	< 0.116	**0.428**	< 0.108	< 0.117	**0.225**	**1.24**	**0.655**	< 0.120	< 0.120	**0.995**	**0.251**	**0.69**	**0.606**	**0.322**	< 0.119	< 0.124	< 0.118	< 0.122
Calcium	NLE	NLE	NLE	921	**2380**	**6570**	**312**	**1460**	**2720**	**1430**	**2770**	**1290**	**1480**	**175**	**1720**	**1710**	**2460**	**1160**	**469**	**636**	**1280**	**2080**	**4680**	**4250**
Chromium	NLE	NLE	NLE	269	**88.6**	**196**	**49.5**	**87.8**	**136**	**173**	**116**	**146**	**177**	**160**	**204**	**117**	**120**	**150**	**89.1**	**140**	**160**	**142**	**104**	**180**
Cobalt	1,600	590	90	2.5	**2.46**	**1.47**	**1.04**	**3.25**	**2.26**	**1.05**	**2.2**	**2.38**	**1.92**	**2.73**	**0.874**	**1.23**	**2.21**	**2.6**	**1.66**	**2.69**	**0.906**	**2.71**	**1.11**	**1.98**
Copper	3,100	45,000	11,000	8	**19.7**	**5.33**	< 0.698	**21**	**22.1**	**4.4**	**44.7**	**49.3**	**52.9**	**18.1**	**17.5**	**33.9**	**9.45**	**91.4**	**35.1**	**37.4**	**6.96**	**6.2**	**7.83**	**6.91**
Iron	NLE	NLE	NLE	55,800	**47.8**	**42800**	**13300**	**27800**	**33400**	**42200**	**31000**	**43600**	**48700**	**56900**	**45600**	**28000**	**36200**	**43600**	**25800**	**44700**	**39400**	**43800**	**27600**	**40100**
Lead	400	800	90	19.5	**47.8**	**12.8**	**15.5**	**93.3**	**31.8**	**16.1**	**111**	**75.2**	**95**	**10.9**	**15.5**	**38.9**	**14.8**	**91.6**	**44.6**	**57.4**	**16.8**	**12.9**	**16**	**12.5**
Magnesium	NLE	NLE	NLE	7,230	**3270**	**6360**	**1130**	**2900**	**4210**	**5450**	**3380**	**4510**	**5420**	**7450**	**7090**	**3710**	**4110**	**4410**	**2450**	**5050**	**5200**	**5890**	**3500**	**6110**
Manganese	11,000	5,900	65	90.7	**62.4**	**34.4**	**24.5**	**95.5**	**24.9**	**19.6**	**148**	**43.5**	**67.7**	**18.9**	**23.1**	**29.7**	**24.9**	**40.6**	**22.5**	**31.9**	**18.8**	**16.7**	**16.4**	**25.5**
Mercury	23	65	0.1	ND	**0.144**	**0.107**	**0.046**	**0.116**	**0.461**	**0.142**	**1.17**	**0.355**	**0.463**	**0.088**	**0.378**	**0.859**	**0.148**	**0.766**	**2.36**	**6.31**	**0.15**	**0.042**	**0.065**	**0.068**
Nickel	1,600	23,000	48	8.4	**7.7**	**8.06**	**3.28**	**12**	**10.8**	**7.33**	**8.57**	**8.17**	**10.8**	**9.52**	**7.56**	**9.04**	**15.1**	**13**	**7.73**	**10.9**	**5.15**	**11.2**	**6.33**	**17.5**
Potassium	NLE	NLE	NLE	15,400	**6560**	**16900**	**3080**	**6730**	**10900**	**14400**	**7150**	**10400**	**13600**	**20300**	**17600**	**9440**	**10300**	**10800**	**6220**	**13100**	**13400**	**17100**	**9040**	**15500**
Selenium	390	5,700	11	1.9	**0.759**	**1.32**	< 0.698	**0.841**	**1.56**	**1.72**	**0.813**	**0.886**	**1.36**	< 0.719	**1.6**	**2.62**	**1.55**	< 1.387	**0.638**	< 0.621	**1.61**	**1.02**	**1.83**	**1.45**
Silver	390	5,700	1	1.1	< 0.671	< 0.643	< 0.698	< 0.671	**5.8**	< 0.700	**3.64**	**2.4**	**2.58**	< 0.719	**4.23**	< 0.793	< 0.786	< 1.387	**0.877**	**0.849**	**3.86**	< 0.744	< 0.706	< 0.731
Sodium	NLE	NLE	NLE	51.6	**258**	**357**	**103**	**228**	**197**	**279**	**158**	**305**	**283**	**129**	**119**	**124**	**341**	**347**	**120**	**239**	**129**	**192**	**199**	**165**
Thallium	5	79	3	ND	< 0.671	< 0.643	< 0.698	< 0.671	< 0.646	< 0.700	< 0.714	< 0.741	< 0.845	< 0.719	< 0.720	< 0.793	< 0.786	< 1.387	< 0.627	< 0.621	< 0.717	< 0.744	< 0.706	< 0.731
Vanadium	78	1,100	NLE	94.1	**52.8**	**75.6**	**37.9**	**73.1**	**51.4**	**62.9**	**55.9**	**63.8**	**67.5**	**62**	**63.5**	**35.8**	**43.3**	**81.7**	**44.8**	**70.7**	**55.9**	**42.6**	**32.4**	**60.8**
Zinc	23,000	110,000	930	81.4	**59.5**	**64.9**	**255**	**205**	**169**	**74.3**	**152**	**98.5**	**117**	**76**	**88**	**140**	**83.4**	**135**	**73.1**	**94.9**	**47.4**	**64.3**	**51.3**	**84.5**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-171	B-172	B-173	B-173 Dup	B-174	B-175	B-176	B-177	B-178	B-179	B-180	B-180 Dup	B-181	B-182	B-183	B-184	B-185	B-186	B-187	B-188
Sample Date					05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/11/99	05/11/99	05/11/99	05/11/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4469.03	4469.05	4469.07	4469.13	4469.09	4469.11	4473.03	4473.05	4473.07	4473.09	4473.11	4473.13	4473.15	4473.17	4473.19	4473.21	4474.03	4474.05	4474.07	4474.09
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
Acetone	70,000,000	NLE	19,000	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Methylene Chloride	34,000	97,000	10	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	**1000**	< 550	< 670	< 610	< 720	< 640	< 690	**2900**	**7600**	**1300**	**620**
2-Butanone	3,100,000	44,000,000	900	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
Benzene	2,000	5,000	5	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
Toluene	6,300,000	91,000,000	7000	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Tetrachloroethene	2,000	5,000	5	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Chlorobenzene	510,000	7,400,000	600	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
TICs	NLE	NLE	NLE	--	**3700**	**3500**	**3600**	**4400**	**2300**	**2200**	**5700**	**4800**	**3800**	**1800**	**2000**	**2700**	ND	**4200**	**4000**	**2700**	**1200**	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4469.02	4469.04	4469.06	4469.12	4469.08	4469.10	4473.02	4473.04	4473.06	4473.08	4473.10	4473.12	4473.14	4473.16	4473.18	4473.20	4474.02	4474.04	4474.06	4474.08
Aniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**210** J	< 1000	< 1100	< 1100	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	**280** J	< 1000	**110** J	< 1000	< 1100	< 1100	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1100	< 1100	< 1200	**130** J	< 1100	< 1100	**160** J	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**400** J	< 1000	< 1100	< 1100	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**340** J	< 1000	< 1100	< 1100	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	**150** J	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**540** J	< 1000	< 1100	< 1100	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1100	**140** J	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	< 1100	< 1100	< 1100	< 1200	**1500**	**360** J	**110** J	**1400**	**140** J	< 1200	**120** J	< 1000	**220** J	**790** J	**310** J	**6900**	**210** J	**120** J	< 1100	< 1100
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1100	< 1100	< 1100	< 1200	**240** J	< 1100	< 1100	**340** J	< 1000	< 1200	< 1000	< 1000	< 1200	**180** J	< 1000	**1800**	< 1000	< 1100	< 1100	< 1100
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**550** JB	**430** JB	**150** JB	**490** JB	< 1000	**810** JB	**120** JB	**390** JB	**390** JB	**350** JB	**570** JB	**260** JB	**610** JB	**660** JB	**560** JB	**160** JB	**350** JB	**430** JB	**830** JB	**430** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	< 1100	< 1100	< 1100	**210** J	**2400**	**840** J	**190** J	**1800**	**220** J	< 1200	**160** J	**200** J	**400** J	**1100** J	**540** J	**9500**	**270** J	**200** J	< 1100	**180** J
Benzidine	700	700	700	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	< 1100	**120** J	< 1100	**190** J	**2500**	**680** J	**200** J	**1400**	**210** J	< 1200	**140** J	**160** J	**390** J	**1300**	**390** J	**6900**	**320** J	**180** J	< 1100	**170** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	**200** J	< 1000	< 1000	< 1200	< 1100	< 1000	**170** J	< 1000	< 1100	< 1100	< 1100
Benzo(a)anthracene	600	2,000	800	--	< 1100	< 1100	< 1100	< 1200	**930** J	**320** J	**110** J	**740** J	**120** J	< 1200	< 1000	< 1000	< 1200	**210** J	**530** J	**280** J	**3900**	**150** J	< 1100	< 1100
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Chrysene	62,000	230,000	80,000	--	< 1100	**120** J	< 1100	**240** J	**1600**	**640** J	**240** J	**1200**	**230** J	< 1200	**190** J	**190** J	**410** J	**1300**	**550** J	**5700**	**330** J	**200** J	< 1100	**200** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1100	< 1100	< 1100	< 1200	**110** J	< 1100	< 1100	**140** J	**120** J	**240** J	**260** J	**120** J	**170** J	**130** J	**300** J	**180** J	**170** J	**260** J	**150** J	**140** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	< 1100	< 1100	< 1100	**130** J	**830** J	**350** J	< 1100	**600** J	< 1000	< 1200	< 1000	< 1000	**280** J	**480** J	**330** J	**3700**	**120** J	< 1100	< 1100	< 1100
Benzo(k)fluoranthene	6,000	23,000	25,000	--	< 1100	< 1100	< 1100	**130** J	**890** J	**320** J	< 1100	**530** J	< 1000	< 1200	< 1000	< 1000	**220** J	**430** J	**270** J	**3300**	**110** J	< 1100	< 1100	< 1100
Benzo(a)pyrene	200	200	200	--	< 1100	< 1100	< 1100	< 1200	**930** J	**370** J	< 1100	**690** J	**110** J	< 1200	< 1000	< 1000	**260** J	**500** J	**280** J	**3200**	**140** J	< 1100	< 1100	< 1100
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1100	< 1100	< 1100	< 1200	**350** J	**260** J	< 1100	**390** J	< 1000	< 1200	< 1000	< 1000	< 1200	**360** J	**150** J	**1100**	< 1000	< 1100	< 1100	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**640** J	< 1000	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1100	< 1100	< 1100	< 1200	**370** J	**270** J	< 1100	**390** J	< 1000	< 1200	< 1000	< 1000	< 1200	**400** J	**140** J	**880** J	< 1000	< 1100	< 1100	< 1100
TICs	NLE	NLE	NLE	--	**4300**	**7320**	**11930**	**13440**	**1800**	**11670**	**10300**	**24400**	**25830**	**76990**	**18120**	**19590**	**30270**	**49920**	**14340**	**13470**	**59880**	**46550**	**17580**	**41880**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0088	< 0.0087	< 0.0093	< 0.0092	< 0.0080	< 0.0087	< 0.0086	< 0.0095	< 0.0086	< 0.0094	< 0.0084	< 0.0084	< 0.0092	< 0.0092	< 0.0086	< 0.0086	< 0.0088	< 0.0089	< 0.0086	< 0.0089
Heptachlor	0.1	0.7	0.5	--	< 0.0066	< 0.0065	< 0.0069	< 0.0069	< 0.0060	< 0.0065	< 0.0064	< 0.0071	< 0.0064	< 0.0070	< 0.0063	< 0.0063	< 0.0069	< 0.0069	< 0.0065	< 0.0064	< 0.0066	< 0.0067	< 0.0064	< 0.0067
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0132	< 0.0130	< 0.0139	< 0.0138	< 0.0121	< 0.0131	< 0.0129	< 0.0142	< 0.0128	< 0.0140	< 0.0125	< 0.0126	< 0.0138	< 0.0138	< 0.0129	< 0.0129	< 0.0132	< 0.0134	< 0.0128	< 0.0134
Endosulfan I	470	6,800	4	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	< 0.0115	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
4,4'-DDE	2	9	18	--	**0.017**	**0.079**	**0.011**	**0.013**	< 0.0080	< 0.0087	**0.137**	**0.141**	**0.134**	**0.105**	**0.091**	**0.097**	**0.533**	**0.419**	**0.077**	< 0.0086	**0.16**	**0.113**	**0.042**	**0.409**
Dieldrin	0.04	0.2	0.003	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	**0.027**	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
Endrin	23	340	1	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	< 0.0115	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
Endosulfan II	470	6,800	4	--	< 0.0088	< 0.0087	< 0.0093	< 0.0092	< 0.0080	< 0.0087	< 0.0086	< 0.0095	< 0.0086	< 0.0094	< 0.0084	< 0.0084	< 0.0092	< 0.0092	< 0.0086	< 0.0086	< 0.0088	< 0.0089	< 0.0086	< 0.0089
4,4'-DDD	3	13	4	--	**0.016**	**0.06**	**0.022**	**0.03**	< 0.0121	< 0.0131	**0.115**	**0.212**	**0.178**	**0.084**	**0.04**	**0.181**	**1.833**	**1.171**	**0.039**	< 0.0129	**0.102**	**0.347**	**0.043**	**0.651**
4,4'-DDT	2	8	11	--	< 0.0241	**0.245**	< 0.0255	< 0.0253	**0.103**	< 0.0240	**0.289**	**0.075**	**0.351**	**0.232**	**0.239**	**0.234**	**0.787**	**0.691**	**0.124**	**0.032**	**0.293**	**0.117**	**0.035**	**0.229**
gamma-Chlordane	0.2	1	0.05	--	< 0.0110	**0.021**	< 0.0116	< 0.0115	< 0.0100	< 0.0109	**0.015**	**0.034**	**0.02**	**0.016**	**0.013**	**0.021**	**0.023**	**0.044**	< 0.0108	< 0.0107	**0.04**	< 0.0112	< 0.0107	**0.045**
alpha-Chlordane	0.2	1	0.05	--	< 0.0110	**0.025**	< 0.0116	< 0.0115	< 0.0100	< 0.0109	**0.016**	**0.027**	**0.016**	**0.015**	**0.012**	**0.018**	**0.022**	**0.039**	< 0.0108	< 0.0107	**0.031**	< 0.0112	< 0.0107	**0.032**
Aroclor 1016	0.2	1	0.2	--	< 0.2456	**0.021**	< 0.2592	< 0.2575	< 0.2251	< 0.2445	< 0.2405	< 0.2654	< 0.2396	< 0.2621	< 0.2342	< 0.2355	< 0.2583	< 0.2570	< 0.2412	< 0.2406	< 0.2468	< 0.2501	< 0.2395	< 0.2493
Aroclor 1221	0.2	1	0.2	--	< 0.4517	**0.025**	< 0.4767	< 0.4735	< 0.4140	< 0.4497	< 0.4423	< 0.4882	< 0.4406	< 0.4820	< 0.4307	< 0.4332	< 0.4750	< 0.4727	< 0.4436	< 0.4426	< 0.4539	< 0.4599	< 0.4405	< 0.4585
Aroclor 1242	0.2	1	0.2	--	< 0.3508	< 0.3472	< 0.3703	< 0.3678	< 0.3215	< 0.3493	< 0.3436	< 0.3792	< 0.3422	< 0.3744	< 0.3345	< 0.3365	< 0.3690	< 0.3671	< 0.3446	< 0.3438	< 0.3525	< 0.3572	< 0.3421	< 0.3561
Aroclor 1260	0.2	1	0.2	--	< 0.0789	< 0.0781	< 0.0833	< 0.0828	< 0.0723	< 0.0786	< 0.0773	< 0.0853	< 0.0770	< 0.0842	< 0.0753	< 0.0757	< 0.0830	< 0.0826	< 0.0775	< 0.0774	< 0.0793	< 0.0804	< 0.0770	< 0.0801

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-171	B-172	B-173	B-173 Dup	B-174	B-175	B-176	B-177	B-178	B-179	B-180	B-180 Dup	B-181	B-182	B-183	B-184	B-185	B-186	B-187	B-188
Sample Date					05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/11/99	05/11/99	05/11/99	05/11/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**7570**	**10100**	**17500**	**15400**	**5890**	**9640**	**10300**	**8820**	**10500**	**9270**	**12500**	**10700**	**9240**	**13100**	**13500**	**12900**	**8850**	**8550**	**11300**	**7930**
Antimony	31	450	6	ND	**4.07**	**5.14**	**0.969**	**0.871**	**0.983**	**0.753**	**3.78**	**1.17**	**0.809**	**13.7**	**3.01**	**6.39**	**2.41**	**1.13**	**5.23**	**0.573**	**0.796**	**0.791**	< 0.441	**0.787**
Arsenic	19	19	19	22.9	**7.71**	**6.62**	**16.4**	**20.5**	**2.89**	**6.62**	**7.48**	**8.18**	**7.44**	**7.35**	**8.83**	**6.7**	**7.27**	**10.4**	**7.44**	**8.02**	**9580**	**6.53**	**5.91**	**6.97**
Barium	16,000	59,000	2,100	32.3	**30.3**	**51.3**	**61.2**	**112**	**21.5**	**15**	**79.3**	**54.9**	**66.4**	**84.8**	**286**	**495**	**53.3**	**80.1**	**46**	**37**	**9.88**	**41.1**	**30.1**	**77**
Beryllium	16	140	0.7	2	**0.499**	**0.578**	**1.66**	**1.69**	**0.526**	**0.49**	**0.652**	**0.818**	**0.925**	**0.638**	**0.925**	**0.688**	**0.744**	**1.01**	**0.773**	**0.898**	**44.6**	**0.574**	**0.571**	**0.682**
Cadmium	78	78	2	ND	< 0.106	**0.6**	< 0.119	< 0.117	**0.974**	< 0.103	**0.768**	**0.656**	**1.28**	**0.792**	**0.809**	**1.24**	**1.01**	**0.791**	**0.803**	**0.489**	**0.599**	**0.6**	**0.38**	**0.829**
Calcium	NLE	NLE	NLE	921	**1390**	**3200**	**769**	**992**	**1910**	**852**	**2670**	**3690**	**2290**	**11200**	**11200**	**28300**	**3790**	**1690**	**3900**	**1580**	**1500**	**4630**	**434**	**1480**
Chromium	NLE	NLE	NLE	269	**52.2**	**54.8**	**198**	**192**	**30.9**	**53.4**	**60**	**82**	**85**	**62.8**	**92.5**	**64.6**	**73.3**	**102**	**88.6**	**90.1**	**87.9**	**98**	**49.9**	**66.1**
Cobalt	1,600	590	90	2.5	**1.76**	**2.21**	**1.37**	**1.36**	**3.32**	**1.2**	**2.72**	**2.38**	**2.77**	**3.41**	**3.25**	**3.34**	**2.76**	**2.74**	**2.15**	**2.67**	**2.52**	**2.8**	**2.5**	**2.86**
Copper	3,100	45,000	11,000	8	**14.8**	**14.1**	**23.9**	**23.6**	**43.5**	**7.17**	**23.8**	**18.5**	**18.2**	**38.7**	**11.7**	**17.7**	**17.7**	**23.1**	**15.9**	**11**	**12.4**	**97.5**	**7.67**	**13.2**
Iron	NLE	NLE	NLE	55,800	**18400**	**18000**	**46600**	**49400**	**12100**	**20800**	**21100**	**20800**	**22400**	**19500**	**28500**	**22400**	**21500**	**23400**	**27400**	**28800**	**23100**	**17000**	**21800**	**20400**
Lead	400	800	90	19.5	**71.2**	**81**	**41.1**	**37.5**	**57.7**	**8.47**	**164**	**88.5**	**50.3**	**191**	**1210**	**1660**	**106**	**40.5**	**87.1**	**48.2**	**36.1**	**40.7**	**14.6**	**77.1**
Magnesium	NLE	NLE	NLE	7,230	**1080**	**1440**	**5090**	**4900**	**1300**	**1160**	**2170**	**2250**	**2300**	**2700**	**2940**	**2930**	**2250**	**2390**	**2100**	**3170**	**2560**	**2220**	**1460**	**1650**
Manganese	11,000	5,900	65	90.7	**32.8**	**57.1**	**22.8**	**18.6**	**56.4**	**26.6**	**71.4**	**39.1**	**73.2**	**91.1**	**61.7**	**96.4**	**61.1**	**79.4**	**48.8**	**71.2**	**61.1**	**57.8**	**60.8**	**110**
Mercury	23	65	0.1	ND	**0.124**	**0.201**	**0.093**	**0.076**	**0.05**	**0.061**	**0.354**	**0.521**	**0.42**	**0.981**	**0.475**	**0.453**	**0.565**	**1.12**	**0.314**	**0.102**	**0.416**	**0.274**	**0.347**	**0.355**
Nickel	1,600	23,000	48	8.4	**5.9**	**8.26**	**8**	**8.69**	**11.5**	**4.78**	**7.43**	**8**	**8.73**	**9**	**10.2**	**9.42**	**7.39**	**9.23**	**8.53**	**8.57**	**8.12**	**6.94**	**6.27**	**6.8**
Potassium	NLE	NLE	NLE	15,400	**2240**	**3090**	**14800**	**15400**	**1670**	**3000**	**3510**	**4620**	**4480**	**3650**	**5810**	**3860**	**4710**	**4460**	**4630**	**6890**	**5340**	**3340**	**3050**	**3260**
Selenium	390	5,700	11	1.9	**0.743**	**1.03**	**1.44**	**2.33**	< 0.619	< 0.615	< 0.593	< 0.678	**0.929**	< 0.774	**0.667**	**0.69**	< 0.787	**1.19**	< 0.665	**0.643**	**0.687**	**0.614**	< 0.662	**0.795**
Silver	390	5,700	1	1.1	< 0.635	< 0.659	< 0.714	< 0.701	< 0.619	< 0.615	< 0.593	**1.88**	**1.32**	< 0.774	< 0.558	< 0.652	**2.83**	**24.2**	< 0.665	< 0.593	**2.8**	< 0.609	< 0.662	**2.32**
Sodium	NLE	NLE	NLE	51.6	**131**	**216**	**200**	**186**	**143**	**67.4**	**136**	**133**	**276**	**175**	**131**	**156**	**156**	**157**	**155**	**236**	**161**	**207**	**128**	**110**
Thallium	5	79	3	ND	< 0.635	< 0.659	< 0.714	< 0.701	< 0.619	< 0.615	< 0.593	< 0.678	< 0.619	< 0.774	< 0.558	< 0.652	< 0.787	< 0.706	< 0.665	< 0.593	< 0.653	< 0.609	< 0.662	< 0.682
Vanadium	78	1,100	NLE	94.1	**42.9**	**37.5**	**74**	**50.2**	**27.3**	**46**	**47.1**	**47.3**	**50.2**	**42.9**	**59.3**	**47.1**	**43.8**	**52.2**	**79.3**	**81.8**	**47.1**	**42.1**	**46.5**	**38.5**
Zinc	23,000	110,000	930	81.4	**169**	**118**	**88.9**	**104**	**71.7**	**30.3**	**220**	**101**	**72.8**	**198**	**1280**	**786**	**135**	**153**	**187**	**51.6**	**65**	**53.5**	**27.8**	**87.3**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-189	B-189 Dup	B-190	B-191	B-192	B-193	B-194	B-195	B-196	B-197	B-198	B-199	B-199 Dup	B-200	B-201	B-202	B-203	B-204	B-205	B-206
Sample Date					05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4474.11	4474.13	4474.15	4474.17	4474.19	4474.21	4474.23	4474.25	4481.03	4481.05	4481.07	4481.09	4481.13	4481.11	4481.15	4481.17	4481.19	4481.21	4481.23	4481.25
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
Acetone	70,000,000	NLE	19,000	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Methylene Chloride	34,000	97,000	10	--	620 J	**440** J	**950**	< 610	< 720	< 550	< 580	< 600	**1600**	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
2-Butanone	3,100,000	44,000,000	900	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
Benzene	2,000	5,000	5	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
Toluene	6,300,000	91,000,000	7000	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Tetrachloroethene	2,000	5,000	5	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Chlorobenzene	510,000	7,400,000	600	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	**5500**	**2900**	ND	**2700**	**3000**	**6600**	ND	**3500**	ND	**3900**	**3000**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4474.10	4474.12	4474.14	4474.16	4474.18	4474.20	4474.22	4474.24	4481.02	4481.04	4481.06	4481.08	4481.12	4481.1	4481.14	4481.16	4481.18	4481.2	4481.22	4481.24
Aniline	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Nitrobenzene	31,000	340,000	200	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Naphthalene	6,000	17,000	25,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**210** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**760** J	**1700** JD	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**220** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	**95** J	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**550** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Azobenzene	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,000	200	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	**2000**	< 1100	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	< 930	< 1100	< 1000	**240** J	< 990	< 1000	< 930	< 990	< 900	< 990	**190** J	**5900**	**12000** JD	< 1100	< 1000	**360** J	**770** J	**520** J	**210** J	< 1100
Anthracene	17,000,000	30,000,000	2,400,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1400**	**3000** JD	< 1100	< 1000	< 1100	**190** J	**120** J	< 1100	< 1100
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**880** JB	**180** JB	**390** JB	**450** JB	**610** JB	**900** JB	**610** JB	**550** JB	**240** JB	< 990	**100** JB	**160** JB	< 12000	**260** JB	**170** JB	**630** JB	**180** JB	**430** JB	**120** JB	**390** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	< 930	< 1100	**190** J	**340** J	< 990	< 1000	< 930	< 990	< 900	< 990	**270** J	**9300**	**21000** D	< 1100	**320** J	**530** J	**1500**	**800** J	**450** J	**120** J
Benzidine	700	700	700	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	< 930	< 1100	**180** J	**350** J	< 990	< 1000	< 930	< 990	< 900	< 990	**230** J	**7300**	**21000** D	< 1100	**270** J	**430** J	**1200**	**720** J	**390** J	**130** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(a)anthracene	600	2,000	800	--	< 930	< 1100	**110** J	**180** J	< 990	< 1000	< 930	< 990	< 900	< 990	**130** J	**3900**	**11000** JD	< 1100	**190** J	**240** J	**680** J	**410** J	**230** J	< 1100
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Chrysene	62,000	230,000	80,000	--	< 930	< 1100	**220** J	**370** J	< 990	< 1000	< 930	< 990	< 900	< 990	**250** J	**6900**	**19000** D	< 1100	**350** J	**430** J	**1300**	**750** J	**460** J	< 1100
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**130** J	< 1100	**120** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	**120** J	< 1100	**180** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	< 930	< 1100	**120** J	**150** J	< 990	< 1000	< 930	< 990	< 900	< 990	**120** J	**3900**	**11000** JD	< 1100	**220** J	**190** J	**500** J	**360** J	**240** J	< 1100
Benzo(k)fluoranthene	6,000	23,000	25,000	--	< 930	< 1100	< 1000	**150** J	< 990	< 1000	< 930	< 990	< 900	< 990	**100** J	**2200**	**9800** JD	< 1100	**150** J	**190** J	**510** J	**330** J	**200** J	< 1100
Benzo(a)pyrene	200	200	200	--	< 930	< 1100	**140** J	**170** J	< 990	< 1000	< 930	< 990	< 900	< 990	**110** J	**3900**	**13000** D	< 1100	**200** J	**200** J	**580** J	**410** J	**230** J	< 1100
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 930	< 1100	**130** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**2100**	**6800** JD	< 1100	**120** J	**140** J	**410** J	**180** J	**170** J	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1200**	**2100** JD	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 930	< 1100	**160** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1900**	**6600** JD	< 1100	< 1000	**140** J	**430** J	**180** J	**190** J	< 1100
TICs	NLE	NLE	NLE	--	**11790**	**10670**	**181600**	**32280**	**16810**	**14430**	**35520**	**12320**	**11330**	**6040**	**8440**	**17080**	ND	**12930**	**10740**	**22210**	**21480**	**18760**	**13060**	**14120**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0086	< 0.0088	< 0.0091	< 0.0090	< 0.0087	< 0.0088	< 0.0084	< 0.0088	< 0.0087	< 0.0090	< 0.0095	< 0.0093	< 0.0101	< 0.0087	< 0.0086	< 0.0095	< 0.0093	< 0.0092	< 0.0091	< 0.0087
Heptachlor	0.1	0.7	0.5	--	< 0.0065	< 0.0066	< 0.0069	< 0.0067	< 0.0065	< 0.0066	< 0.0063	< 0.0066	< 0.0065	< 0.0067	< 0.0071	< 0.0070	< 0.0076	< 0.0065	< 0.0064	< 0.0071	< 0.0070	< 0.0069	< 0.0068	< 0.0065
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0130	< 0.0133	< 0.0137	< 0.0135	< 0.0131	< 0.0132	< 0.0126	< 0.0132	< 0.0130	< 0.0135	< 0.0142	< 0.0140	< 0.0152	< 0.0131	< 0.0129	< 0.0143	< 0.0139	< 0.0138	< 0.0136	< 0.0131
Endosulfan I	470	6,800	4	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
4,4'-DDE	2	9	18	--	< 0.0086	< 0.0088	**0.173**	**0.2**	**0.023**	< 0.0088	< 0.0084	< 0.0088	**0.019**	< 0.0090	**0.088**	**0.128**	**0.155**	**2.108**	**0.035**	**0.459**	**0.066**	**0.143**	**0.049**	**0.033**
Dieldrin	0.04	0.2	0.003	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
Endrin	23	340	1	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
Endosulfan II	470	6,800	4	--	< 0.0086	< 0.0088	< 0.0091	< 0.0090	< 0.0087	< 0.0088	< 0.0084	< 0.0088	< 0.0087	< 0.0090	< 0.0095	< 0.0093	< 0.0101	< 0.0087	< 0.0086	< 0.0095	< 0.0093	< 0.0092	< 0.0091	< 0.0087
4,4'-DDD	3	13	4	--	< 0.0130	< 0.0133	**0.208**	**0.228**	**0.055**	< 0.0132	< 0.0126	< 0.0132	**0.021**	< 0.0135	**0.066**	**0.094**	**0.176**	**2.548**	**0.053**	**0.316**	**0.134**	**0.399**	**0.13**	**0.082**
4,4'-DDT	2	8	11	--	< 0.0238	< 0.0243	**0.186**	**0.185**	**0.272**	< 0.0241	< 0.0231	< 0.0241	**0.056**	< 0.0247	**0.129**	**0.047**	**0.085**	**3.771**	**0.119**	**0.188**	**0.033**	**0.326**	**0.088**	< 0.0240
gamma-Chlordane	0.2	1	0.05	--	< 0.0108	< 0.0111	**0.028**	**0.023**	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	**0.014**	< 0.0117	< 0.0126	**0.036**	< 0.0107	**0.015**	< 0.0116	**0.072**	**0.022**	< 0.0109
alpha-Chlordane	0.2	1	0.05	--	< 0.0108	< 0.0111	**0.024**	**0.022**	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	**0.011**	**0.014**	< 0.0116	**0.064**	**0.018**	< 0.0109
Aroclor 1016	0.2	1	0.2	--	< 0.2421	< 0.2476	< 0.2558	< 0.2517	< 0.2437	< 0.2457	< 0.2352	< 0.2458	< 0.2426	< 0.2518	< 0.2656	< 0.2615	< 0.0708	< 0.2441	< 0.2405	< 0.2663	< 0.2599	< 0.2570	< 0.2543	< 0.2442
Aroclor 1221	0.2	1	0.2	--	< 0.4453	< 0.4554	< 0.4704	< 0.4629	< 0.4483	< 0.4519	< 0.4327	< 0.4522	< 0.4461	< 0.4632	< 0.4886	< 0.4810	< 0.1303	< 0.4490	< 0.4423	< 0.4898	< 0.4780	< 0.4726	< 0.4678	< 0.4492
Aroclor 1242	0.2	1	0.2	--	< 0.3458	< 0.3537	< 0.3654	< 0.3595	< 0.3482	< 0.3510	< 0.3361	< 0.3512	< 0.3465	< 0.3598	< 0.3795	< 0.3736	< 0.1012	< 0.3487	< 0.3436	< 0.3804	< 0.3713	< 0.3671	< 0.3633	< 0.3489
Aroclor 1260	0.2	1	0.2	--	< 0.0778	< 0.0796	< 0.0822	< 0.0809	< 0.0783	< 0.0790	< 0.0756	< 0.0790	< 0.0780	< 0.0809	< 0.0854	< 0.0841	< 0.0228	< 0.0785	< 0.0773	< 0.0856	< 0.0855	< 0.0826	< 0.0817	< 0.0785

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-189	B-189 Dup	B-190	B-191	B-192	B-193	B-194	B-195	B-196	B-197	B-198	B-199	B-199 Dup	B-200	B-201	B-202	B-203	B-204	B-205	B-206
Sample Date					05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**10900**	**10700**	**10300**	**9870**	**10100**	**9160**	**8210**	**14900**	**6890**	**10700**	**22200**	**8390**	**8450**	**11500**	**10400**	**14100**	**10900**	**19400**	**14100**	**5720**
Antimony	31	450	6	ND	**0.518**	< 0.417	**1.89**	**1.41**	**1.16**	**0.462**	**0.561**	**0.794**	**1.23**	**1.08**	**0.553**	**0.867**	**1.2**	**2.21**	**1.64**	**0.741**	**1.25**	**0.967**	**1.64**	< 0.456
Arsenic	19	19	19	22.9	**5.86**	**5.27**	**8.19**	**7.76**	**9.5**	**5.49**	**4.87**	**7.61**	**6.18**	**6.06**	**25.6**	**4.61**	**5.35**	**3.55**	**8.68**	**6.78**	**6.08**	**6.65**	**11.6**	**3.76**
Barium	16,000	59,000	2,100	32.3	**19.7**	**18.7**	**53.8**	**43.8**	**34**	**16.5**	**12.1**	**29.8**	**86.1**	**23.9**	**49.6**	**40.8**	**43.9**	**47.3**	**35**	**82.6**	**35.6**	**116**	**53.2**	**33.7**
Beryllium	16	140	0.7	2	**0.584**	**0.557**	**0.817**	**0.754**	**0.806**	**0.511**	**0.533**	**0.801**	**0.541**	**0.802**	**1.91**	**0.733**	**0.674**	**2.64**	**0.774**	**0.878**	**1.25**	**1.48**	**1.25**	**0.672**
Cadmium	78	78	2	ND	**0.343**	**0.281**	**0.798**	**0.606**	**1.57**	**0.36**	**0.382**	**0.405**	**1.14**	**0.592**	**2.33**	**1.34**	**1.33**	**26.6**	**1.98**	**0.873**	**0.719**	**2.41**	**1.91**	**2.31**
Calcium	NLE	NLE	NLE	921	**206**	**244**	**2550**	**3230**	**1470**	**210**	**493**	**893**	**2590**	**1840**	**923**	**2920**	**20200**	**2980**	**1540**	**1480**	**352**	**4340**	**2660**	**7480**
Chromium	NLE	NLE	NLE	269	**62.6**	**48.1**	**84**	**93.5**	**78.3**	**47.7**	**51.6**	**70.9**	**52.7**	**86**	**132**	**76**	**101**	**33**	**79.5**	**77.2**	**101**	**109**	**106**	**56.8**
Cobalt	1,600	590	90	2.5	**3.04**	**2.92**	**2.79**	**3.15**	**2.51**	**1.87**	**2.66**	**3.92**	**2.75**	**1.34**	**4.01**	**2.27**	**3.03**	**4.25**	**2.28**	**2.13**	**1.24**	**4.2**	**4.74**	**1.4**
Copper	3,100	45,000	11,000	8	**8.61**	**11.6**	**22.4**	**66.4**	**24.7**	**10.9**	**5.2**	**7.97**	**21.2**	**10.9**	**19.3**	**16.7**	**39.3**	**45**	**15.5**	**4.87**	**120**	**11.3**	**41.2**	**40.4**
Iron	NLE	NLE	NLE	55,800	**20800**	**19100**	**23000**	**23700**	**26800**	**18900**	**19800**	**28900**	**18100**	**22700**	**121000**	**19400**	**19500**	**9340**	**28000**	**21200**	**24700**	**26000**	**35000**	**24500**
Lead	400	800	90	19.5	**5.49**	**5.15**	**77**	**51**	**47.5**	**8.31**	**4.88**	**7.71**	**107**	**8.16**	**22.3**	**153**	**86.6**	**42**	**54.4**	**15.8**	**28.5**	**26.3**	**66**	**75.3**
Magnesium	NLE	NLE	NLE	7,230	**1490**	**1430**	**2250**	**2530**	**2630**	**1300**	**1320**	**2150**	**1650**	**2960**	**2640**	**2270**	**3750**	**1820**	**2110**	**2150**	**3070**	**2950**	**3700**	**1250**
Manganese	11,000	5,900	65	90.7	**81.3**	**82.2**	**59.6**	**68.1**	**69.1**	**35.1**	**108**	**147**	**59.1**	**31.4**	**105**	**48.3**	**120**	**41.5**	**48.8**	**24.8**	**16.4**	**312**	**84.9**	**31.6**
Mercury	23	65	0.1	ND	**0.254**	**0.301**	**0.392**	**0.35**	**0.297**	**0.192**	**0.293**	**0.219**	**1.75**	**16.6**	**216**	**4.84**	**0.764**	**0.526**	**0.938**	**1.68**	**0.381**	**0.587**	**1.47**	**0.297**
Nickel	1,600	23,000	48	8.4	**10.3**	**6.5**	**11.5**	**9.81**	**7.57**	**5.24**	**4.34**	**8.73**	**9.29**	**5.07**	**19.7**	**7.46**	**9.64**	**19**	**10.2**	**7.01**	**5.55**	**12.4**	**12.6**	**5.03**
Potassium	NLE	NLE	NLE	15,400	**3470**	**3150**	**4460**	**4210**	**5030**	**2720**	**3190**	**4270**	**2950**	**4960**	**4830**	**4130**	**4000**	**1730**	**4430**	**3770**	**6700**	**4200**	**7720**	**2090**
Selenium	390	5,700	11	1.9	< 0.656	< 0.625	**1.33**	**0.68**	**1.12**	**0.978**	**1.07**	**0.925**	**1.16**	**1.07**	**3.17**	**1.1**	**1.18**	< 0.625	< 0.602	**1.04**	**1.17**	**0.848**	**1.17**	**0.75**
Silver	390	5,700	1	1.1	< 0.656	< 0.625	**1.74**	**1.52**	< 0.611	< 0.677	< 0.616	< 0.632	< 0.667	< 0.625	< 0.742	< 0.718	< 0.744	< 0.625	< 0.602	**0.864**	< 0.714	< 0.632	< 0.605	< 0.684
Sodium	NLE	NLE	NLE	51.6	**122**	**176**	**237**	**251**	**139**	**79**	**104**	**168**	**137**	**128**	**165**	**155**	**214**	**123**	**129**	**160**	**120**	**230**	**374**	**313**
Thallium	5	79	3	ND	< 0.656	< 0.625	< 0.680	< 0.634	< 0.611	< 0.677	< 0.616	< 0.632	< 0.667	< 0.625	< 0.742	< 0.718	< 0.744	< 0.625	< 0.602	< 0.667	< 0.714	< 0.632	< 0.605	< 0.684
Vanadium	78	1,100	NLE	94.1	**52.4**	**45.7**	**54**	**49.3**	**54.4**	**46.4**	**49**	**63.9**	**38.8**	**41.9**	**222**	**40.5**	**42.8**	**25.3**	**68.2**	**47**	**48.2**	**60.3**	**60.8**	**23.5**
Zinc	23,000	110,000	930	81.4	**28**	**28.5**	**99.5**	**65.5**	**76.8**	**15.9**	**17.1**	**31.1**	**167**	**34.3**	**133**	**172**	**151**	**332**	**123**	**70.7**	**43.8**	**167**	**105**	**138**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-207	B-208	B-209	B-210	B-211	B-212	B-212 Dup	B-213	B-214	B-215	B-216	B-217	B-217 Dup	B-218	B-219	B-220	B-221	B-222	B-223	B-224
Sample Date					05/13/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4481.27	4484.03	4484.05	4484.07	4484.09	4484.11	4484.13	4490.03	4490.05	4490.07	4490.09	4490.11	4490.13	4490.15	4490.17	4490.19	4490.21	4490.23	4490.25	4490.27
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
Acetone	70,000,000	NLE	19,000	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	< 640
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Methylene Chloride	34,000	97,000	10	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	**460** J
2-Butanone	3,100,000	44,000,000	900	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
Benzene	2,000	5,000	5	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	**4800**	< 520	< 630	< 640	< 640
Toluene	6,300,000	91,000,000	7000	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Tetrachloroethene	2,000	5,000	5	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Chlorobenzene	510,000	7,400,000	600	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	< 640
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
TICs	NLE	NLE	NLE	--	**3400**	ND	ND	ND	ND	ND	ND	ND	**990**	**1500**	**1000**	**8900**	**1900**	ND	ND	**1700**	**1400**	ND	**2800**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4481.26	4484.02	4484.04	4484.06	4484.08	4484.10	4484.12	4490.02	4490.04	4490.06	4490.08	4490.10	4490.12	4490.14	4490.16	4490.18	4490.20	4490.22	4490.24	4490.26
Aniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1100	**270** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 1100	**130** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	**490** J	**1200**	**120** J	< 1100	**170** J	**490** J	< 1200	**140** J	< 12000	< 1000	< 1100	**120** J	< 10000	< 1000	**400** J	< 12000	< 1300	**120** J	< 12000	**210** J
Anthracene	17,000,000	30,000,000	2,400,000	--	**130** J	**480** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**370** JB	**340** JB	**230** JB	**110** JB	**140** JB	**150** JB	< 1200	**150** JB	< 12000	**150** JB	**150** JB	**570** JB	< 10000	**290** JB	**900** JB	< 12000	**960** JB	**1600** B	< 12000	**13000** BD
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**1200**	**3000**	**320** J	< 1100	**470** J	**460** J	**200** J	**270** J	< 12000	**170** J	**120** J	**280** J	< 10000	< 1000	**540** J	< 12000	**210** J	**150** J	< 12000	**540** J
Benzidine	700	700	700	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	**1000** J	**2300**	**340** J	< 1100	**430** J	**440** J	**190** J	**250** J	< 12000	**190** J	**120** J	**280** J	< 10000	< 1000	**650** J	< 12000	**230** J	**200** J	< 12000	**500** J
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(a)anthracene	600	2,000	800	--	**490** J	**1400**	**200** J	< 1100	**250** J	**200** J	< 1200	**140** J	< 12000	**110** J	< 1100	**180** J	< 10000	< 1000	**320** J	< 12000	**140** J	< 1100	< 12000	**280** J
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Chrysene	62,000	230,000	80,000	--	**940** J	**2200**	**400** J	< 1100	**510** J	**400** J	**200** J	**310** J	< 12000	**250** J	< 1100	**400** J	< 10000	< 1000	**730** J	< 12000	**250** J	**210** J	< 12000	**570** J
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1100	**120** J	< 1100	< 1100	**110** J	**120** J	< 1200	**210** J	< 12000	**140** J	**130** J	**160** J	< 10000	< 1000	**120** J	< 12000	**760** J	**190** J	< 12000	**140** J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	**420** J	**1600**	**320** J	< 1100	**320** J	**150** J	< 1200	**140** J	< 12000	< 1000	**110** J	**260** J	< 10000	< 1000	**290** J	< 12000	< 1300	< 1100	< 12000	**310** J
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**430** J	**1200**	**310** J	< 1100	**290** J	**130** J	< 1200	**120** J	< 12000	< 1000	< 1100	**170** J	< 10000	< 1000	**220** J	< 12000	< 1300	< 1100	< 12000	**190** J
Benzo(a)pyrene	200	200	200	--	**450** J	**1500**	**330** J	< 1100	**300** J	**160** J	< 1200	< 1100	< 12000	< 1000	< 1100	**210** J	< 10000	< 1000	**280** J	< 12000	< 1300	< 1100	< 12000	**260** J
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**260** J	**650** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	**240** J	< 12000	< 1300	< 1100	< 12000	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**270** J	**590** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	**280** J	< 12000	< 1300	< 1100	< 12000	< 1100
TICs	NLE	NLE	NLE	--	**28020**	**12790**	**5950**	**10240**	**16210**	**11050**	**22750**	**44000**	**34900**	**27800**	**38360**	**30520**	**5000**	**5150**	**40600**	ND	**22060**	**40710**	ND	**19960**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0091	< 0.0088	< 0.0090	< 0.0089	< 0.0087	< 0.0090	< 0.0089	< 0.0091	< 0.0097	< 0.0083	< 0.0083	< 0.0085	< 0.0077	< 0.0080	< 0.0088	< 0.0096	< 0.0095	< 0.0092	< 0.0089	< 0.0092
Heptachlor	0.1	0.7	0.5	--	< 0.0068	< 0.0066	< 0.0067	< 0.0067	< 0.0065	< 0.0067	< 0.0067	< 0.0068	< 0.0073	< 0.0062	< 0.0062	< 0.0064	< 0.0058	< 0.0060	< 0.0066	< 0.0072	< 0.0071	< 0.0069	< 0.0067	< 0.0069
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0137	< 0.0132	< 0.0134	< 0.0134	< 0.0130	< 0.0134	< 0.0133	< 0.0136	< 0.0145	< 0.0125	< 0.0124	< 0.0128	< 0.0115	< 0.0120	< 0.0132	< 0.0143	< 0.0142	< 0.0138	< 0.0134	< 0.0139
Endosulfan I	470	6,800	4	--	< 0.0114	< 0.0110	< 0.0112	< 0.0111	< 0.0108	**0.018**	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	< 0.0107	< 0.0096	< 0.0100	< 0.0110	< 0.0119	< 0.0119	< 0.0115	< 0.0111	< 0.0115
4,4'-DDE	2	9	18	--	**0.07**	**0.028**	**0.037**	< 0.0089	**0.055**	**0.018**	**0.034**	**0.087**	**0.07**	**0.058**	**0.091**	**0.175**	< 0.0077	< 0.0080	**0.138**	**0.475**	**0.246**	**0.065**	**0.208**	**0.075**
Dieldrin	0.04	0.2	0.003	--	< 0.0114	**0.012**	**0.021**	< 0.0111	< 0.0108	< 0.0112	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	**0.037**	< 0.0096	< 0.0100	< 0.0110	**0.029**	**0.037**	< 0.0115	**0.031**	< 0.0115
Endrin	23	340	1	--	< 0.0114	< 0.0110	< 0.0112	< 0.0111	< 0.0108	< 0.0112	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	< 0.0107	< 0.0096	< 0.0100	< 0.0110	< 0.0119	< 0.0119	< 0.0115	< 0.0111	< 0.0115
Endosulfan II	470	6,800	4	--	< 0.0091	< 0.0088	< 0.0090	< 0.0089	< 0.0087	**0.037**	< 0.0089	< 0.0091	< 0.0097	< 0.0083	< 0.0083	< 0.0085	< 0.0077	< 0.0080	< 0.0088	< 0.0096	< 0.0095	< 0.0092	< 0.0089	< 0.0092
4,4'-DDD	3	13	4	--	**0.184**	**0.035**	**0.05**	< 0.0134	**0.078**	< 0.0134	**0.054**	**0.13**	**0.132**	**0.047**	**0.023**	**0.344**	**0.027**	< 0.0120	**0.096**	**9.331**	**0.464**	**0.201**	**3.632**	**0.176**
4,4'-DDT	2	8	11	--	**0.028**	**0.037**	**0.067**	< 0.0245	**0.237**	< 0.0246	< 0.0244	**0.054**	**0.235**	**0.306**	**0.049**	**0.493**	**0.027**	< 0.0220	**0.232**	**0.492**	**0.354**	**0.074**	**0.327**	**0.089**
gamma-Chlordane	0.2	1	0.05	--	**0.021**	< 0.0110	**0.015**	< 0.0111	**0.014**	< 0.0112	< 0.0111	**0.069**	**0.037**	< 0.0104	< 0.0104	**0.038**	< 0.0096	< 0.0100	< 0.0110	**0.066**	**0.043**	< 0.0115	**0.314**	**0.024**
alpha-Chlordane	0.2	1	0.05	--	< 0.0114	< 0.0110	**0.013**	< 0.0111	**0.012**	< 0.0112	< 0.0111	**0.063**	**0.034**	< 0.0104	< 0.0104	**0.029**	< 0.0096	< 0.0100	< 0.0110	**0.052**	**0.049**	< 0.0115	**0.241**	**0.015**
Aroclor 1016	0.2	1	0.2	--	< 0.2549	< 0.2456	< 0.2507	< 0.2497	< 0.2428	< 0.2510	< 0.2484	< 0.2544	< 0.0136	< 0.2327	< 0.2322	< 0.2386	< 0.2150	< 0.2245	< 0.2460	< 0.2677	< 0.2659	< 0.2575	< 0.2495	< 0.2586
Aroclor 1221	0.2	1	0.2	--	< 0.4688	< 0.4517	< 0.4611	< 0.4592	< 0.4465	< 0.4616	< 0.4570	< 0.4679	< 0.0250	< 0.4281	< 0.4271	< 0.4389	< 0.3955	< 0.4129	< 0.4525	< 0.4923	< 0.4891	< 0.4737	< 0.4588	< 0.4757
Aroclor 1242	0.2	1	0.2	--	< 0.3641	< 0.3508	< 0.3581	< 0.3567	< 0.3468	< 0.3585	< 0.3549	< 0.3634	< 0.0194	< 0.3325	< 0.3317	< 0.3409	< 0.3072	< 0.3207	< 0.3514	< 0.3824	< 0.3799	< 0.3679	< 0.3564	< 0.3695
Aroclor 1260	0.2	1	0.2	--	< 0.0819	< 0.0789	< 0.0806	< 0.0802	< 0.0780	< 0.0807	< 0.0799	< 0.0818	**3.268**	< 0.0748	< 0.0746	< 0.0767	< 0.0691	< 0.0722	< 0.0791	< 0.0860	< 0.0855	< 0.0828	< 0.0802	< 0.0831

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-207	B-208	B-209	B-210	B-211	B-212	B-212 Dup	B-213	B-214	B-215	B-216	B-217	B-217 Dup	B-218	B-219	B-220	B-221	B-222	B-223	B-224
Sample Date					05/13/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**13500**	**9700**	**6940**	**11700**	**5310**	**9390**	**6870**	**6990**	**11400**	**4710**	**7750**	**11200**	**9660**	**7980**	**10000**	**8180**	**7640**	**6220**	**6760**	**7340**
Antimony	31	450	6	ND	**1.1**	**0.892**	**2.07**	**0.74**	< 0.425	< 0.418	< 0.386	**0.952**	**63.9**	**0.856**	**0.894**	**2.27**	**0.547**	**0.399**	**0.778**	**5.68**	**3.59**	**0.931**	**0.938**	**2.9**
Arsenic	19	19	19	22.9	**10.3**	**7.01**	**6.48**	**17.7**	**7.21**	**7.54**	**7.26**	**7.99**	**6.25**	**3.43**	**6.51**	**8.43**	**3.88**	**3.31**	**6.38**	**5.2**	**5.27**	**6.04**	**6.42**	**6.96**
Barium	16,000	59,000	2,100	32.3	**52.8**	**29**	**27.5**	**37.6**	**66.7**	**34.9**	**27.4**	**54.2**	**70.3**	**16.5**	**20.3**	**93**	**20.7**	**14.5**	**50.4**	**569**	**103**	**16.9**	**40.9**	**27.5**
Beryllium	16	140	0.7	2	**1.04**	**0.751**	**0.663**	**0.916**	**0.557**	**0.51**	**0.468**	**0.694**	**0.753**	**0.389**	**0.624**	**0.916**	**0.482**	**0.378**	**0.773**	**0.807**	**0.489**	**0.666**	**0.622**	**0.665**
Cadmium	78	78	2	ND	**3.64**	**0.625**	**0.567**	**0.8**	**0.886**	**0.512**	**0.403**	**0.327**	**0.765**	**0.261**	**0.854**	**1.38**	**0.315**	**0.305**	**0.533**	**4.25**	**1.1**	**0.442**	**1.04**	**0.407**
Calcium	NLE	NLE	NLE	921	**4670**	**2760**	**1540**	**432**	**1480**	**1640**	**1330**	**424**	**5430**	**517**	**2010**	**2620**	**2460**	**2430**	**1080**	**15700**	**3890**	**319**	**1190**	**787**
Chromium	NLE	NLE	NLE	269	**67.7**	**68.9**	**59.9**	**84.2**	**45.8**	**41.9**	**43.1**	**73.1**	**73.5**	**31.8**	**56.6**	**96**	**54.2**	**45.7**	**80.7**	**44.3**	**41.6**	**78**	**62.9**	**69.7**
Cobalt	1,600	590	90	2.5	**5.82**	**2.19**	**1.61**	**1.52**	**1.89**	**1.99**	**1.79**	**1.38**	**2.96**	**1.41**	**2.8**	**2.83**	**4.57**	**4.8**	**2.73**	**4.72**	**2.74**	**0.751**	**2.22**	**1.05**
Copper	3,100	45,000	11,000	8	**19.1**	**14.5**	**11.7**	**12**	**29.7**	**13.9**	**15.6**	**21.6**	**14.4**	**17.5**	**30.1**	**32.5**	**48.6**	**50**	**13.9**	**30**	**19.7**	**31.1**	**38.6**	**24.6**
Iron	NLE	NLE	NLE	55,800	**33400**	**24300**	**20800**	**30700**	**17100**	**17200**	**15300**	**21700**	**23300**	**12000**	**18500**	**29000**	**18000**	**16300**	**20800**	**15000**	**16700**	**20700**	**17400**	**21300**
Lead	400	800	90	19.5	**280**	**40.6**	**49.8**	**11.3**	**105**	**53.1**	**58.2**	**53**	**179**	**83.3**	**38.7**	**312**	**31.9**	**24.7**	**38.2**	**5050**	**786**	**25.9**	**59.3**	**42.7**
Magnesium	NLE	NLE	NLE	7,230	**2970**	**2910**	**1970**	**3070**	**1000**	**1140**	**1080**	**2140**	**2600**	**1260**	**2160**	**3540**	**3480**	**3010**	**2080**	**2100**	**1630**	**2260**	**1390**	**2010**
Manganese	11,000	5,900	65	90.7	**105**	**64**	**28**	**28**	**33.8**	**109**	**75.9**	**14.7**	**61**	**33**	**67.1**	**68.7**	**71**	**79.5**	**51.2**	**83.3**	**60.3**	**12**	**47.1**	**18.7**
Mercury	23	65	0.1	ND	**0.225**	**0.069**	**0.069**	< 0.024	**0.445**	**0.108**	**0.149**	**0.96**	**0.583**	**0.216**	**1.521**	**0.709**	**0.891**	**0.211**	**2.36**	**0.51**	**0.56**	**0.232**	**0.339**	**0.362**
Nickel	1,600	23,000	48	8.4	**16**	**6.12**	**5.73**	**5.34**	**5.95**	**5.26**	**5.3**	**4.5**	**9.42**	**4.22**	**8.56**	**8.74**	**11**	**11.2**	**7.32**	**13.3**	**7.57**	**3.09**	**7.98**	**4.3**
Potassium	NLE	NLE	NLE	15,400	**5120**	**5590**	**4430**	**6230**	**1820**	**1860**	**1960**	**5030**	**4880**	**2600**	**3660**	**6790**	**3460**	**2620**	**4410**	**2070**	**2480**	**5670**	**2580**	**4600**
Selenium	390	5,700	11	1.9	**1.05**	**1.24**	**1.26**	**1.46**	**0.795**	**1.18**	**1.34**	**1.55**	**0.924**	< 0.669	**1.02**	**1.42**	**0.584**	**0.618**	**1.17**	**1.31**	**1.12**	**1.15**	**0.813**	**1.52**
Silver	390	5,700	1	1.1	**0.79**	< 0.637	< 0.731	< 0.665	**0.715**	< 0.628	< 0.579	< 0.684	< 0.751	< 0.669	< 0.629	< 0.666	< 0.528	< 0.567	**11.1**	< 0.770	< 0.810	**0.58**	**3.04**	< 0.632
Sodium	NLE	NLE	NLE	51.6	**349**	**224**	**222**	**186**	**141**	**226**	**113**	**159**	**334**	**156**	**219**	**263**	**346**	**347**	**186**	**184**	**113**	**238**	**106**	**165**
Thallium	5	79	3	ND	< 0.585	< 0.637	< 0.731	< 0.665	< 0.638	< 0.628	< 0.579	< 0.684	< 0.751	< 0.669	< 0.629	< 0.666	< 0.528	< 0.567	< 0.637	< 0.770	< 0.810	< 0.546	< 0.608	< 0.632
Vanadium	78	1,100	NLE	94.1	**43.3**	**42.1**	**38.1**	**48.3**	**26.9**	**20.5**	**23.2**	**37.5**	**47.7**	**25.5**	**40**	**56.6**	**55.6**	**62.5**	**47.6**	**32.1**	**29.9**	**33.9**	**41.4**	**34.6**
Zinc	23,000	110,000	930	81.4	**374**	**101**	**87.4**	**49.3**	**128**	**99.4**	**96.4**	**40.1**	**270**	**41.5**	**74.8**	**133**	**47.3**	**36.8**	**73.3**	**1190**	**530**	**34.5**	**62.9**	**42.9**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-225	B-226	B-227	B-228	B-229	B-229 Dup	B-230	B-231	B-232	B-233	B-234	B-235	B-236	B-237	B-238	B-239	B-240	B-241	B-242	B-243
Sample Date					06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4533.03	4533.05	4533.07	4533.09	4533.11	4533.13	4533.15	4533.17	4533.19	4533.21	4533.23	4533.25	4533.27	4533.29	4533.31	4533.33	4533.35	4533.37	4533.39	4533.41
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
Acetone	70,000,000	NLE	19,000	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Methylene Chloride	34,000	97,000	10	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
2-Butanone	3,100,000	44,000,000	900	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
Benzene	2,000	5,000	5	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
Toluene	6,300,000	91,000,000	7000	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Tetrachloroethene	2,000	5,000	5	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Chlorobenzene	510,000	7,400,000	600	--	< 250	< 320	< 290	**690**	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
TICs	NLE	NLE	NLE	--	**1900**	**2000**	**1800**	**64800**	**2000**	ND	**2200**	ND	ND	ND	ND	ND	**2600**	**3900**	**3000**	**2900**	**3500**	**3200**	**3100**	**3000**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4533.02	4533.04	4533.06	4533.08	4533.10	4533.12	4533.14	4533.16	4533.18	4533.20	4533.22	4533.24	4533.26	4533.28	4533.30	4533.32	4533.34	4533.36	4533.38	4533.40
Aniline	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzyl alcohol	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
4-Methylphenol	31,000	340,000	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Nitrobenzene	31,000	340,000	200	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzoic Acid	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	**530** J	< 1100
Naphthalene	6,000	17,000	25,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
4-Chloroaniline	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Acenaphthylene	NLE	300,000,000	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Dibenzofuran	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1000	< 1100	< 1100	**190** J	< 1100	< 1100	< 1100	< 1000	< 1100	**380** J	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Fluorene	2,300,000	24,000,000	170,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Azobenzene	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Hexachlorobenzene	300	1,000	200	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Phenanthrene	NLE	300,000,000	NLE	--	< 1000	**170** J	< 1100	< 1200	< 1100	< 1100	**120** J	< 1000	**290** J	< 1100	**430** J	< 1100	< 1100	< 1200	< 1100	< 1100	**240** J	**210** J	< 1000	< 1100
Anthracene	17,000,000	30,000,000	2,400,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	**130** J	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**180** JB	**420** JB	**510** JB	**960** JB	**220** JB	**420** JB	**510** JB	**930** JB	**150** JB	**770** JB	**860** JB	**690** JB	**340** JB	**230** JB	**1100** B	**550** JB	**700** JB	**800** JB	**160** JB	**210** JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**130** J	**360** J	< 1100	< 1200	< 1100	< 1100	**230** J	< 1000	**430** J	**190** J	**770** J	**180** J	**120** J	< 1200	< 1100	**110** J	**310** J	**360** J	**110** J	< 1100
Benzidine	700	700	700	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Pyrene	1,700,000	18,000,000	840,000	--	**110** J	**310** J	< 1100	< 1200	< 1100	< 1100	**220** J	< 1000	**410** J	**170** J	**630** J	**160** J	< 1100	< 1200	< 1100	**110** J	**310** J	**280** J	< 1000	< 1100
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(a)anthracene	600	2,000	800	--	< 1000	**170** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**230** J	< 1100	**370** J	< 1100	< 1100	< 1200	< 1100	< 1100	**170** J	**160** J	< 1000	< 1100
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Chrysene	62,000	230,000	80,000	--	**130** J	**370** J	< 1100	< 1200	< 1100	< 1100	**270** J	< 1000	**460** J	**280** J	**730** J	**190** J	**110** J	< 1200	< 1100	**120** J	**400** J	**340** J	**100** J	< 1100
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	< 1000	**140** JB	**120** JB	**140** JB	< 1100	< 1100	**160** JB	**150** JB	< 1100	**160** JB	**170** JB	**120** JB	< 1100	< 1200	**110** JB	**140** JB	**170** J	**150** J	< 1000	< 1100
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(b)fluoranthene	600	2,000	2,000	--	< 1000	**200** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**200** J	< 1100	**430** J	< 1100	< 1100	< 1200	< 1100	< 1100	**170** J	**170** J	< 1000	< 1100
Benzo(k)fluoranthene	6,000	23,000	25,000	--	< 1000	**160** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**180** J	< 1100	**340** J	< 1100	< 1100	< 1200	< 1100	< 1100	**160** J	**160** J	< 1000	< 1100
Benzo(a)pyrene	200	200	200	--	< 1000	**160** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**210** J	< 1100	**390** J	< 1100	< 1100	< 1200	< 1100	< 1100	**150** J	**160** J	< 1000	< 1100
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	< 1000	**140** J	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	**110** J	< 1100	**230** J	< 1100	< 1100	< 1200	< 1100	< 1100	**120** J	**120** J	< 1000	< 1100
Dibenz(a,h)anthracene	200	200	800	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	< 1000	**150** J	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	**220** J	< 1100	< 1100	< 1200	< 1100	< 1100	**130** J	**130** J	< 1000	< 1100
TICs	NLE	NLE	NLE	--	**10690**	**23970**	**11960**	**53650**	**11670**	**11760**	**29060**	**13830**	**37500**	**11900**	**46200**	**12110**	**5180**	**7870**	**22980**	**11210**	**175970**	**14210**	**20900**	**265500**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.4	2	0.002	--	< 0.0085	< 0.0090	< 0.0087	< 0.0102	< 0.0086	< 0.0086	< 0.0088	< 0.0084	< 0.0082	< 0.0092	< 0.0085	< 0.0086	< 0.0086	< 0.0087	< 0.0080	< 0.0084	< 0.0086	< 0.0089	< 0.0077	< 0.0087
Heptachlor	0.1	0.7	0.5	--	< 0.0064	< 0.0068	< 0.0065	< 0.0076	< 0.0064	< 0.0065	< 0.0066	< 0.0063	< 0.0062	< 0.0069	< 0.0063	< 0.0064	< 0.0065	< 0.0065	< 0.0060	< 0.0063	< 0.0065	< 0.0066	< 0.0058	< 0.0066
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0128	< 0.0135	< 0.0131	< 0.0152	< 0.0129	< 0.0129	< 0.0132	< 0.0126	< 0.0123	< 0.0137	< 0.0127	< 0.0129	< 0.0129	< 0.0130	< 0.0120	< 0.0126	< 0.0130	< 0.0133	< 0.0116	< 0.0131
Endosulfan I	470	6,800	4	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
4,4'-DDE	2	9	18	--	< 0.0085	**0.023**	**0.02**	**0.027**	**0.024**	**0.024**	**0.104**	**0.03**	**0.137**	**0.016**	**0.048**	**0.013**	**0.012**	< 0.0087	**0.036**	**0.059**	**0.104**	**0.014**	**0.012**	**0.023**
Dieldrin	0.04	0.2	0.003	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Endrin	23	340	1	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Endosulfan II	470	6,800	4	--	< 0.0085	< 0.0090	< 0.0087	< 0.0102	< 0.0086	< 0.0086	< 0.0088	< 0.0084	< 0.0082	< 0.0092	< 0.0085	< 0.0086	< 0.0086	< 0.0087	< 0.0080	< 0.0084	< 0.0086	< 0.0089	< 0.0077	< 0.0087
4,4'-DDD	3	13	4	--	< 0.0128	**0.031**	**0.02**	< 0.0152	**0.016**	**0.024**	**0.222**	**0.041**	**0.17**	**0.032**	**0.081**	< 0.0129	**0.017**	**0.013**	**0.028**	**0.064**	**0.138**	< 0.0133	< 0.0116	< 0.0131
4,4'-DDT	2	8	11	--	< 0.0235	< 0.0248	**0.032**	< 0.0279	**0.032**	**0.035**	**0.264**	**0.117**	**0.206**	**0.07**	**0.177**	**0.033**	**0.05**	< 0.0238	**0.048**	**0.124**	**0.166**	**0.054**	**0.022**	**0.093**
gamma-Chlordane	0.2	1	0.05	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	**0.039**	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
alpha-Chlordane	0.2	1	0.05	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	**0.031**	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Aroclor 1016	0.2	1	0.2	--	< 0.2394	< 0.2524	< 0.2436	< 0.0711	< 0.2405	< 0.2411	< 0.2463	< 0.2357	< 0.2299	< 0.2566	< 0.2367	< 0.2406	< 0.2412	< 0.2426	< 0.2232	< 0.2358	< 0.2418	< 0.2478	< 0.2169	< 0.2450
Aroclor 1221	0.2	1	0.2	--	< 0.4403	< 0.4642	< 0.4481	< 0.1308	< 0.4424	< 0.4434	< 0.4530	< 0.4336	< 0.4228	< 0.4720	< 0.4353	< 0.4426	< 0.4437	< 0.4463	< 0.4106	< 0.4336	< 0.4447	< 0.4559	< 0.3989	< 0.4506
Aroclor 1242	0.2	1	0.2	--	< 0.3420	< 0.3605	< 0.3481	< 0.1016	< 0.3436	< 0.3444	< 0.3519	< 0.3368	< 0.3284	< 0.3666	< 0.3381	< 0.3438	< 0.3446	< 0.3466	< 0.3189	< 0.3368	< 0.3454	< 0.3541	< 0.3098	< 0.3499
Aroclor 1260	0.2	1	0.2	--	< 0.0769	< 0.0811	< 0.0783	< 0.0229	< 0.0773	< 0.0775	< 0.0792	< 0.0758	< 0.0739	< 0.0825	< 0.0761	< 0.0773	< 0.0775	< 0.0780	< 0.0718	< 0.0758	< 0.0777	< 0.0797	< 0.0697	< 0.0787

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-225	B-226	B-227	B-228	B-229	B-229 Dup	B-230	B-231	B-232	B-233	B-234	B-235	B-236	B-237	B-238	B-239	B-240	B-241	B-242	B-243
Sample Date					06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99
Metals (mg/kg)																								
Aluminum	78,000	NA	6,000	15,200	**5090**	**10300**	**4370**	**5910**	**7070**	**4950**	**9220**	**7580**	**5910**	**11900**	**10900**	**3130**	**7560**	**20800**	**4700**	**9300**	**9010**	**19500**	**8190**	**15800**
Antimony	31	450	6	ND	**0.655**	**0.848**	< 0.470	**1.3**	**0.959**	**11.3**	**1.03**	**0.512**	**1.16**	**1.09**	**1.1**	**0.736**	**0.616**	**1.46**	< 0.418	**1.69**	**0.938**	**2.32**	**0.755**	**0.639**
Arsenic	19	19	19	22.9	**9.84**	**13.4**	**5.84**	**9.57**	**7.27**	**6.31**	**9.7**	**9.81**	**8.21**	**8.9**	**13.5**	**7.97**	**11.2**	**15.6**	**7.03**	**7.62**	**8.59**	**12**	**7.4**	**15.4**
Barium	16,000	59,000	2,100	32.3	**45.4**	**50.4**	**26**	**31.9**	**26.6**	**20.6**	**48.1**	**37.1**	**33.4**	**80.6**	**46.5**	**11**	**103**	**104**	**38.3**	**38.5**	**39.7**	**60.5**	**35.6**	**44.5**
Beryllium	16	140	0.7	2	**0.539**	**1.04**	**0.531**	**0.849**	**0.937**	**0.446**	**0.843**	**0.956**	**0.635**	**1.43**	**1.05**	**0.4**	**0.874**	**2.49**	**0.752**	**0.79**	**0.848**	**2.18**	**0.864**	**1.28**
Cadmium	78	78	2	ND	**1.37**	**1.55**	**0.643**	**2.2**	**0.789**	**0.654**	**1.31**	**1.15**	**1.38**	**1.73**	**1.62**	**1.15**	**1.74**	**3.04**	**0.837**	**0.828**	**1.11**	**2.79**	**0.746**	**1.21**
Calcium	NLE	NLE	NLE	921	**371**	**370**	**754**	**448**	**660**	**668**	**1120**	**545**	**250**	**1110**	**716**	**153**	**952**	**1450**	**437**	**1650**	**335**	**422**	**215**	**745**
Chromium	NLE	NLE	NLE	269	**80.9**	**127**	**49.3**	**61**	**96.4**	**2480**	**99.5**	**85.5**	**78.3**	**152**	**129**	**68.4**	**108**	**328**	**63.1**	**64.8**	**105**	**276**	**89.3**	**67.4**
Cobalt	1,600	590	90	2.5	**0.902**	**1.55**	**0.886**	**3.72**	**0.859**	**8.39**	**2.5**	**1.43**	**1.06**	**2.07**	**2.12**	**0.669**	**2.05**	**2.31**	**0.823**	**2.69**	**1.46**	**1.46**	**1.28**	**3.8**
Copper	3,100	45,000	11,000	8	**10.5**	**30.4**	**3.16**	**5.01**	**2.02**	**2.43**	**31.9**	**3.78**	**32.5**	**13.9**	**24.5**	**9.02**	**12.9**	**99.6**	**3.33**	**10.6**	**23.5**	**14.9**	**4.73**	**17.5**
Iron	NLE	NLE	NLE	55,800	**28000**	**35500**	**14800**	**14700**	**23200**	**19100**	**30800**	**26700**	**22200**	**38700**	**36300**	**25700**	**29600**	**68000**	**16900**	**21600**	**29100**	**64000**	**21900**	**32000**
Lead	400	800	90	19.5	**25.1**	**82.3**	**4.38**	**13.8**	**18.3**	**11.1**	**78.6**	**17.2**	**45.9**	**18.2**	**87.8**	**17.7**	**19.3**	**19.2**	**10.9**	**53.9**	**39**	**25.6**	**11.8**	**29**
Magnesium	NLE	NLE	NLE	7,230	**1650**	**3370**	**1130**	**1700**	**2910**	**3420**	**3110**	**2510**	**2010**	**5050**	**3470**	**762**	**2640**	**10200**	**1650**	**2350**	**3130**	**8800**	**2360**	**3180**
Manganese	11,000	5,900	65	90.7	**11.2**	**25.9**	**9.64**	**18.4**	**15**	**62.4**	**94.2**	**21.7**	**18.7**	**25.9**	**31.5**	**7.11**	**14**	**22.7**	**12.4**	**64.3**	**23.8**	**22.7**	**18.6**	**103**
Mercury	23	65	0.1	ND	**0.071**	**0.197**	**0.05**	**1.027**	**0.09**	**0.047**	**0.246**	**0.044**	**0.117**	**0.073**	**0.215**	**0.05**	**0.072**	**0.051**	**0.047**	**0.145**	**0.115**	**0.091**	**0.135**	**0.141**
Nickel	1,600	23,000	48	8.4	**4.04**	**6.88**	**4.31**	**9.4**	**4.34**	**12400**	**13.5**	**8.3**	**5.89**	**9.41**	**9.79**	**3.05**	**6.61**	**11.3**	**4.34**	**7.24**	**6.23**	**8.48**	**6.29**	**9.85**
Potassium	NLE	NLE	NLE	15,400	**4730**	**8230**	**2910**	**3910**	**7040**	**5140**	**7350**	**6020**	**4720**	**13000**	**8240**	**2230**	**7730**	**25500**	**4200**	**4840**	**7400**	**22500**	**5810**	**6990**
Selenium	390	5,700	11	1.9	**2.84**	**2.31**	**1.34**	**1.08**	**1.12**	< 0.654	**1.63**	**1.52**	**1.21**	**2.31**	**1.96**	**2.38**	**4.76**	**3.87**	**1.33**	**1.01**	**1.12**	**2.64**	**1.33**	**1.19**
Silver	390	5,700	1	1.1	**0.662**	**2.28**	< 0.705	< 0.787	< 0.599	**1.07**	< 0.713	< 0.630	**0.978**	< 0.774	**2.18**	< 0.600	< 0.767	**0.839**	< 0.627	< 0.628	< 0.677	< 0.667	< 0.612	< 0.755
Sodium	NLE	NLE	NLE	51.6	**108**	**326**	**108**	**81.9**	**113**	**218**	**324**	**133**	**266**	**153**	**342**	**49.8**	**67.5**	**112**	**84.9**	**72.4**	**264**	**233**	**112**	**132**
Thallium	5	79	3	ND	< 0.591	< 0.771	< 0.705	< 0.787	< 0.599	< 0.654	< 0.713	< 0.630	< 0.648	< 0.774	< 0.732	< 0.600	< 0.767	< 0.712	< 0.627	< 0.628	< 0.677	< 0.667	< 0.612	< 0.755
Vanadium	78	1,100	NLE	94.1	**39.4**	**58.2**	**28.5**	**34**	**45.5**	**39.5**	**49.7**	**44.7**	**34**	**46.3**	**76.7**	**72.3**	**30.4**	**98.2**	**30.2**	**40.9**	**51.7**	**109**	**50.5**	**49.2**
Zinc	23,000	110,000	930	81.4	**49.2**	**66.3**	**41.4**	**201**	**40.3**	**31.9**	**114**	**53.8**	**36.2**	**97.6**	**62.1**	**54.8**	**93.4**	**128**	**36.1**	**80.5**	**36.6**	**96.5**	**33.9**	**68.7**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-244		B-245		B-246		B-247		B-248		B-249		B-250	
Sample Date					06/03/99		06/03/99		06/03/99		06/03/99		06/03/99		06/03/99		06/03/99	
Volatile Organic Compounds (µg/kg)																		
Lab Sample ID (VOCs only collected 24 in bgs)					4533.43		4533.45		4533.47		4533.49		4533.51		4533.53		4533.55	
Methyl *tert*- Butyl ether	110,000	320,000	200	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
Acetone	70,000,000	NLE	19,000	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
Carbon Disulfide	7,800,000	110,000,000	6,000	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Methylene Chloride	34,000	97,000	10	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
2-Butanone	3,100,000	44,000,000	900	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
Benzene	2,000	5,000	5	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
Toluene	6,300,000	91,000,000	7000	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Tetrachloroethene	2,000	5,000	5	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Chlorobenzene	510,000	7,400,000	600	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Ethylbenzene	7,800,000	110,000,000	13,000	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
m+p-Xylenes	12,000,000	170,000,000	19,000	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
TICs	NLE	NLE	NLE	--	**4200**		**3100**		**2500**		**2500**		**2500**		**4400**		**4000**	
Semi-VOCs (µg/kg)																		
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4533.42		4533.44		4533.46		4533.48		4533.50		4533.52		4533.54	
Aniline	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		**330**	J	< 1100	
1,4-Dichlorobenzene	5,000	13,000	2,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzyl alcohol	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
4-Methylphenol	31,000	340,000	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Nitrobenzene	31,000	340,000	200	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
2,4-Dimethylphenol	1,200,000	14,000,000	1,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzoic Acid	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Naphthalene	6,000	17,000	25,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
4-Chloroaniline	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
2-Methylnaphthalene	230,000	2,400,000	8,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Acenaphthylene	NLE	300,000,000	NLE	--	**180**	J	< 1000		< 990		< 980		< 1100		< 1100		**250**	J
Acenaphthene	3,400,000	37,000,000	110,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**440**	J
Dibenzofuran	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**130**	J
Diethylphthalate	49,000,000	550,000,000	88,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Fluorene	2,300,000	24,000,000	170,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**440**	J
Azobenzene	NLE	NLE	NLE	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Hexachlorobenzene	300	1,000	200	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Phenanthrene	NLE	300,000,000	NLE	--	**350**	J	< 1000		**140**	J	< 980		**250**	J	**370**	J	**5100**	
Anthracene	17,000,000	30,000,000	2,400,000	--	**270**	J	< 1000		< 990		< 980		< 1100		< 1100		**2200**	
Di-n-butylphthalate	6,100,000	68,000,000	760,000	--	**190**	JB	**330**	JB	**440**	JB	**380**	JB	**1000**	JB	**690**	JB	**310**	JB
Fluoranthene	2,300,000	24,000,000	1,300,000	--	**810**	J	**230**	J	**290**	J	< 980		**740**	J	**700**	J	**16000**	D
Benzidine	700	700	700	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Pyrene	1,700,000	18,000,000	840,000	--	**680**	J	**200**	J	**260**	J	< 980		**590**	J	**690**	J	**14000**	D
Butylbenzylphthalate	1,200,000	14,000,000	230,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzo(a)anthracene	600	2,000	800	--	**690**	J	**120**	J	**150**	J	< 980		**370**	J	**340**	J	**7900**	D
3,3'-Dichlorobenzidine	1,000	4,000	200	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Chrysene	62,000	230,000	80,000	--	**1700**		**250**	J	**370**	J	< 980		**600**	J	**500**	J	**13000**	D
bis(2-Ethylhexyl)phthalate	35,000	140,000	1,200,000	--	**170**	J	< 1000		**400**	J	**150**	J	**120**	J	**120**	J	**120**	J
Di-n-octylphthalate	2,400,000	27,000,000	3,300,000	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzo(b)fluoranthene	600	2,000	2,000	--	**900**	J	**150**	J	**310**	J	< 980		**320**	J	**410**	J	**7200**	D
Benzo(k)fluoranthene	6,000	23,000	25,000	--	**650**	J	**120**	J	**280**	J	< 980		**280**	J	**330**	J	**5000**	
Benzo(a)pyrene	200	200	200	--	**590**	J	**150**	J	**220**	J	< 980		**360**	J	**360**	J	**7300**	D
Indeno(1,2,3-cd)pyrene	600	2,000	7,000	--	**390**	J	**120**	J	**140**	J	< 980		**230**	J	**150**	J	**3100**	
Dibenz(a,h)anthracene	200	200	800	--	**150**	J	< 1000		< 990		< 980		< 1100		< 1100		**1400**	
Benzo(g,h,i)perylene	380,000,000	30,000,000	NLE	--	**330**	J	**140**	J	**170**	J	< 980		**230**	J	**130**	J	**2600**	
TICs	NLE	NLE	NLE	--	**33920**		**10720**		**19500**		**11590**		**23690**		**24030**		**23910**	
Pesticides/PCBs (mg/kg)																		
gamma-BHC	0.4	2	0.002	--	< 0.0084		< 0.0084		< 0.0080		< 0.0084		< 0.0087		< 0.0090		< 0.0086	
Heptachlor	0.1	0.7	0.5	--	< 0.0063		< 0.0063		< 0.0060		< 0.0063		< 0.0065		< 0.0067		< 0.0064	
Heptachlor Epoxide	0.07	0.3	0.01	--	< 0.0127		< 0.0125		< 0.0120		< 0.0126		< 0.0131		< 0.0135		< 0.0129	
Endosulfan I	470	6,800	4	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		< 0.0112		< 0.0107	
4,4'-DDE	2	9	18	--	**0.211**		**0.019**		**0.122**		**0.039**		**0.051**		**0.021**		**0.128**	
Dieldrin	0.04	0.2	0.003	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		**0.019**		< 0.0107	
Endrin	23	340	1	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		< 0.0112		< 0.0107	
Endosulfan II	470	6,800	4	--	< 0.0084		< 0.0084		< 0.0080		< 0.0084		< 0.0087		< 0.0090		< 0.0086	
4,4'-DDD	3	13	4	--	**0.089**		**0.017**		**0.06**		**0.025**		**0.06**		**0.031**		**0.084**	
4,4'-DDT	2	8	11	--	**0.06**		< 0.0230		**0.277**		**0.041**		**0.192**		**0.074**		**0.189**	
gamma-Chlordane	0.2	1	0.05	--	**0.017**		**0.017**		**0.037**		< 0.0105		< 0.0109		**0.019**		< 0.0107	
alpha-Chlordane	0.2	1	0.05	--	**0.016**		**0.017**		**0.033**		< 0.0105		< 0.0109		**0.016**		< 0.0107	
Aroclor 1016	0.2	1	0.2	--	< 0.2365		< 0.2338		< 0.2236		< 0.2352		< 0.2445		< 0.2517		< 0.2405	
Aroclor 1221	0.2	1	0.2	--	< 0.4350		< 0.4300		< 0.4113		< 0.4326		< 0.4496		< 0.4630		< 0.4424	
Aroclor 1242	0.2	1	0.2	--	< 0.3378		< 0.3340		< 0.3195		< 0.3360		< 0.3492		< 0.3596		< 0.3436	
Aroclor 1260	0.2	1	0.2	--	< 0.0760		< 0.0752		< 0.0719		< 0.0756		< 0.0786		< 0.0809		< 0.0773	

TABLE 4.1
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO NJDEP STANDARDS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location / Sample Date	NJDEP RDCSRS (1)	NJDEP NRDCSRS (1)	NJDEP IGW (2)	Weston 1995 Background (Main Post)	B-244 06/03/99	B-245 06/03/99	B-246 06/03/99	B-247 06/03/99	B-248 06/03/99	B-249 06/03/99	B-250 06/03/99
Metals (mg/kg)											
Aluminum	78,000	NA	6,000	15,200	**9810**	**7900**	**17600**	**8830**	**10800**	**9290**	**11600**
Antimony	31	450	6	ND	**1.53**	**12**	**1.58**	**0.804**	**1.84**	**1.65**	**2.2**
Arsenic	19	19	19	22.9	**8.59**	**6.25**	**10**	**9.7**	**10.5**	**9.13**	**14**
Barium	16,000	59,000	2,100	32.3	**49.8**	**32.8**	**81.9**	**57**	**84.7**	**103**	**67.9**
Beryllium	16	140	0.7	2	**0.878**	**0.41**	**1.36**	**1.19**	**1.44**	**0.966**	**1.21**
Cadmium	78	78	2	ND	**1.76**	**7.1**	**3.06**	**1.16**	**3.79**	**1.61**	**1.95**
Calcium	NLE	NLE	NLE	921	**3950**	**4840**	**2440**	**913**	**2610**	**1630**	**11100**
Chromium	NLE	NLE	NLE	269	**89.8**	**1560**	**83**	**136**	**94**	**72.2**	**103**
Cobalt	1,600	590	90	2.5	**5.53**	**5.55**	**5.45**	**1.26**	**7.53**	**2.69**	**4.51**
Copper	3,100	45,000	11,000	8	**32.2**	**131**	**36.2**	**133**	**332**	**17.6**	**18.8**
Iron	NLE	NLE	NLE	55,800	**29500**	**21500**	**29800**	**31100**	**27200**	**25100**	**34700**
Lead	400	800	90	19.5	**174**	**47.6**	**225**	**19**	**274**	**477**	**234**
Magnesium	NLE	NLE	NLE	7,230	**5360**	**2920**	**3260**	**4110**	**4150**	**2980**	**10900**
Manganese	11,000	5,900	65	90.7	**121**	**88.2**	**157**	**21.8**	**133**	**49.6**	**123**
Mercury	23	65	0.1	ND	**0.821**	**7.682**	**0.271**	**0.083**	**1.317**	**0.25**	**0.587**
Nickel	1,600	23,000	48	8.4	**13.9**	**7330**	**25.7**	**6.28**	**17.9**	**10.3**	**36.8**
Potassium	NLE	NLE	NLE	15,400	**6050**	**4150**	**6860**	**10300**	**7440**	**6280**	**8390**
Selenium	390	5,700	11	1.9	**1.67**	< 0.638	**1.09**	**1.5**	**0.97**	**1.08**	**0.741**
Silver	390	5,700	1	1.1	< 0.724	< 0.638	< 0.709	< 0.647	< 0.729	< 0.704	< 0.650
Sodium	NLE	NLE	NLE	51.6	**181**	**117**	**278**	**77.6**	**130**	**64.6**	**96.4**
Thallium	5	79	3	ND	< 0.724	< 0.638	< 0.709	< 0.647	< 0.729	< 0.704	< 0.650
Vanadium	78	1,100	NLE	94.1	**53.5**	**58**	**59.4**	**58.7**	**49.2**	**43.8**	**101**
Zinc	23,000	110,000	930	81.4	**167**	**146**	**256**	**96.5**	**461**	**321**	**197**

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

NJDEP criteria for total xylenes are used for xylene isomers (m+p, o).

NJDEP criteria for endrin is used for endrin aldehyde.

NJDEP criteria for 4,4'-DDD and 4,4'-DDT are for total DDD and total DDT, respectively.

NJDEP criteria used for aroclor 1016, aroclor 1221, aroclor 1242, and aroclor 1260 is the NJDEP criteria for total PCBs.

Dash (--) = only background concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and associated laboratory blank.

D = Result from dilution of sample.

DUP = field duplicate sample.

E = Estimated value.

J = Analyte detected between MDL and practical quantitation limit (PQL).

NA = not analyzed.

ND = not detected.

NLE = No limit established.

< = analyte not detected above method detection limit (MDL).

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

VOCs = volatile organic compounds.

in. = inches.

bgs = below ground surface.

Detections are bolded.

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	B-18	B-19	B-20
Sample Date					11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4045.03	4045.05	4045.07	4045.09	4045.11	4095.03	4095.05	4095.07	4095.09	4095.11	4095.13	4145.03	4145.05	4145.07	4145.09	4145.11	4145.13	4145.15	4145.17	4145.19
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 790	< 750	< 810	< 820	< 800	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
Acetone	6,100,000	63,000,000	240	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
Carbon Disulfide	82,000	370,000	21	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Methylene Chloride	36,000	310,000	2.2	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	**690**	**880**	**850**	**720**	**930**	**1500**	**1300**	**1300**	**1000**	**3900**	**4300**	**3000**	**320**
2-Butanone	2,800,000	20,000,000	100	--	< 790	**810**	< 810	**880**	**890**	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
Benzene	1,100	5,400	0.2	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
Toluene	500,000	4,500,000	59	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Tetrachloroethene	8,600	41,000	1.6	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Chlorobenzene	29,000	140,000	4.9	--	< 260	< 250	< 270	< 270	< 270	< 310	< 270	< 250	< 320	< 330	< 280	< 270	< 440	< 370	< 390	< 300	< 320	< 360	< 260	< 270
Ethylbenzene	5,400	27,000	1.5	--	< 530	< 500	< 540	< 550	< 530	< 620	< 550	< 510	< 630	< 650	< 560	< 530	< 870	< 730	< 780	< 600	< 640	< 720	< 510	< 540
m+p-Xylenes	630,000	2,700,000	19	--	< 790	< 750	< 810	< 820	< 800	< 920	< 820	< 760	< 950	< 980	< 840	< 800	< 1300	< 1100	< 1200	< 910	< 970	< 1100	< 770	< 810
TICs	NLE	NLE	NLE	--	**1700**	ND	ND	ND	ND	ND	ND	**1800**	**2100**	**13000**	ND	ND	**3200**	ND	**2900**	ND	**3500**	**2600**	**4300**	**2500**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4045.02	4045.04	4045.06	4045.08	4045.1	4095.02	4095.04	4095.06	4095.08	4095.1	4095.12	4145.02	4145.04	4145.06	4145.08	4145.1	4145.12	4145.14	4145.16	4145.18
Aniline	43,000	300,000	3.7	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**270** J	< 1200	< 1100	< 1300	< 1100	< 1000
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Acenaphthylene	NLE	NLE	NLE	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	**240** J	**200** J	**160** J	< 1100	**230** J	< 1100	< 1000
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**540** J	< 1200	< 1100	< 1300	< 1100	< 1000
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**260** J	< 1200	< 1100	< 1300	< 1100	< 1000
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	**3000** B	**2600** B	**1900** B	**1600** B	**1300** B	**1300** JB	**210** J	**170** J
Fluorene	230,000	2,200,000	400	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	**450** J	< 1200	< 1100	< 1300	< 1100	< 1000
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Phenanthrene	NLE	NLE	NLE	--	< 1100	**1900**	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**1000** J	**330** J	**1800**	**5600**	**830** J	**460** J	**1100** J	**190** J	**140** J
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**230** J	< 1400	**330** J	**1100** J	**220** J	< 1100	**280** J	< 1100	< 1000
Di-n-butylphthalate	610,000	6,200,000	170	--	**220** JB	**1100** B	**560** JB	**200** JB	**390** JB	< 11000	< 11000	< 12000	**1100** JBD	**1000** JBD	< 11000	**1300** B	**530** JB	**1300** JB	**1800** B	**1200** B	**420** JB	**430** JB	**1300** B	**1200** B
Fluoranthene	230,000	2,200,000	7,000	--	< 1100	**3400**	< 1000	**130** J	< 1100	**1400** JD	< 11000	< 12000	< 11000	< 12000	< 11000	**1500**	**800** J	**4000**	**8200**	**2000**	**670** J	**2800**	**330** J	**330** J
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Pyrene	170,000	1,700,000	950	--	< 1100	**2500**	< 1000	**240** J	< 1100	**1100** JD	< 11000	< 12000	< 11000	**1400** JD	< 11000	**1400**	**680** J	**3100**	**5700**	**1900**	**710** J	**3900**	**330** J	**350** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzo(a)anthracene	150	2,100	10	--	< 1100	**1200**	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**620** J	**300** J	**1400**	**2800**	**990** J	**270** J	**770** J	**160** J	**180** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Chrysene	15,000	210,000	1,100	--	< 1100	**2100**	< 1000	**410** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**730** J	**460** J	**2000**	**3500**	**1700**	**400** J	**2200**	**210** J	**260** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	**2600** JBD	< 11000	**290** JB	**270** JB	**160** JB	**410** JB	**210** JB	**140** JB	**390** JB	**290** J	**180** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	**1600** JD	< 1000	< 1400	< 1400	< 1200	< 1200	< 1100	< 1300	< 1100	< 1000
Benzo(b)fluoranthene	150	2,100	35	--	< 1100	**900** J	< 1000	**760** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**570** J	**400** J	**1600**	**3100**	**1400**	**360** J	**1600**	**170** J	**210** J
Benzo(k)fluoranthene	1,500	21,000	350	--	< 1100	**890** J	< 1000	**520** J	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**680** J	**420** J	**1600**	**2900**	**1400**	**420** J	**1600**	**190** J	**270** J
Benzo(a)pyrene	15	210	4	--	< 1100	**970** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**590** J	**340** J	**1500**	**2700**	**1000** J	**290** J	**1100** J	**190** J	**220** J
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	**540** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**180** J	**170** J	**600** J	**860** J	**350** J	< 1100	**310** J	< 1100	< 1000
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1000	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	< 1000	< 1400	**180** J	**250** J	**140** J	< 1100	< 1300	< 1100	< 1000
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1100	**530** J	< 1000	< 1100	< 1100	< 11000	< 11000	< 12000	< 11000	< 12000	< 11000	**210** J	**210** J	**680** J	**920** J	**380** J	< 1100	**340** J	**110** J	< 1000
TICs	NLE	NLE	NLE	--	**3770**	**16960**	**8300**	ND	**10330**	ND	ND	**19000**	ND	**66000**	ND	**8800**	**3100**	**4900**	**5800**	**10500**	**2400**	ND	**7400**	**5300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0043	< 0.0045	< 0.0046	< 0.0046	< 0.0048	< 0.0044	< 0.0022	< 0.0027	< 0.0028	< 0.0025	< 0.0024	< 0.0022	< 0.0026	< 0.0019	< 0.0022
Heptachlor	0.11	0.38	0.00014	--	< 0.0016	< 0.0015	< 0.0016	< 0.0016	< 0.0016	< 0.0032	< 0.0033	< 0.0035	< 0.0034	< 0.0036	< 0.0033	< 0.0016	< 0.0020	< 0.0021	< 0.0019	< 0.0018	< 0.0016	< 0.0020	< 0.0014	< 0.0017
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0032	< 0.0031	< 0.0032	**0.014**	< 0.0032	< 0.0065	< 0.0067	< 0.0069	< 0.0068	< 0.0072	< 0.0066	< 0.0033	< 0.0041	< 0.0041	< 0.0038	< 0.0036	< 0.0033	**0.017**	< 0.0029	< 0.0033
Endosulfan I	370	3700	0.11	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	< 0.0030	< 0.0027	< 0.0033	< 0.0024	< 0.0028
4,4'-DDE	1.4	5.1	0.05	--	**0.036**	**0.04**	**0.017**	**0.089**	**0.044**	**0.049**	**0.057**	**0.207**	**0.379**	**0.066**	**0.074**	**0.014**	**0.04**	**0.053**	**0.071**	**0.07**	**0.015**	**0.181**	**0.05**	**0.11**
Dieldrin	0.03	0.11	0.000061	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	**0.023**	**0.006**	**0.023**	< 0.0024	< 0.0028
Endrin	1.8	18	0.0068	--	< 0.0026	< 0.0026	< 0.0027	< 0.0027	< 0.0026	< 0.0054	< 0.0056	< 0.0058	< 0.0057	< 0.0060	< 0.0055	< 0.0027	< 0.0034	< 0.0035	< 0.0032	< 0.0030	< 0.0027	< 0.0033	< 0.0024	< 0.0028
Endosulfan II	370	3700	0.11	--	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0021	< 0.0043	**0.057**	< 0.0046	< 0.0046	< 0.0048	< 0.0044	< 0.0022	< 0.0027	< 0.0028	< 0.0025	< 0.0024	< 0.0022	< 0.0026	< 0.0019	< 0.0022
4,4'-DDD	2.0	7.2	0.01	--	**0.046**	**0.051**	**0.033**	**0.427**	**0.07**	**0.066**	**0.094**	**2.123**	**0.364**	**0.089**	**0.176**	**0.027**	**0.131**	**0.191**	**0.307**	**0.268**	**0.04**	**0.604**	**0.041**	**0.071**
4,4'-DDT	1.7	7	0.07	--	**0.061**	**0.036**	**0.038**	**0.117**	**0.07**	**0.145**	**0.179**	**0.175**	**0.05**	**0.029**	**0.038**	**0.015**	**0.017**	**0.032**	**0.051**	**0.287**	**0.013**	**0.0073**	**0.021**	**0.044**
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0026	**0.003**	**0.005**	**0.03**	**0.005**	< 0.0054	< 0.0056	**0.094**	**0.022**	< 0.0060	**0.024**	**0.011**	**0.009**	< 0.0035	< 0.0032	**0.056**	< 0.0027	**0.045**	**0.055**	< 0.0028
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0026	< 0.0026	**0.005**	**0.02**	**0.003**	< 0.0054	< 0.0056	**0.11**	**0.017**	< 0.0060	**0.026**	**0.008**	< 0.0034	< 0.0035	< 0.0032	**0.071**	< 0.0027	**0.023**	**0.05**	< 0.0028
Aroclor 1016	0.39	3.7	0.01	--	< 0.0594	< 0.0575	< 0.0595	< 0.0598	< 0.0589	< 0.1211	< 0.1249	< 0.1289	< 0.1278	< 0.1346	< 0.1225	< 0.0612	< 0.0760	< 0.0774	< 0.0712	< 0.0678	< 0.0609	< 0.0738	< 0.0537	< 0.0623
Aroclor 1221	0.14	0.54	0.000069	--	< 0.1092	< 0.1057	< 0.1095	< 0.1099	< 0.1084	< 0.2227	< 0.2298	< 0.2372	< 0.2351	< 0.2476	< 0.2253	< 0.1125	< 0.1398	< 0.1423	< 0.1309	< 0.1247	< 0.1120	< 0.1358	< 0.0988	< 0.1146
Aroclor 1242	0.22	0.74	0.0053	--	< 0.0848	< 0.0821	< 0.0850	< 0.0854	< 0.0842	< 0.1730	< 0.1785	< 0.1842	< 0.1826	< 0.1923	< 0.1750	< 0.0874	< 0.1086	< 0.1105	< 0.1017	< 0.0968	< 0.0870	< 0.1055	< 0.0767	< 0.0890
Aroclor 1260	0.22	0.74	0.024	--	< 0.0191	< 0.0185	< 0.0191	< 0.0192	< 0.0189	< 0.0389	< 0.0402	< 0.0414	< 0.0411	< 0.0433	< 0.0394	< 0.0197	< 0.0244	< 0.0249	< 0.0229	< 0.0218	< 0.0196	< 0.0237	< 0.0173	< 0.0200

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	B-18	B-19	B-20
Sample Date					11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	11/30/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**5660**	**11200**	**12700**	**7380**	**5420**	**8130**	**9230**	**11300**	**9880**	**18500**	**10900**	**7970**	**13600**	**8860**	**8280**	**11300**	**8170**	**13900**	**4030**	**7590**
Antimony	3.1	41	0.03	ND	< 0.291	< 0.239	**14.7**	**2.53**	< 0.259	**0.742**	**0.846**	**14.1**	**2.22**	**0.253**	**3.28**	**0.532**	**1.3**	< 0.603	**1.91**	**1.77**	**1.36**	**1.88**	< 0.386	**0.468**
Arsenic	0.61	2.4	0.0013	22.9	**8.08**	**10.8**	**14.7**	**8.78**	**8.39**	**8.12**	**9.85**	**10.9**	**14.8**	**15.4**	**9.07**	**7.36**	**19.8**	**17**	**19**	**23.7**	**8.88**	**21.4**	**4.01**	**6.68**
Barium	1,500	19,000	12	32.3	**26.4**	**42.4**	**42.9**	**67**	**31.3**	**31.5**	**287**	**44.7**	**90.7**	**90.3**	**62.8**	**61.4**	**54.7**	**23.7**	**36.6**	**32.6**	**28.6**	**51.4**	**18.1**	**27.4**
Beryllium	16	200	1.3	2	**0.762**	**1.43**	**1.59**	**0.788**	**0.659**	**0.999**	**1.52**	**1.43**	**1.21**	**1.82**	**1.1**	**0.673**	**1.63**	**0.897**	**0.822**	**1.62**	**0.805**	**1.1**	**0.362**	**0.645**
Cadmium	7	80	0.05	ND	**0.343**	**0.756**	**0.705**	**0.923**	**0.339**	**0.142**	**0.425**	**0.514**	**0.945**	**0.431**	**0.52**	**0.308**	**0.161**	**1.33**	**0.435**	**1.25**	**0.382**	**1.69**	**0.206**	**0.224**
Calcium	NLE	NLE	NLE	921	**459**	**1540**	**3810**	**1900**	**417**	**771**	**992**	**1140**	**3480**	**3450**	**2380**	**11300**	**1410**	**2170**	**1990**	**1190**	**2050**	**1670**	**3640**	**2230**
Chromium	12,000	150,000	2,800,000	269	**85.1**	**101**	**128**	**63.3**	**73.6**	**66.6**	**85.9**	**99.5**	**125**	**199**	**85.6**	**60.1**	**139**	**100**	**108**	**202**	**72.4**	**166**	**65.6**	**58.4**
Cobalt	2.3	30	0.02	2.5	**1.04**	**2.45**	**2.94**	**2.73**	**1**	**2.11**	**5.3**	**2.2**	**1.61**	**3.21**	**3.4**	**3.02**	**3.11**	**2.11**	**1.92**	**1.69**	**2.27**	**2.77**	**1.74**	**2.41**
Copper	310	4,100	2.2	8	**4.99**	**14.1**	**11.4**	**25**	**4.84**	**16.8**	**24.1**	**13.2**	**43.2**	**11.3**	**20**	**19.2**	**31.3**	**30.5**	**29.9**	**61.8**	**1160**	**74.6**	**10**	**14.9**
Iron	5500	72,000	27	55,800	**21600**	**34600**	**42600**	**18800**	**17000**	**26300**	**27000**	**24000**	**29700**	**45000**	**31700**	**23600**	**46400**	**37500**	**35600**	**51000**	**25100**	**45200**	**13500**	**24300**
Lead	400	800	NLE	19.5	**8.34**	**52.5**	**45.5**	**445**	**16**	**74.4**	**223**	**104**	**52.5**	**24**	**585**	**104**	**193**	**32.3**	**115**	**115**	**54**	**269**	**39.8**	**25.9**
Magnesium	NLE	NLE	NLE	7,230	**2030**	**4180**	**4800**	**2050**	**1890**	**2780**	**3030**	**2880**	**3790**	**5780**	**3450**	**3400**	**4040**	**3320**	**3150**	**5430**	**2690**	**4630**	**1940**	**2540**
Manganese	180	2,300	2.1	90.7	**37.5**	**45.8**	**104**	**46.3**	**18.1**	**59.1**	**126**	**22.9**	**34.2**	**101**	**52.4**	**84.8**	**56.4**	**56**	**48.8**	**33.9**	**62.9**	**51.6**	**228**	**73.5**
Mercury	1	4.3	0.0033	ND	**0.02**	**0.045**	**0.115**	**0.156**	**0.053**	**0.065**	**0.101**	**0.059**	**0.481**	**0.233**	**0.199**	**0.089**	**0.356**	**0.122**	**0.258**	**0.253**	**0.085**	**0.616**	**0.064**	**0.087**
Nickel	150	2,000	2	8.4	**4.33**	**10.7**	**15.2**	**8.52**	**3.43**	**8.22**	**14.2**	**12.5**	**10.9**	**13.1**	**12.7**	**8.93**	**12.4**	**7.83**	**7.48**	**8.94**	**7.49**	**11.6**	**5.18**	**7.23**
Potassium	NLE	NLE	NLE	15,400	**3590**	**8500**	**9500**	**2950**	**3310**	**6510**	**6970**	**6640**	**9030**	**14500**	**7150**	**4480**	**7990**	**6670**	**6660**	**12300**	**4990**	**9410**	**2560**	**4280**
Selenium	39	510	0.04	1.9	**0.847**	**0.8**	**0.842**	**0.903**	**1.02**	**0.706**	**0.613**	**1.38**	**1.35**	**1.31**	**0.763**	**0.915**	**2.07**	**1.2**	**1.95**	**2.1**	**0.986**	**2.09**	< 0.579	**0.678**
Silver	39	510	0.06	1.1	< 0.436	< 0.358	< 0.513	< 0.331	**0.893**	< 0.491	< 0.400	< 0.598	< 0.517	**2.36**	< 0.389	< 0.713	**3.15**	< 0.904	**4.17**	**4.93**	< 0.751	**6.13**	< 0.579	< 0.632
Sodium	NLE	NLE	NLE	51.6	**105**	**209**	**255**	**115**	**103**	**98.1**	**94.4**	**125**	**117**	**116**	**78.6**	**293**	**742**	**474**	**233**	**282**	**213**	**407**	**199**	**281**
Thallium	0.078	1	0.0011	ND	< 0.436	< 0.358	< 0.513	< 0.331	< 0.388	< 0.491	< 0.400	< 0.598	< 0.517	< 0.347	< 0.389	< 0.713	< 0.756	< 0.904	< 0.852	< 0.742	< 0.751	< 0.839	< 0.579	< 0.632
Vanadium	39	510	6.3	94.1	**35.6**	**47.8**	**60.6**	**37.3**	**26.8**	**42.2**	**51.9**	**64**	**65.4**	**103**	**53.5**	**43.3**	**79**	**57**	**63.8**	**80.4**	**45.8**	**93.4**	**23.3**	**47**
Zinc	2,300	31,000	29	81.4	**47.1**	**95.7**	**113**	**329**	**65.7**	**71.3**	**306**	**111**	**252**	**135**	**216**	**123**	**76.5**	**76.3**	**68.7**	**84.7**	**100**	**110**	**155**	**69.6**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-21	B-22	B-23	B-23 Dup	B-24	B-25	B-26	B-27	B-28	B-29	B-30	B-31	B-32	B-33	B-34	B-35	B-36	B-37	B-38	B-39
Sample Date					12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4145.21	4145.23	4145.25	4145.37	4145.27	4145.29	4145.31	4145.33	4145.35	4194.03	4194.05	4194.07	4194.09	4194.11	4194.13	4194.15	4194.17	4194.19	4194.21	4194.23
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
Acetone	6,100,000	63,000,000	240	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
Carbon Disulfide	82,000	370,000	21	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Methylene Chloride	36,000	310,000	2.2	--	**3500**	**3000**	**5000**	**4400**	**3400**	**4900**	**4000**	**3100**	**3200**	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
2-Butanone	2,800,000	20,000,000	100	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
Benzene	1,100	5,400	0.2	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
Toluene	500,000	4,500,000	59	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Tetrachloroethene	8,600	41,000	1.6	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Chlorobenzene	29,000	140,000	4.9	--	< 310	< 270	< 440	< 380	< 300	< 340	< 350	< 280	< 270	< 330	< 410	< 340	< 330	< 330	< 350	< 270	< 340	< 320	< 310	< 300
Ethylbenzene	5,400	27,000	1.5	--	< 620	< 550	< 870	< 760	< 600	< 670	< 700	< 550	< 550	< 660	< 820	< 670	< 660	< 670	< 690	< 550	< 680	< 640	< 620	< 600
m+p-Xylenes	630,000	2,700,000	19	--	< 930	< 820	< 1300	< 1100	< 900	< 1000	< 1000	< 830	< 820	< 990	< 1200	< 1000	< 1000	< 1000	< 1000	< 820	< 1000	< 960	< 920	< 900
TICs	NLE	NLE	NLE	--	**5200**	**2100**	**8000**	**7100**	**5000**	**9000**	**6400**	**5400**	**5300**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4145.2	4145.22	4145.24	4145.36	4145.26	4145.28	4145.3	4145.32	4145.34	4194.02	4194.04	4194.06	4194.08	4194.1	4194.12	4194.14	4194.16	4194.18	4194.2	4194.22
Aniline	43,000	300,000	3.7	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1100	**130** J	**200** J	**200** J	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	**840** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	**150** J	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1200	< 1200	< 1200	**820** J	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	**210** J	< 7600	< 1100	**130** J	**110** J
Fluorene	230,000	2,200,000	400	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	**120** J	< 1100	< 1100	< 1200	< 1100	< 1100	**740** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	**190** J	**1200**	**1000** J	**980** J	**260** J	**650** J	**1400**	**150** J	**160** J	< 1200	< 1100	**420** J	**12000** D	**290** J	**1700** JD	**330** J	< 7600	**190** J	**290** J	**960** J
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	**320** J	**240** J	**1000** J	< 1200	**140** J	**320** J	**160** J	**160** J	< 1200	< 1100	< 1100	**1800** JD	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	**170** J
Di-n-butylphthalate	610,000	6,200,000	170	--	**2000** B	**1200** B	**1000** JB	**380** JB	**2000** B	**1100** JB	**1000** JB	**1400** B	**340** JB	**1600** B	**970** JB	**1400** B	**1100** JBD	**1800** B	**26000** BD	**1300** B	**1400** JBD	**350** JB	**1000** JB	**400** JB
Fluoranthene	230,000	2,200,000	7,000	--	**440** J	**2200**	**2600**	**2000**	**690** J	**1300**	**2100**	**1700**	**400** J	**190** J	< 1100	**700** J	**16000** D	**460** J	**3400** JD	**490** J	**1400** JD	**460** J	**600** J	**1300**
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1200	< 1200	**5800**	< 1200	**8300**	**8000**	**6500**	**8600**	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	**490** J	**2200**	**2300**	**2600**	**1000** J	**1800**	**2800**	**2200**	**550** J	**180** J	< 1100	**690** J	**11000** D	**430** J	**2700** JD	**470** J	**2100** JD	**360** J	**500** J	**1000** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	**220** J	**940** J	**1200** J	**990** J	**450** J	**610** J	**900** J	**630** J	**230** J	< 1200	< 1100	**330** J	**5400** JD	**210** J	**1000** JD	**230** J	**880** JD	**240** J	**250** J	**460** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	**270** J	**1200**	**1600**	**1400**	**520** J	**770** J	**1200**	**900** J	**290** J	**130** J	< 1100	**400** J	**5900** D	**270** J	**1400** JD	**310** J	**1100** JD	**280** J	**380** J	**610** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**180** J	**220** J	**510** J	**620** J	**260** J	**300** J	**260** J	**340** J	< 1100	**130** J	**620** J	**170** J	< 5500	**130** J	< 5900	**150** J	**1000** JD	< 1100	**130** J	< 1100
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	**330** J	**930** J	**1600**	**1200**	**790** J	**870** J	**1200**	**1000** J	< 1100	< 1200	< 1100	**320** J	**3700** JD	**170** J	**1200** JD	**190** J	< 7600	**280** J	**280** J	**350** J
Benzo(k)fluoranthene	1,500	21,000	350	--	**340** J	**1000** J	**1600**	**1500**	**900** J	**930** J	**1600**	**550** J	< 1100	**120** J	< 1100	**320** J	**4800** JD	**160** J	**1300** JD	**220** J	< 7600	**280** J	**290** J	**440** J
Benzo(a)pyrene	15	210	4	--	**400** J	**790** J	**1300**	**1000** J	**590** J	**700** J	**1100** J	**850** J	< 1100	< 1200	< 1100	**350** J	**4100** JD	**180** J	**1100** JD	**220** J	< 7600	**230** J	**240** J	**370** J
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**140** J	**240** J	**360** J	**300** J	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	**1300** JD	< 1100	< 5900	**110** J	< 7600	< 1100	**150** J	**200** J
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 5500	< 1100	< 5900	< 1100	< 7600	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**180** J	**260** J	**390** J	< 1200	< 1200	< 1300	< 1100	< 1100	< 1100	< 1200	< 1100	**140** J	**1400** JD	< 1100	< 5900	**150** J	< 7600	< 1100	**180** J	**250** J
TICs	NLE	NLE	NLE	--	**7100**	**10200**	**7100**	ND	ND	ND	ND	ND	ND	**4000**	**2700**	**4700**	ND	ND	ND	**2300**	ND	**8400**	**4700**	**5000**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0022	< 0.0088	< 0.0092	< 0.0094	< 0.0096	< 0.0096	< 0.0092	< 0.0094	< 0.0095	< 0.0092	< 0.0092	< 0.0091	< 0.0088	< 0.0091	< 0.0094	< 0.0087	< 0.0123	< 0.0090	< 0.0089	< 0.0086
Heptachlor	0.11	0.38	0.00014	--	< 0.0016	< 0.0066	< 0.0069	< 0.0071	< 0.0072	< 0.0072	< 0.0069	< 0.0071	< 0.0071	< 0.0069	< 0.0069	< 0.0068	< 0.0066	< 0.0068	< 0.0071	< 0.0065	< 0.0092	< 0.0067	< 0.0067	< 0.0064
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0033	< 0.0132	< 0.0138	< 0.0141	< 0.0143	< 0.0144	< 0.0138	< 0.0141	< 0.0142	< 0.0138	< 0.0137	< 0.0136	< 0.0132	< 0.0136	< 0.0141	< 0.0130	< 0.0184	< 0.0135	< 0.0134	< 0.0128
Endosulfan I	370	3700	0.11	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	< 0.0115	< 0.0118	< 0.0118	< 0.0115	< 0.0114	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
4,4'-DDE	1.4	5.1	0.05	--	**0.105**	**0.061**	**0.082**	**0.101**	**0.036**	**0.048**	**0.044**	**0.09**	< 0.0095	**0.065**	**0.023**	**0.207**	**0.141**	**0.141**	**0.088**	**0.136**	**0.081**	**0.064**	**0.072**	**0.097**
Dieldrin	0.03	0.11	0.000061	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	**0.013**	< 0.0118	< 0.0118	**0.013**	**0.026**	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
Endrin	1.8	18	0.0068	--	< 0.0027	< 0.0110	< 0.0115	< 0.0118	< 0.0120	< 0.0120	< 0.0115	< 0.0118	< 0.0118	< 0.0115	< 0.0114	< 0.0113	< 0.0110	< 0.0114	< 0.0118	< 0.0109	< 0.0154	< 0.0112	< 0.0112	< 0.0107
Endosulfan II	370	3700	0.11	--	< 0.0022	< 0.0088	< 0.0092	< 0.0094	< 0.0096	< 0.0096	< 0.0092	< 0.0094	< 0.0095	< 0.0092	< 0.0092	< 0.0091	< 0.0088	< 0.0091	< 0.0094	< 0.0087	< 0.0123	< 0.0090	< 0.0089	< 0.0086
4,4'-DDD	2.0	7.2	0.01	--	**0.187**	**0.16**	**0.199**	**0.25**	**0.08**	**0.099**	**0.128**	**0.215**	< 0.0142	**0.05**	**0.022**	**0.062**	**0.043**	**0.097**	**0.043**	**0.145**	**0.049**	**0.042**	**0.03**	**0.053**
4,4'-DDT	1.7	7	0.07	--	**0.04**	< 0.0241	**0.027**	**0.035**	**0.03**	**0.241**	< 0.0254	**0.086**	< 0.0260	**0.144**	**0.075**	**0.739**	**0.332**	**0.662**	**0.182**	**0.253**	**0.276**	**0.246**	**0.138**	**0.133**
gamma-Chlordane	1.6	6.5	0.013	--	**0.026**	**0.027**	**0.015**	**0.051**	**0.022**	**0.026**	**0.039**	**0.075**	< 0.0118	**0.032**	< 0.0114	< 0.0113	< 0.0110	< 0.0114	**0.025**	**0.02**	**0.015**	**0.02**	**0.013**	< 0.0107
alpha-Chlordane	1.6	6.5	0.013	--	**0.022**	**0.022**	**0.044**	**0.016**	**0.021**	**0.018**	**0.035**	**0.059**	< 0.0118	**0.024**	< 0.0114	< 0.0113	< 0.0110	< 0.0114	**0.025**	**0.017**	< 0.0154	**0.013**	< 0.0112	< 0.0107
Aroclor 1016	0.39	3.7	0.01	--	< 0.0612	< 0.2456	< 0.2574	< 0.2639	< 0.2677	< 0.2685	< 0.2581	< 0.2633	< 0.2648	< 0.2572	< 0.2564	< 0.2538	< 0.2456	< 0.2548	< 0.2637	< 0.2433	< 0.3439	< 0.2513	< 0.2501	< 0.2399
Aroclor 1221	0.14	0.54	0.000069	--	< 0.1125	< 0.4518	< 0.4734	< 0.4854	< 0.4923	< 0.4939	< 0.4748	< 0.4843	< 0.4871	< 0.4731	< 0.4717	< 0.4669	< 0.4518	< 0.4686	< 0.4851	< 0.4474	< 0.4919	< 0.4622	< 0.4600	< 0.4412
Aroclor 1242	0.22	0.74	0.0053	--	< 0.0874	< 0.3509	< 0.3677	< 0.3770	< 0.3824	< 0.3836	< 0.3688	< 0.3762	< 0.3783	< 0.3675	< 0.3664	< 0.3626	< 0.3509	< 0.3639	< 0.3768	< 0.3475	< 0.4913	< 0.3590	< 0.3573	< 0.3427
Aroclor 1260	0.22	0.74	0.024	--	< 0.0197	< 0.0789	< 0.0827	< 0.0848	< 0.0860	< 0.0863	< 0.0830	< 0.0846	< 0.0851	< 0.0827	< 0.0824	< 0.0816	< 0.0789	< 0.0819	< 0.0848	< 0.0782	< 0.1105	< 0.808	< 0.0804	< 0.0771

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-21	B-22	B-23	B-23 Dup	B-24	B-25	B-26	B-27	B-28	B-29	B-30	B-31	B-32	B-33	B-34	B-35	B-36	B-37	B-38	B-39
Sample Date					12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	12/16/98	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99	01/19/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**10000**	**15800**	**13600**	**13800**	**9510**	**8990**	**12900**	**10600**	**13100**	**11100**	**10300**	**11400**	**9630**	**13000**	**7170**	**7240**	**8940**	**7840**	**10200**	**5410**
Antimony	3.1	41	0.03	ND	**1.63**	**30.7**	**1.39**	**0.599**	**7.64**	**0.956**	**2.13**	**3.72**	**1.07**	< 0.415	**1.53**	**7.02**	**0.89**	**26.1**	**0.78**	**0.545**	**30**	**4.78**	**0.846**	**0.909**
Arsenic	0.61	2.4	0.0013	22.9	**12.9**	**14.6**	**18**	**15.4**	**7.31**	**8.82**	**20.9**	**7.77**	**17.2**	**7.23**	**5.26**	**7.28**	**6.77**	**6.94**	**7.37**	**6.89**	**10.6**	**10.2**	**11.6**	**6.79**
Barium	1,500	19,000	12	32.3	**48.3**	**72.5**	**52.8**	**41**	**40.4**	**31.1**	**44.1**	**66.1**	**37.4**	**46.6**	**35**	**69.8**	**44**	**57**	**45.1**	**36.8**	**282**	**135**	**61.4**	**31.6**
Beryllium	16	200	1.3	2	**1.13**	**1.29**	**1.1**	**1**	**0.96**	**0.66**	**1.02**	**1.02**	**1.58**	**0.872**	**0.608**	**0.726**	**0.782**	**0.734**	**0.814**	**0.768**	**0.76**	**0.851**	**1.06**	**0.557**
Cadmium	7	80	0.05	ND	**0.218**	**4.63**	**3.86**	**3.92**	**2.09**	**0.757**	**2.46**	**3.54**	**0.345**	**0.792**	**0.688**	**0.75**	**0.613**	**0.786**	**1.06**	**0.631**	**2.2**	**1.38**	**1.13**	**0.617**
Calcium	NLE	NLE	NLE	921	**1920**	**4940**	**2880**	**1520**	**1780**	**2960**	**1850**	**4490**	**2360**	**1560**	**4440**	**4540**	**1640**	**2420**	**2400**	**831**	**16600**	**2210**	**1300**	**246**
Chromium	12,000	150,000	2,800,000	269	**98.5**	**119**	**138**	**140**	**63.5**	**66.5**	**167**	**66**	**157**	**75.9**	**53.8**	**61**	**64.3**	**62.5**	**67.6**	**65.3**	**66**	**72.3**	**102**	**62.7**
Cobalt	2.3	30	0.02	2.5	**2.25**	**4.22**	**3.07**	**2.98**	**3.7**	**3.84**	**3.28**	**4**	**2.75**	**2.56**	**1.84**	**2.44**	**2.01**	**3.88**	**2.6**	**1.84**	**4.91**	**3.05**	**2.61**	**0.724**
Copper	310	4,100	2.2	8	**16.5**	**43.4**	**49.2**	**60.3**	**25.1**	**29.8**	**87.1**	**25.5**	**13.9**	**10.4**	**10.1**	**17.3**	**8.99**	**20.9**	**15.2**	**8.85**	**26.3**	**35.4**	**28.8**	**15.8**
Iron	5500	72,000	27	55,800	**31700**	**43600**	**38400**	**35300**	**23200**	**26300**	**42400**	**26400**	**50400**	**20500**	**19900**	**20400**	**20600**	**22700**	**19300**	**18300**	**31600**	**25000**	**30300**	**19200**
Lead	400	800	NLE	19.5	**45.3**	**119**	**187**	**125**	**68.1**	**48.6**	**194**	**71.9**	**33.3**	**54.5**	**60.7**	**191**	**40**	**76.7**	**56.3**	**43.2**	**1990**	**528**	**62.7**	**45.9**
Magnesium	NLE	NLE	NLE	7,230	**3760**	**3730**	**3700**	**3770**	**2170**	**3100**	**3540**	**2070**	**5660**	**2160**	**1780**	**2560**	**1860**	**2100**	**1750**	**1790**	**2360**	**2360**	**3260**	**1680**
Manganese	180	2,300	2.1	90.7	**91.9**	**75.5**	**48.3**	**42.2**	**63.1**	**94.5**	**63.8**	**185**	**101**	**26.6**	**51.6**	**82.2**	**45.1**	**75.6**	**63**	**30.3**	**152**	**88.7**	**40.4**	**160**
Mercury	1	4.3	0.0033	ND	**0.132**	**0.301**	**0.424**	**0.462**	**0.175**	**0.128**	**0.568**	**0.2**	**0.073**	**0.08**	**0.07**	**0.07**	**0.18**	**0.12**	**0.21**	**0.16**	**1.25**	**0.35**	**0.16**	**0.33**
Nickel	150	2,000	2	8.4	**7.28**	**13.2**	**10.6**	**11.6**	**9.47**	**9.97**	**13.3**	**11.7**	**11.1**	**11.4**	**6.71**	**14.9**	**12.6**	**10.5**	**7.51**	**5.87**	**15.5**	**8.44**	**8.91**	**3.64**
Potassium	NLE	NLE	NLE	15,400	**7500**	**7220**	**8270**	**7820**	**4060**	**4320**	**6840**	**4200**	**11800**	**4670**	**2560**	**4460**	**3900**	**3370**	**3770**	**3790**	**4000**	**4540**	**6570**	**4030**
Selenium	39	510	0.04	1.9	**0.905**	**1.12**	**1.73**	**1.41**	**0.579**	< 0.710	**1.74**	**0.678**	**1.3**	**0.648**	< 0.513	**1.05**	**1.19**	**0.837**	**1.2**	**0.957**	**2.32**	**1.61**	**1.07**	**1.03**
Silver	39	510	0.06	1.1	< 0.748	< 0.807	**5.31**	**5.07**	< 0.481	< 0.710	**7.58**	< 0.535	< 0.574	< 0.623	< 0.513	**0.821**	**3.57**	< 0.599	**5.88**	**4.42**	**1.42**	< 0.694	**2.38**	**1.07**
Sodium	NLE	NLE	NLE	51.6	**260**	**303**	**301**	**251**	**133**	**299**	**316**	**138**	**146**	**150**	**101**	**171**	**147**	**166**	**75.9**	**88.3**	**147**	**239**	**185**	**162**
Thallium	0.078	1	0.0011	ND	< 0.748	< 0.807	< 0.880	< 0.851	< 0.481	< 0.710	< 0.757	< 0.535	< 0.574	< 0.623	< 0.513	< 0.531	< 0.681	< 0.599	< 0.696	< 0.696	< 0.862	< 0.694	< 0.546	< 0.684
Vanadium	39	510	6.3	94.1	**57.5**	**86.5**	**82.5**	**72.7**	**51.6**	**49.5**	**87.6**	**51.5**	**86.5**	**46**	**58.4**	**39.4**	**40.6**	**51.9**	**34.7**	**34.9**	**43.3**	**35.6**	**38.1**	**25.1**
Zinc	2,300	31,000	29	81.4	**124**	**250**	**96.6**	**99.2**	**141**	**140**	**128**	**183**	**95.3**	**59.9**	**83.1**	**237**	**67.7**	**127**	**106**	**58.3**	**904**	**262**	**75.1**	**41.3**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-40	B-41	B-1A	B-2B	B-3C	B-4D	B-5E	B-6F	B-7G	B-8H	B-9I	B-10J	B-11K	B-12L	B-13M	B-14N	B-15O	B-16P	B-17Q	B-18R
Sample Date					01/19/99	01/19/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4194.25	4194.27	4351.03	4351.05	4351.07	4351.09	4351.11	4351.13	4351.15	4351.17	4351.19	4351.21	4351.23	4351.25	4351.27	4354.03	4354.05	4354.07	4354.09	4354.11
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
Acetone	6,100,000	63,000,000	240	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
Carbon Disulfide	82,000	370,000	21	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	**600**	< 350
Methylene Chloride	36,000	310,000	2.2	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
2-Butanone	2,800,000	20,000,000	100	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
Benzene	1,100	5,400	0.2	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
Toluene	500,000	4,500,000	59	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Tetrachloroethene	8,600	41,000	1.6	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	< 440	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Chlorobenzene	29,000	140,000	4.9	--	< 270	< 320	< 370	< 270	< 270	< 280	< 320	< 370	< 240	< 320	< 370	< 330	**620**	< 340	< 340	< 300	< 270	< 290	< 390	< 350
Ethylbenzene	5,400	27,000	1.5	--	< 550	< 640	< 730	< 550	< 550	< 570	< 630	< 730	< 480	< 640	< 740	< 670	< 880	< 680	< 680	< 590	< 540	< 570	< 790	< 690
m+p-Xylenes	630,000	2,700,000	19	--	< 820	< 960	< 1100	< 820	< 820	< 850	< 950	< 1100	< 720	< 960	< 1100	< 1000	< 1300	< 1000	< 1000	< 890	< 810	< 860	< 1200	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8300**	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4194.24	4194.26	4351.02	4351.04	4351.06	4351.08	4351.1	4351.12	4351.14	4351.16	4351.18	4351.2	4351.22	4351.24	4351.26	4354.02	4354.04	4354.06	4354.08	4354.1
Aniline	43,000	300,000	3.7	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	**730** J	< 1100	< 1200	< 1400	< 1100	**780** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	**1600**	< 1000	< 1100	< 1100	< 1200
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	**310** J	< 1000	< 1100	< 1100	< 1200
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	**420** J	< 1100	< 1200	< 1400	< 1100	**240** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	**160** J
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1200	< 13000	< 1200	< 1100	**130** J	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Acenaphthylene	NLE	NLE	NLE	--	< 1100	**210** J	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	**250** J	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**210** J	< 1300	< 1100	< 1000	< 1100	< 1100	**590** J
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	**340** J
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1200	< 13000	< 1200	< 1100	**140** J	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	**160** J	**160** J	**190** J	< 1100	< 1000	< 1100	< 1100	< 1200
Fluorene	230,000	2,200,000	400	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**230** J	< 1300	< 1100	< 1000	< 1100	< 1100	**670** J
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Phenanthrene	NLE	NLE	NLE	--	**350** J	**200** J	< 13000	**160** J	< 1100	**370** J	< 1400	< 1700	< 1100	**730** J	**680** J	< 1100	**230** J	**2700**	**270** J	< 1100	**390** J	< 1100	**130** J	**6100**
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	**140** J	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	**200** J	**180** J	< 1100	< 1400	**840** J	< 1300	< 1100	< 1000	< 1100	< 1100	**1900**
Di-n-butylphthalate	610,000	6,200,000	170	--	**520** JB	**1300** B	< 13000	**1500** B	**1100** JB	**370** JB	**450** JB	< 1700	**270** JB	**610** JB	**320** JB	**310** JB	**1100** JB	**480** JB	**560** JB	**600** JB	**690** JB	**1500** B	**780** JB	**270** JB
Fluoranthene	230,000	2,200,000	7,000	--	**580** J	**560** J	< 13000	**310** J	< 1100	**650** J	**190** J	**290** J	< 1100	**1100** J	**1300** J	< 1100	**890** J	**4300**	**530** J	**150** J	**820** J	**210** J	**270** J	**6800**
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Pyrene	170,000	1,700,000	950	--	**770** J	**740** J	< 13000	**290** J	< 1100	**610** J	**200** J	**240** J	< 1100	**1000** J	**1200** J	< 1100	**1400** J	**3300**	**500** J	**140** J	**630** J	**200** J	**250** J	**4800**
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	**1200**	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzo(a)anthracene	150	2,100	10	--	**240** J	**390** J	< 13000	**160** J	< 1100	**320** J	**170** J	< 1700	< 1100	**480** J	**650** J	< 1100	**870** J	**1800**	**260** J	< 1100	**340** J	< 1100	**140** J	**2500**
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Chrysene	15,000	210,000	1,100	--	**310** J	**510** J	< 13000	**320** J	< 1100	**590** J	**270** J	**290** J	< 1100	**790** J	**1100** J	< 1100	**1800**	**2800**	**540** J	**160** J	**570** J	**210** J	**280** J	**3800**
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1100	**360** J	< 13000	**220** JB	**330** JB	**340** JB	**180** JB	**1400** JB	**220** JB	**300** JB	**190** JB	**260** JB	**340** JB	**180** JB	**160** JB	**170** JB	**460** JB	**170** JB	**210** JB	**140** JB
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	< 1300	< 1300	< 1100	< 1000	< 1100	< 1100	< 1200
Benzo(b)fluoranthene	150	2,100	35	--	**210** J	**360** J	< 13000	**180** J	< 1100	**340** J	**170** J	< 1700	< 1100	**330** J	**630** J	< 1100	**520** J	**1800**	**310** J	< 1100	**300** J	< 1100	**160** J	**2100**
Benzo(k)fluoranthene	1,500	21,000	350	--	**260** J	**440** J	< 13000	**210** J	< 1100	**360** J	**160** J	< 1700	< 1100	**470** J	**750** J	< 1100	**770** J	**1600**	**330** J	< 1100	**360** J	< 1100	**220** J	**2000**
Benzo(a)pyrene	15	210	4	--	**350** J	**460** J	< 13000	**170** J	< 1100	**360** J	**180** J	< 1700	< 1100	**470** J	**750** J	< 1100	**760** J	**1700**	**300** J	< 1100	**340** J	**120** J	**150** J	**2500**
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	**140** J	< 13000	**130** J	< 1100	**230** J	< 1400	< 1700	< 1100	**260** J	**380** J	< 1100	**250** J	**660** J	**220** J	< 1100	**220** J	< 1100	< 1100	**1400**
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1200	< 13000	< 1200	< 1100	< 1100	< 1400	< 1700	< 1100	< 1200	< 1400	< 1100	< 1400	**250** J	< 1300	< 1100	< 1000	< 1100	< 1100	**390** J
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**290** J	**170** J	< 13000	**140** J	< 1100	**270** J	< 1400	< 1700	< 1100	**280** J	**370** J	< 1100	**290** J	**550** J	**260** J	< 1100	**180** J	< 1100	< 1100	**1300**
TICs	NLE	NLE	NLE	--	**3600**	**5700**	**139000**	**11500**	**10700**	**9210**	**9900**	**79200**	**7430**	**8400**	**10300**	**10000**	**52300**	**23200**	ND	**205900**	**3650**	**5200**	**9010**	**3300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0092	< 0.0094	< 0.0107	< 0.0096	< 0.0091	< 0.0089	< 0.0092	< 0.0140	< 0.0090	< 0.0095	< 0.0093	< 0.0093	< 0.0098	< 0.0093	< 0.0088	< 0.0092	< 0.0082	< 0.0079	< 0.0088	< 0.0089
Heptachlor	0.11	0.38	0.00014	--	< 0.0069	< 0.0070	< 0.0080	< 0.0072	< 0.0069	< 0.0067	< 0.0069	< 0.0105	< 0.0067	< 0.0071	< 0.0070	< 0.0070	< 0.0073	< 0.0070	< 0.0066	< 0.0069	< 0.0062	< 0.0060	< 0.0066	< 0.0067
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0137	< 0.0140	< 0.0160	< 0.0144	< 0.0137	< 0.0134	< 0.0139	< 0.0211	< 0.0135	< 0.0143	< 0.0140	< 0.0140	< 0.0147	< 0.0140	< 0.0133	< 0.0138	< 0.0123	< 0.0119	< 0.0133	< 0.0134
Endosulfan I	370	3700	0.11	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	< 0.0114	< 0.0111	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
4,4'-DDE	1.4	5.1	0.05	--	**0.011**	**0.021**	**0.022**	**0.02**	**0.054**	**0.073**	**0.058**	**0.046**	**0.021**	**0.033**	**0.065**	**0.022**	**0.134**	**0.062**	**0.039**	**0.019**	< 0.0082	**0.021**	**0.058**	< 0.0089
Dieldrin	0.03	0.11	0.000061	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	**0.03**	**0.022**	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
Endrin	1.8	18	0.0068	--	< 0.0114	< 0.0117	< 0.0133	< 0.0120	< 0.0114	< 0.0111	< 0.0116	< 0.0176	< 0.0112	< 0.0119	< 0.0117	< 0.0117	< 0.0122	< 0.0116	< 0.0111	< 0.0115	< 0.0103	< 0.0099	< 0.0111	< 0.0111
Endosulfan II	370	3700	0.11	--	< 0.0092	< 0.0094	< 0.0107	< 0.0096	< 0.0091	< 0.0089	< 0.0092	< 0.0140	< 0.0090	< 0.0095	< 0.0093	< 0.0093	< 0.0098	< 0.0093	< 0.0088	< 0.0092	< 0.0082	< 0.0079	< 0.0088	< 0.0089
4,4'-DDD	2.0	7.2	0.01	--	< 0.0137	< 0.0140	**0.073**	< 0.0144	**0.043**	**0.351**	**0.268**	**0.07**	< 0.0135	**0.049**	**0.232**	**0.018**	**0.366**	**0.245**	**0.074**	**0.037**	< 0.0123	**0.088**	**0.0119**	< 0.0134
4,4'-DDT	1.7	7	0.07	--	< 0.0252	**0.051**	**0.1**	< 0.0263	**0.209**	**0.042**	**0.05**	< 0.0386	**0.049**	< 0.0262	**0.965**	**0.027**	< 0.0269	**0.032**	**0.065**	< 0.0253	**0.06**	**0.162**	**0.043**	< 0.0245
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0114	**0.017**	**0.034**	< 0.0120	< 0.0114	**0.035**	**0.033**	< 0.0176	< 0.0112	< 0.0119	**0.04**	< 0.0117	**0.021**	**0.016**	**0.016**	< 0.0115	**0.011**	**0.201**	**0.045**	< 0.0111
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0114	**0.017**	**0.021**	< 0.0120	< 0.0114	**0.023**	**0.019**	< 0.0176	< 0.0112	< 0.0119	**0.025**	< 0.0117	**0.016**	< 0.0116	< 0.0111	< 0.0115	< 0.0103	**0.171**	**0.036**	< 0.0111
Aroclor 1016	0.39	3.7	0.01	--	< 0.2564	< 0.2619	< 0.0149	< 0.2682	< 0.0128	< 0.2494	< 0.2589	< 0.3934	< 0.2512	< 0.2667	< 0.2616	< 0.2613	< 0.2743	< 0.2607	< 0.2476	< 0.2580	< 0.2300	< 0.2226	< 0.2476	< 0.2495
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4716	< 0.4817	< 0.0275	< 0.4933	< 0.0236	< 0.4587	< 0.4761	< 0.7235	< 0.4620	< 0.4905	< 0.4448	< 0.4807	< 0.4665	< 0.4434	< 0.4210	< 0.4745	< 0.4230	< 0.3786	< 0.4554	< 0.4589
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3663	< 0.3741	< 0.0213	< 0.3831	< 0.0183	< 0.3563	< 0.3698	< 0.5620	< 0.3588	< 0.3810	< 0.3736	< 0.3733	< 0.3919	< 0.3724	< 0.3537	< 0.3685	< 0.3285	< 0.3180	< 0.3537	< 0.3564
Aroclor 1260	0.22	0.74	0.024	--	< 0.0824	< 0.0842	< 0.0048	< 0.0862	**0.445**	< 0.0802	< 0.0832	< 0.1264	< 0.0807	< 0.0857	< 0.0841	< 0.0840	< 0.0882	< 0.0838	< 0.0796	< 0.0829	< 0.0739	< 0.0715	< 0.0796	< 0.0802

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-40	B-41	B-1A	B-2B	B-3C	B-4D	B-5E	B-6F	B-7G	B-8H	B-9I	B-10J	B-11K	B-12L	B-13M	B-14N	B-15O	B-16P	B-17Q	B-18R
Sample Date					01/19/99	01/19/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/16/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**9850**	**6960**	**12500**	**13600**	**7060**	**13300**	**8600**	**19700**	**13100**	**11700**	**12300**	**7480**	**13000**	**9700**	**14500**	**11700**	**6050**	**7470**	**7880**	**12300**
Antimony	3.1	41	0.03	ND	**1.21**	**2.14**	**7.28**	< 0.486	**1.21**	**2.52**	**22.6**	**4.47**	< 0.438	< 0.406	**2.88**	**0.89**	**30.1**	**9**	**1.25**	**0.608**	**0.669**	< 0.468	**0.936**	< 0.471
Arsenic	0.61	2.4	0.0013	22.9	**7.46**	**8.35**	**10.4**	**18**	**11.7**	**16.1**	**9.48**	**13.5**	**9.24**	**13.4**	**11.1**	**10.8**	**8.18**	**7.6**	**15.1**	**14.8**	**5.2**	**10.2**	**4.82**	**12.3**
Barium	1,500	19,000	12	32.3	**39.5**	**41.8**	**35.6**	**55.5**	**47.4**	**61.4**	**101**	**78.6**	**51.7**	**68.8**	**63.9**	**27.1**	**185**	**87.9**	**61.9**	**80.4**	**19**	**38.4**	**22.7**	**40.4**
Beryllium	16	200	1.3	2	**0.96**	**0.742**	**1.18**	**1.97**	**0.657**	**1.33**	**0.83**	**1.73**	**0.952**	**1.73**	**1.53**	**0.885**	**1.05**	**0.823**	**1.29**	**1.62**	**0.544**	**0.803**	**0.598**	**1.28**
Cadmium	7	80	0.05	ND	**0.578**	**1.15**	**0.432**	**0.286**	< 0.110	**0.164**	**1.02**	**0.968**	**0.348**	**0.942**	< 0.110	< 0.108	**0.417**	**8.88**	**0.142**	< 0.125	< 0.110	< 0.117	< 0.122	< 0.118
Calcium	NLE	NLE	NLE	921	**10400**	**2460**	**3410**	**4540**	**1190**	**3710**	**2580**	**3780**	**622**	**3120**	**1740**	**526**	**13100**	**3490**	**2740**	**970**	**2050**	**1680**	**2020**	**1650**
Chromium	12,000	150,000	2,800,000	269	**203**	**58.4**	**103**	**217**	**73.5**	**97.7**	**69.7**	**122**	**66**	**155**	**136**	**88.4**	**76.6**	**70.8**	**154**	**173**	**51.8**	**73.1**	**61.5**	**114**
Cobalt	2.3	30	0.02	2.5	**3.97**	**3.14**	**2.26**	**3**	**1.63**	**5.17**	**3.3**	**3.91**	**2.34**	**2.62**	**2.33**	**1.65**	**3.31**	**2.57**	**2.41**	**1.24**	**2.36**	**1.74**	**3.13**	**0.849**
Copper	310	4,100	2.2	8	**354**	**80.6**	**26.3**	**46.1**	**66.2**	**34.8**	**38.1**	**56.1**	**19.3**	**19.5**	**33**	**12.4**	**19.8**	**20.5**	**34.7**	**20.9**	**17**	**22.9**	**26.6**	**8.46**
Iron	5500	72,000	27	55,800	**22900**	**22800**	**41800**	**53600**	**25500**	**43400**	**25400**	**45800**	**23800**	**34300**	**39800**	**24500**	**27400**	**22800**	**45700**	**45300**	**18400**	**26200**	**17800**	**28800**
Lead	400	800	NLE	19.5	**27.7**	**81.9**	**115**	**52.9**	**125**	**136**	**468**	**236**	**17**	**17.8**	**55.4**	**10.7**	**672**	**334**	**160**	**35.1**	**58.1**	**74.7**	**47.7**	**9.58**
Magnesium	NLE	NLE	NLE	7,230	**2320**	**2110**	**3840**	**6760**	**2100**	**3780**	**2450**	**4910**	**2330**	**5150**	**4680**	**2760**	**4040**	**2920**	**4920**	**5500**	**2550**	**2540**	**2430**	**3810**
Manganese	180	2,300	2.1	90.7	**74.8**	**84.2**	**55.7**	**22.9**	**33**	**143**	**73.5**	**90.2**	**73**	**33.8**	**38.6**	**38.8**	**126**	**38.9**	**82.5**	**17.9**	**48.9**	**50.3**	**42.6**	**40.4**
Mercury	1	4.3	0.0033	ND	**0.06**	**0.09**	**0.26**	**0.18**	**0.61**	**18.17**	**0.33**	**0.26**	**0.08**	**0.08**	**0.39**	**0.04**	**0.45**	**0.28**	**0.21**	**0.25**	**1.5**	**0.167**	**0.17**	**0.045**
Nickel	150	2,000	2	8.4	**12.2**	**40.4**	**7.76**	**8.67**	**5.37**	**20.3**	**8.91**	**16.4**	**5.85**	**11.9**	**12.6**	**4.4**	**11**	**9.72**	**8.9**	**7.19**	**6.05**	**7.85**	**10.6**	**4.36**
Potassium	NLE	NLE	NLE	15,400	**2820**	**3410**	**8640**	**17100**	**4530**	**7940**	**4770**	**10400**	**5540**	**11600**	**10400**	**6390**	**6490**	**5320**	**11200**	**14500**	**3630**	**5130**	**4100**	**7960**
Selenium	39	510	0.04	1.9	**1.09**	**1.36**	< 0.805	**1.99**	**0.75**	**1.18**	< 0.817	< 1.018	< 0.657	**1.23**	**1.09**	**0.988**	< 0.690	**0.335**	**1**	**3.51**	**0.9**	**1.86**	**0.973**	**1.45**
Silver	39	510	0.06	1.1	< 0.675	< 0.722	< 0.805	**1.19**	< 0.657	< 0.581	< 0.817	< 1.018	< 0.657	< 0.609	**2.76**	< 0.649	< 0.690	< 0.203	< 0.813	< 0.747	< 0.662	< 0.703	< 0.729	< 0.706
Sodium	NLE	NLE	NLE	51.6	**180**	**119**	**290**	**394**	**371**	**229**	**229**	**285**	**225**	**159**	**235**	**158**	**262**	**162**	**262**	**238**	**103**	**93.7**	**364**	**69**
Thallium	0.078	1	0.0011	ND	< 0.675	< 0.722	< 0.805	< 0.729	< 0.657	< 0.581	< 0.817	< 1.018	< 0.657	< 0.609	< 0.658	< 0.649	< 0.690	< 0.203	< 0.813	< 0.747	< 0.662	< 0.703	< 0.729	< 0.706
Vanadium	39	510	6.3	94.1	**44.3**	**299**	**66.2**	**57.7**	**36.6**	**73.3**	**44.1**	**83.5**	**42.3**	**71.4**	**122**	**45.6**	**52.1**	**55.3**	**78.5**	**49.6**	**30.6**	**38.7**	**66.4**	**47.9**
Zinc	2,300	31,000	29	81.4	**79.9**	**197**	**361**	**166**	**61.2**	**197**	**345**	**222**	**53.4**	**80.7**	**151**	**37.5**	**346**	**181**	**313**	**83.3**	**47.6**	**73.4**	**47.3**	**41.3**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-19S	B-20T	B-21U	B-22V	B-23W	B-24X	B-25Y	B-26Z	B-27AA	B-28BB	B-29CC	B-30DD	B-31EE	B-32FF	B-33GG	B-34HH	B-35II	B-36JJ	B-37KK	B-38LL
Sample Date					03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4354.13	4354.15	4354.17	4354.19	4354.21	4354.23	4354.25	4354.27	4354.29	4357.03	4357.05	4357.07	4357.09	4357.11	4357.13	4357.15	4357.17	4357.19	4357.21	4357.23
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
Acetone	6,100,000	63,000,000	240	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
Carbon Disulfide	82,000	370,000	21	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	**260** J	< 370
Methylene Chloride	36,000	310,000	2.2	--	< 570	**670**	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
2-Butanone	2,800,000	20,000,000	100	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
Benzene	1,100	5,400	0.2	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
Toluene	500,000	4,500,000	59	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Tetrachloroethene	8,600	41,000	1.6	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Chlorobenzene	29,000	140,000	4.9	--	< 280	< 350	< 340	< 310	< 270	< 290	< 340	< 320	< 300	< 340	< 310	< 330	< 370	< 470	< 430	< 280	< 310	< 260	<320	< 370
Ethylbenzene	5,400	27,000	1.5	--	< 570	< 700	< 670	< 610	< 530	< 590	< 680	< 650	< 600	< 680	< 620	< 660	< 740	< 950	< 860	< 560	< 630	< 520	< 640	< 750
m+p-Xylenes	630,000	2,700,000	19	--	< 850	< 1000	< 1000	< 920	< 800	< 880	< 1000	< 970	< 910	< 1000	< 930	< 980	< 1100	< 1400	< 1300	< 850	< 940	< 780	< 960	< 1100
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4354.12	4354.14	4354.16	4354.18	4354.2	4354.22	4354.24	4354.26	4354.28	4357.02	4357.04	4357.06	4357.08	4357.1	4357.12	4357.14	4357.16	4357.18	4357.2	4357.22
Aniline	43,000	300,000	3.7	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	**780** J	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1200	< 1100	< 1000	< 1100	**7000**	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1200	< 1100	< 1000	< 1100	**5200**	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Acenaphthylene	NLE	NLE	NLE	--	< 1100	< 1200	**170** J	< 1000	< 1100	< 1100	**120** J	**160** J	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	**170** J	< 1100	< 1200	< 1200	< 1200	< 1200
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1200	< 1100	< 1000	< 1100	**120** J	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Fluorene	230,000	2,200,000	400	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Phenanthrene	NLE	NLE	NLE	--	**150** J	< 1200	**450** J	**570** J	< 1100	**290** J	**620** J	**150** J	**160** J	< 1300	**200** J	< 1100	**140** J	< 1200	**760** J	**180** J	< 1200	< 1200	< 1200	< 1200
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	< 1200	**150** J	**150** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Di-n-butylphthalate	610,000	6,200,000	170	--	**180** JB	**590** JB	**550** JB	**170** JB	**460** JB	**400** JB	**600** JB	**120** JB	**550** JB	**1100** JB	**130** JB	**400** JB	**130** JB	**390** JB	**850** JB	**140** JB	**160** JB	**420** JB	**530** JB	< 1200
Fluoranthene	230,000	2,200,000	7,000	--	**240** J	< 1200	**1000** J	**1300**	**200** J	**340** J	**640** J	**290** J	**340** J	**270** J	**260** J	< 1100	**280** J	**270** J	**550** J	**1500**	< 1200	< 1200	< 1200	**140** J
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Pyrene	170,000	1,700,000	950	--	**260** J	< 1200	**1100** J	**1300**	**190** J	**280** J	**780** J	**380** J	**360** J	**200** J	**250** J	< 1100	**260** J	**270** J	**990** J	**1100**	< 1200	< 1200	< 1200	**150** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1200	< 1100	< 1000	< 1100	**770** J	< 1200	< 1100	< 1300	< 1300	**160** J	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(a)anthracene	150	2,100	10	--	**130** J	< 1200	**550** J	**690** J	**120** J	**180** J	**370** J	**260** J	**220** J	**160** J	**140** J	< 1100	**170** J	**170** J	**400** J	**370** J	< 1200	< 1200	< 1200	**130** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Chrysene	15,000	210,000	1,100	--	**260** J	< 1200	**1300**	**1500**	**210** J	**450** J	**740** J	**480** J	**450** J	**250** J	**340** J	< 1100	**290** J	**320** J	**810** J	**910** J	< 1200	< 1200	< 1200	**200** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**180** JB	**210** JB	**480** JB	**200** JB	**140** JB	**140** JB	< 1200	< 1100	**300** JB	**170** J	**470** J	< 1100	**160** J	**120** J	**250** J	**170** J	< 1200	< 1200	**140** J	**170** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1200	< 1100	< 1000	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(b)fluoranthene	150	2,100	35	--	**170** J	< 1200	**980** J	**1400**	**160** J	**270** J	**280** J	**310** J	**300** J	**170** J	**150** J	< 1100	**200** J	**190** J	**230** J	**350** J	< 1200	< 1200	< 1200	< 1200
Benzo(k)fluoranthene	1,500	21,000	350	--	**140** J	< 1200	**900** J	**1000** J	**120** J	**320** J	**290** J	**330** J	**210** J	**170** J	**150** J	< 1100	**240** J	**210** J	**310** J	**280** J	< 1200	< 1200	< 1200	< 1200
Benzo(a)pyrene	15	210	4	--	**150** J	< 1200	**650** J	**1900**	**150** J	< 1100	**340** J	**380** J	**270** J	**170** J	**150** J	< 1100	**180** J	**190** J	**320** J	**240** J	< 1200	< 1200	< 1200	< 1200
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	< 1200	**270** J	**1500**	< 1100	< 1100	**180** J	**240** J	< 1300	< 1300	< 1100	< 1100	< 1200	**130** J	< 1400	**160** J	< 1200	< 1200	< 1200	< 1200
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1200	< 1100	**380** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 1300	< 1100	< 1100	< 1200	< 1200	< 1400	< 1100	< 1200	< 1200	< 1200	< 1200
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1100	< 1200	< 1100	**1600**	< 1100	< 1100	**230** J	**280** J	< 1300	< 1300	< 1100	< 1100	< 1200	**150** J	< 1400	**180** J	< 1200	< 1200	< 1200	< 1200
TICs	NLE	NLE	NLE	--	**8500**	**5300**	**4500**	**4400**	**3900**	**17040**	**9700**	**3800**	**6100**	**21100**	**3600**	**4620**	**2800**	**4200**	**3500**	**6400**	**3700**	**3300**	**4900**	**3100**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0086	< 0.0089	< 0.0087	< 0.0083	< 0.0082	< 0.0084	< 0.0094	< 0.0093	< 0.0088	< 0.0091	< 0.0091	< 0.0088	< 0.0095	< 0.0092	< 0.0096	< 0.0093	< 0.0095	< 0.0095	< 0.0095	< 0.0090
Heptachlor	0.11	0.38	0.00014	--	< 0.0064	< 0.0067	< 0.0065	< 0.0062	< 0.0062	< 0.0063	< 0.0070	< 0.0070	< 0.0066	< 0.0069	< 0.0068	< 0.0066	< 0.0071	< 0.0069	< 0.0072	< 0.0069	< 0.0071	< 0.0071	< 0.0071	< 0.0067
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0129	< 0.0133	< 0.0130	< 0.0124	< 0.0123	< 0.0127	< 0.0141	< 0.0139	< 0.0132	< 0.0137	< 0.0136	< 0.0132	< 0.0142	< 0.0138	< 0.0144	< 0.0139	< 0.0142	< 0.0143	< 0.0142	< 0.0134
Endosulfan I	370	3700	0.11	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
4,4'-DDE	1.4	5.1	0.05	--	**0.206**	**0.035**	**0.096**	**0.083**	**0.054**	**0.033**	**0.147**	< 0.0093	**0.039**	**0.025**	**0.126**	**0.049**	**0.026**	**0.055**	**0.046**	**0.061**	< 0.0095	< 0.0095	**0.024**	**0.029**
Dieldrin	0.03	0.11	0.000061	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
Endrin	1.8	18	0.0068	--	< 0.0107	< 0.0111	< 0.0108	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	< 0.0110	< 0.0114	< 0.0114	< 0.0110	< 0.0118	< 0.0115	< 0.0120	< 0.0116	< 0.0118	< 0.0119	< 0.0118	< 0.0112
Endosulfan II	370	3700	0.11	--	< 0.0086	< 0.0089	< 0.0087	< 0.0083	< 0.0082	< 0.0084	< 0.0094	< 0.0093	< 0.0088	< 0.0091	< 0.0091	< 0.0088	< 0.0095	< 0.0092	< 0.0096	< 0.0093	< 0.0095	< 0.0095	< 0.0095	< 0.0090
4,4'-DDD	2.0	7.2	0.01	--	**0.077**	**0.06**	**0.083**	**0.018**	**0.029**	**0.047**	**0.167**	< 0.0139	**0.134**	**0.048**	**0.135**	**0.018**	**0.018**	**0.031**	**0.093**	**0.173**	< 0.0142	< 0.0143	**0.021**	**0.137**
4,4'-DDT	1.7	7	0.07	--	**0.409**	< 0.0244	**0.199**	**0.185**	**0.159**	**0.115**	**0.254**	< 0.0256	**0.134**	**0.07**	**0.34**	**0.161**	**0.085**	**0.099**	**0.217**	**0.038**	< 0.0261	< 0.0262	**0.051**	< 0.0246
gamma-Chlordane	1.6	6.5	0.013	--	**0.019**	< 0.0111	**0.03**	< 0.0104	**0.012**	< 0.0105	< 0.0117	< 0.0116	**0.034**	< 0.0114	**0.017**	< 0.0110	< 0.0118	< 0.0115	< 0.0120	**0.021**	< 0.0118	< 0.0119	< 0.0118	**0.018**
alpha-Chlordane	1.6	6.5	0.013	--	**0.015**	< 0.0111	**0.017**	< 0.0104	< 0.0103	< 0.0105	< 0.0117	< 0.0116	**0.022**	< 0.0114	**0.012**	< 0.0110	< 0.0118	< 0.0115	< 0.0120	**0.016**	< 0.0118	< 0.0119	< 0.0118	**0.013**
Aroclor 1016	0.39	3.7	0.01	--	< 0.0120	< 0.2485	< 0.2428	< 0.2319	< 0.2302	< 0.2362	< 0.2630	< 0.2602	< 0.2459	< 0.2561	< 0.2543	< 0.2460	< 0.2648	< 0.2571	< 0.2679	< 0.2591	< 0.2653	< 0.2666	< 0.2651	< 0.2507
Aroclor 1221	0.14	0.54	0.000069	--	< 0.0221	< 0.4570	< 0.4465	< 0.4265	< 0.4234	< 0.4345	< 0.4838	< 0.4786	< 0.4182	< 0.4711	< 0.4677	< 0.4524	< 0.4870	< 0.4729	< 0.4927	< 0.4765	< 0.4880	< 0.4903	< 0.4875	< 0.4610
Aroclor 1242	0.22	0.74	0.0053	--	< 0.0171	< 0.3549	< 0.3468	< 0.3313	< 0.3288	< 0.3375	< 0.3758	< 0.3717	< 0.3513	< 0.3659	< 0.3632	< 0.3514	< 0.3782	< 0.3673	< 0.3827	< 0.3701	< 0.3791	< 0.3808	< 0.3787	< 0.3581
Aroclor 1260	0.22	0.74	0.024	--	< 0.0039	< 0.0799	< 0.0780	< 0.0745	< 0.0740	< 0.0759	< 0.0845	< 0.0836	< 0.0790	< 0.0823	< 0.0817	< 0.0791	< 0.0851	< 0.0826	< 0.0861	< 0.0833	< 0.0853	< 0.0857	< 0.0852	< 0.0806

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-19S	B-20T	B-21U	B-22V	B-23W	B-24X	B-25Y	B-26Z	B-27AA	B-28BB	B-29CC	B-30DD	B-31EE	B-32FF	B-33GG	B-34HH	B-35II	B-36JJ	B-37KK	B-38LL
Sample Date					03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/17/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99	03/18/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**10400**	**11100**	**15400**	**9060**	**7560**	**9690**	**6450**	**10200**	**8410**	**12800**	**13500**	**6270**	**10500**	**10100**	**6890**	**10600**	**15400**	**10200**	**7400**	**8850**
Antimony	3.1	41	0.03	ND	**0.522**	**0.415**	< 0.456	< 0.430	< 0.443	**2.92**	< 0.474	< 0.448	**2.91**	**2.76**	**1.93**	< 0.428	**9.24**	< 0.479	**73.5**	< 0.438	< 0.486	< 0.431	**0.719**	**4.61**
Arsenic	0.61	2.4	0.0013	22.9	**9.42**	**15.7**	**20.7**	**5.97**	**5.96**	**13.4**	**7.64**	**7.11**	**7.72**	**12.5**	**11.2**	**5.05**	**6.93**	**13.6**	**5.47**	**10**	**10.8**	**14.8**	**5.4**	**7.37**
Barium	1,500	19,000	12	32.3	**48.5**	**67.3**	**66.1**	**27.8**	**23.6**	**40.6**	**30.1**	**26**	**50.4**	**107**	**60.8**	**23.8**	**132**	**64.7**	**68.1**	**44.4**	**40**	**64.6**	**41.7**	**37.8**
Beryllium	16	200	1.3	2	**0.933**	**0.816**	**1.61**	**0.722**	**0.636**	**0.981**	**0.532**	**0.902**	**0.857**	**1.17**	**1.42**	**0.471**	**0.777**	**0.946**	**0.573**	**0.789**	**1.48**	**1.12**	**0.608**	**0.811**
Cadmium	7	80	0.05	ND	< 0.112	< 0.079	< 0.114	< 0.107	< 0.111	< 0.113	**0.316**	< 0.112	< 0.132	**1.96**	< 0.120	< 0.107	**2.43**	**1.33**	**0.542**	< 0.110	< 0.121	< 0.108	< 0.110	**0.129**
Calcium	NLE	NLE	NLE	921	**2060**	**882**	**1060**	**2420**	**2500**	**936**	**385**	**1720**	**2400**	**2860**	**2280**	**1940**	**2120**	**824**	**21100**	**1260**	**1780**	**691**	**1070**	**2340**
Chromium	12,000	150,000	2,800,000	269	**93.7**	**74.4**	**208**	**63.8**	**57.9**	**116**	**73.3**	**86.4**	**63.4**	**104**	**137**	**45.8**	**104**	**90.5**	**47**	**124**	**164**	**145**	**57.6**	**74.5**
Cobalt	2.3	30	0.02	2.5	**2.09**	**1.39**	**1.45**	**2.73**	**2.63**	**1.29**	**0.882**	**1.92**	**2.74**	**3.53**	**2.05**	**2.1**	**2.95**	**1.31**	**4.11**	**1.46**	**0.726**	**1.16**	**2.52**	**1.85**
Copper	310	4,100	2.2	8	**16.8**	**10.5**	**31.9**	**21.8**	**26.2**	**29.3**	**20.7**	**56.5**	**19.2**	**28.9**	**19.7**	**23.1**	**17.5**	**30**	**35.1**	**53.5**	**3.38**	**18.7**	**15.3**	**9.28**
Iron	5500	72,000	27	55,800	**25500**	**14900**	**56400**	**25000**	**21100**	**35900**	**21600**	**27900**	**19800**	**36700**	**35200**	**16100**	**22500**	**28100**	**19500**	**28200**	**35800**	**40800**	**17000**	**23000**
Lead	400	800	NLE	19.5	**39.8**	**11.9**	**119**	**29.6**	**36.4**	**91.9**	**35**	**19.6**	**148**	**1060**	**240**	**45.1**	**686**	**68.3**	**1090**	**59.4**	**8.02**	**79.1**	**24**	**108**
Magnesium	NLE	NLE	NLE	7,230	**2840**	**2990**	**6420**	**3110**	**2820**	**3390**	**1870**	**3000**	**1950**	**3830**	**4220**	**2070**	**2530**	**2540**	**1910**	**2980**	**5300**	**3940**	**1490**	**2450**
Manganese	180	2,300	2.1	90.7	**43.6**	**26.5**	**30.7**	**66**	**56.5**	**25.9**	**18**	**54.5**	**31.2**	**112**	**38.8**	**49.4**	**138**	**25.7**	**110**	**27.1**	**23.5**	**18.1**	**79.1**	**27.3**
Mercury	1	4.3	0.0033	ND	**0.195**	**0.049**	**0.271**	**0.127**	**0.125**	**0.33**	**0.103**	**0.067**	**0.705**	**0.286**	**0.152**	**0.148**	**0.2**	**0.082**	**0.318**	**0.127**	**0.025**	**0.121**	**0.131**	**0.096**
Nickel	150	2,000	2	8.4	**6.98**	**4.92**	**7.45**	**7.36**	**6.55**	**5.66**	**3.75**	**5.67**	**9.97**	**12.5**	**7.49**	**6.96**	**9.36**	**5.75**	**9**	**5.49**	**5.24**	**5.99**	**7.62**	**7.91**
Potassium	NLE	NLE	NLE	15,400	**6090**	**5270**	**15500**	**5170**	**4250**	**8160**	**4600**	**6600**	**4150**	**7930**	**9860**	**3210**	**4700**	**5980**	**3430**	**6320**	**12000**	**10500**	**3380**	**5310**
Selenium	39	510	0.04	1.9	**1.33**	**1.01**	**1.83**	**1.09**	**0.731**	**1.89**	**0.841**	**0.768**	**1.69**	**1.81**	**1.57**	< 0.643	**1.39**	**2.02**	**1.46**	**1.13**	**3.25**	**2.08**	**0.919**	**0.942**
Silver	39	510	0.06	1.1	**2.83**	< 0.471	**2.79**	< 0.645	< 0.665	**2.38**	**1.24**	< 0.672	< 0.792	< 0.787	< 0.714	< 0.643	< 0.720	< 0.718	< 0.877	< 0.657	< 0.729	**2.34**	< 0.660	< 0.763
Sodium	NLE	NLE	NLE	51.6	**89.3**	**76.2**	**405**	**208**	**137**	**508**	**217**	**90.3**	**126**	**163**	**149**	**176**	**177**	**256**	**206**	**160**	**141**	**198**	**105**	**136**
Thallium	0.078	1	0.0011	ND	< 0.674	< 0.471	< 0.683	< 0.645	< 0.665	< 0.680	< 0.711	< 0.672	< 0.792	< 0.787	< 0.714	< 0.643	< 0.720	< 0.718	< 0.877	< 0.657	< 0.729	< 0.646	< 0.660	< 0.763
Vanadium	39	510	6.3	94.1	**48.2**	**40**	**95.3**	**44.1**	**36.5**	**48.1**	**33.2**	**44.6**	**40**	**73.9**	**63.3**	**34.3**	**48.8**	**40.7**	**38**	**52.8**	**71.5**	**46.5**	**44.1**	**48.5**
Zinc	2,300	31,000	29	81.4	**67.8**	**34.7**	**79**	**89.8**	**59.6**	**65.2**	**40.6**	**40.4**	**174**	**410**	**112**	**61.4**	**532**	**70.2**	**485**	**38.3**	**41.9**	**75.6**	**95.5**	**158**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-39MM	B-40NN	B-41OO	B-42PP	B-43	B-44	B-45	B-46	B-47	B-48	B-49	B-50	B-51	B-52	B-53	B-54	B-55	B-56	B-57	B-58
Sample Date					03/18/99	03/18/99	03/18/99	03/18/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4357.25	4357.27	4357.29	4357.31	4372.03	4372.05	4372.07	4372.09	4372.11	4372.13	4376.03	4376.05	4376.07	4376.09	4376.11	4376.13	4376.15	4376.17	4376.19	4376.21
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	930	< 960	< 1900	< 930	< 880	< 1100	< 870	< 850	< 800	< 880	< 1000	< 1200
Acetone	6,100,000	63,000,000	240	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	**1500**	**1200**	< 1300	< 620	< 590	< 710	< 580	< 570	< 530	< 590	< 680	< 820
Carbon Disulfide	82,000	370,000	21	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Methylene Chloride	36,000	310,000	2.2	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	**1200**	**1100**	**1100**	< 1300	< 620	< 590	< 710	**1300**	< 570	< 530	< 590	< 680	< 820
2-Butanone	2,800,000	20,000,000	100	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	< 930	< 960	< 1900	< 930	< 880	< 1100	< 870	< 850	< 800	< 880	< 1000	< 1200
Benzene	1,100	5,400	0.2	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	< 620	< 640	< 1300	< 620	< 590	< 710	< 580	< 570	< 530	< 590	< 680	< 820
Toluene	500,000	4,500,000	59	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Tetrachloroethene	8,600	41,000	1.6	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Chlorobenzene	29,000	140,000	4.9	--	< 340	< 380	< 380	< 500	< 330	< 380	< 330	< 310	< 310	< 320	< 630	< 310	< 290	< 360	< 290	< 280	< 270	< 290	< 340	< 410
Ethylbenzene	5,400	27,000	1.5	--	< 670	< 770	< 750	< 1000	< 650	< 760	< 650	< 630	< 620	< 640	< 1300	< 620	< 590	**1300**	< 580	< 570	< 530	< 590	< 680	< 820
m+p-Xylenes	630,000	2,700,000	19	--	< 1000	< 1200	< 1100	< 1500	< 980	< 1100	< 980	< 940	< 930	< 960	< 1900	< 930	< 880	**1600**	< 870	< 850	< 800	< 880	< 1000	< 1200
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	**2000**	**1900**	**2000**	**2000**	**4100**	**2100**	ND	**6200**	**1800**	**2000**	ND	ND	ND	**3600**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4357.24	4357.26	4357.28	4357.3	4372.02	4372.04	4372.06	4372.08	4372.1	4372.12	4376.02	4376.04	4376.06	4376.08	4376.1	4376.12	4376.14	4376.16	4376.18	4376.2
Aniline	43,000	300,000	3.7	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1200	**1200** J	< 1200	**200** J	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**350** J	< 1100	< 1100	< 1200	< 1100	< 1300	**1600** J
Benzyl alcohol	610,000	6,200,000	37	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
4-Methylphenol	610,000	6,200,000	110	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Nitrobenzene	4,800	24,000	0.079	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Naphthalene	3,600	18,000	0.47	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**230** J	< 1100	< 1100	< 1200	< 1100	< 1300	**240** J
4-Chloroaniline	2,400	8,600	0.13	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
2-Methylnaphthalene	23,000	220,000	14	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**360** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Acenaphthylene	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**150** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**180** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Acenaphthene	340,000	3,300,000	410	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Dibenzofuran	7,800	100,000	11	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Diethylphthalate	4,900,000	49,000,000	470	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	**130** J	< 1100	< 1200	< 1100	< 1300	< 2000
Fluorene	230,000	2,200,000	400	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**170** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Azobenzene	5,100	23,000	0.8	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Hexachlorobenzene	300	1,100	0.53	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Phenanthrene	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	**140** J	**170** J	< 1000	**540** J	**360** J	< 1200	< 1200	< 1500	**190** J	< 1100	**880** J	**140** J	**120** J	< 1200	**230** J	**290** J	**220** J
Anthracene	1,700,000	17,000,000	4,200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**210** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**140** J	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Di-n-butylphthalate	610,000	6,200,000	170	--	**370** JB	**170** JB	**120** JB	**470** JB	**810** JB	**790** JB	**630** JB	**450** JB	**390** JB	**220** JB	**650** JB	**260** JB	**980** JB	**590** JB	**1100** B	**550** JB	**260** JB	**1300** B	**590** JB	**2500** B
Fluoranthene	230,000	2,200,000	7,000	--	**420** J	**470** J	< 1200	**190** J	**390** J	< 1000	**1100** J	**460** J	< 1200	**210** J	< 1500	**290** J	< 1100	**530** J	**290** J	**260** J	**150** J	**430** J	**700** J	**210** J
Benzidine	0.5	7.5	0.00024	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Pyrene	170,000	1,700,000	950	--	**360** J	**640** J	< 1200	**230** J	**340** J	< 1000	**1200**	**490** J	**170** J	**360** J	**340** J	**410** J	< 1100	**880** J	**160** J	**260** J	**160** J	**400** J	**660** J	**290** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	**160** J	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(a)anthracene	150	2,100	10	--	**210** J	**400** J	< 1200	< 1400	**250** J	< 1000	**580** J	**250** J	< 1200	**200** J	< 1500	**200** J	< 1100	**360** J	< 1100	**140** J	< 1200	**200** J	**400** J	< 2000
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Chrysene	15,000	210,000	1,100	--	**480** J	**660** J	< 1200	**200** J	**450** J	< 1000	**1000** J	**480** J	**180** J	**440** J	**350** J	**400** J	< 1100	**730** J	**230** J	**260** J	**170** J	**390** J	**630** J	**290** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**160** J	**500** J	**190** J	**660** J	**150** J	**130** J	**410** J	**190** J	**280** J	**260** J	**370** J	**150** J	**150** J	**340** J	< 1100	**200** J	< 1200	**220** J	< 1300	**3600**
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(b)fluoranthene	150	2,100	35	--	**150** J	**430** J	< 1200	< 1400	**260** J	< 1000	**560** J	**260** J	< 1200	**230** J	< 1500	**180** J	< 1100	**190** J	**110** J	**120** J	< 1200	**180** J	**310** J	< 2000
Benzo(k)fluoranthene	1,500	21,000	350	--	**150** J	**430** J	< 1200	< 1400	**250** J	< 1000	**530** J	**220** J	< 1200	**210** J	< 1500	**180** J	< 1100	**200** J	**150** J	**140** J	< 1200	**180** J	**280** J	< 2000
Benzo(a)pyrene	15	210	4	--	**220** J	**390** J	< 1200	< 1400	**240** J	< 1000	**640** J	**250** J	< 1200	**210** J	< 1500	**210** J	< 1100	**310** J	**120** J	**130** J	< 1200	**190** J	**350** J	< 2000
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**220** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**170** J	< 1100	< 1100	< 1200	**170** J	**240** J	< 2000
Dibenz(a,h)anthracene	15	210	11	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	< 1100	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1300	< 2000
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1200	< 1400	< 1200	< 1400	< 1100	< 1000	**250** J	< 1100	< 1200	< 1200	< 1500	< 1200	< 1100	**240** J	< 1100	< 1100	< 1200	**170** J	**250** J	< 2000
TICs	NLE	NLE	NLE	--	**12400**	**12200**	**3300**	**7800**	**29800**	**3900**	**3500**	**3300**	**2100**	**2500**	ND	ND	**6000**	**25850**	**235400**	**1000**	**3200**	**6360**	**4600**	**74300**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0089	< 0.0096	< 0.0089	< 0.0096	< 0.0091	< 0.0087	< 0.0096	< 0.0090	< 0.0091	< 0.0093	< 0.0101	< 0.0091	< 0.0092	< 0.0088	< 0.0091	< 0.0088	< 0.0090	< 0.0092	< 0.0091	< 0.0164
Heptachlor	0.11	0.38	0.00014	--	< 0.0066	< 0.0072	< 0.0066	< 0.0072	< 0.0069	< 0.0065	< 0.0072	< 0.0067	< 0.0068	< 0.0070	< 0.0076	< 0.0068	< 0.0069	< 0.0066	< 0.0068	< 0.0066	< 0.0067	< 0.0069	< 0.0068	< 0.0123
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0133	< 0.0144	< 0.0133	< 0.0143	< 0.0137	< 0.0131	< 0.0144	< 0.0135	< 0.0137	< 0.0139	< 0.0151	< 0.0136	< 0.0138	< 0.0133	< 0.0137	< 0.0133	< 0.0135	< 0.0138	< 0.0137	< 0.0246
Endosulfan I	370	3700	0.11	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	< 0.0114	< 0.0116	< 0.0126	< 0.0114	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
4,4'-DDE	1.4	5.1	0.05	--	**0.078**	**0.056**	**0.014**	**0.042**	**0.097**	< 0.0087	**0.082**	**0.024**	**0.158**	**0.12**	**0.081**	**0.043**	**0.045**	< 0.0088	**0.073**	**0.015**	**0.022**	**0.13**	**0.093**	< 0.0164
Dieldrin	0.03	0.11	0.000061	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	**0.011**	< 0.0116	< 0.0126	**0.022**	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
Endrin	1.8	18	0.0068	--	< 0.0111	< 0.0120	< 0.0111	< 0.0119	< 0.0114	< 0.0109	< 0.0120	< 0.0112	< 0.0114	< 0.0116	< 0.0126	< 0.0114	< 0.0115	< 0.0110	< 0.0114	< 0.0110	< 0.0112	< 0.0115	< 0.0114	< 0.0205
Endosulfan II	370	3700	0.11	--	< 0.0089	< 0.0096	< 0.0089	**0.042**	< 0.0091	< 0.0087	< 0.0096	< 0.0090	< 0.0091	< 0.0093	< 0.0101	< 0.0091	< 0.0092	< 0.0088	< 0.0091	< 0.0088	< 0.0090	< 0.0092	< 0.0091	< 0.0164
4,4'-DDD	2.0	7.2	0.01	--	**0.302**	**0.087**	< 0.0133	**0.119**	**0.35**	< 0.0131	**0.358**	**0.108**	**0.309**	**0.458**	**0.203**	**0.071**	**0.067**	**0.039**	**0.407**	< 0.0133	**0.043**	**0.101**	**0.414**	**0.087**
4,4'-DDT	1.7	7	0.07	--	**0.032**	< 0.0264	**0.036**	< 0.0263	**0.292**	< 0.0240	**0.042**	< 0.0247	**0.043**	< 0.0256	< 0.0278	**0.031**	**0.28**	< 0.0243	**0.047**	**0.055**	< 0.0247	**0.247**	**0.057**	< 0.0451
gamma-Chlordane	1.6	6.5	0.013	--	**0.024**	**0.021**	< 0.0111	< 0.0119	**0.02**	< 0.0109	**0.016**	**0.012**	**0.022**	**0.021**	**0.016**	**0.02**	< 0.0115	< 0.0110	**0.023**	**0.013**	< 0.0112	**0.012**	**0.028**	< 0.0205
alpha-Chlordane	1.6	6.5	0.013	--	**0.022**	**0.029**	< 0.0111	< 0.0119	**0.015**	< 0.0109	**0.013**	< 0.0112	**0.014**	**0.012**	< 0.0126	**0.018**	< 0.0115	< 0.0110	**0.016**	< 0.0110	< 0.0112	< 0.0115	**0.018**	< 0.0205
Aroclor 1016	0.39	3.7	0.01	--	< 0.2481	< 0.2688	< 0.2482	< 0.2675	< 0.2560	< 0.2443	< 0.2684	< 0.2519	< 0.2555	< 0.2603	< 0.2827	< 0.2543	< 0.2569	< 0.2474	< 0.2557	< 0.2474	< 0.2519	< 0.2583	< 0.2557	< 0.4591
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4563	< 0.4943	< 0.4565	< 0.4919	< 0.4708	< 0.4493	< 0.4936	< 0.4633	< 0.4700	< 0.4788	< 0.4922	< 0.4676	< 0.4724	< 0.4550	< 0.4704	< 0.4550	< 0.4632	< 0.4750	< 0.4703	< 0.8445
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3544	< 0.3839	< 0.3546	< 0.3821	< 0.3657	< 0.3490	< 0.3834	< 0.3598	< 0.3650	< 0.3719	< 0.4039	< 0.3632	< 0.3670	< 0.3534	< 0.3653	< 0.3534	< 0.3598	< 0.3689	< 0.3653	< 0.6559
Aroclor 1260	0.22	0.74	0.024	--	< 0.0797	< 0.0864	< 0.0798	< 0.0860	< 0.0823	< 0.0785	< 0.0863	< 0.0810	< 0.0821	< 0.0837	< 0.0909	< 0.0817	< 0.0826	< 0.0795	< 0.0822	< 0.0795	< 0.0810	< 0.0830	< 0.0822	< 0.1476

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-39MM	B-40NN	B-41OO	B-42PP	B-43	B-44	B-45	B-46	B-47	B-48	B-49	B-50	B-51	B-52	B-53	B-54	B-55	B-56	B-57	B-58
Sample Date					03/18/99	03/18/99	03/18/99	03/18/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/26/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**12100**	**9160**	**9440**	**7360**	**10600**	**8030**	**7910**	**9610**	**8180**	**15300**	**36900**	**13500**	**6650**	**17000**	**9670**	**7520**	**14800**	**11800**	**9840**	**9520**
Antimony	3.1	41	0.03	ND	**4.68**	**5.07**	**0.635**	**7.26**	**0.531**	**0.492**	**3.1**	**1.63**	**19.8**	**1.94**	**29.8**	**2.77**	**0.503**	< 0.424	**0.469**	< 0.440	**0.537**	< 0.463	**4.02**	< 0.741
Arsenic	0.61	2.4	0.0013	22.9	**8.32**	**8.77**	**10.6**	**9.93**	**11.5**	**5.98**	**8.56**	**11.1**	**8.45**	**9.18**	**9.76**	**10.7**	**7.55**	**11.5**	**5.86**	**11.8**	**7.37**	**11.7**	**8.78**	**8.56**
Barium	1,500	19,000	12	32.3	**60.9**	**131**	**38.4**	**68.2**	**63.9**	**12**	**62.5**	**57.6**	**40.3**	**55.1**	**157**	**45**	**26.7**	**58.2**	**39.3**	**32.7**	**10.7**	**30.9**	**79.3**	**66.8**
Beryllium	16	200	1.3	2	**0.923**	**0.854**	**0.851**	**1.07**	**1**	**0.609**	**0.768**	**1.05**	**0.836**	**1.47**	**1.05**	**1.09**	**0.803**	**1.32**	**0.653**	**0.726**	**1.02**	**0.802**	**0.88**	**0.646**
Cadmium	7	80	0.05	ND	**0.246**	**5.29**	< 0.118	< 0.116	< 0.104	< 0.107	**0.526**	< 0.112	**0.228**	< 0.115	**0.488**	**0.546**	< 0.099	< 0.106	< 0.113	**0.39**	< 0.112	< 0.116	**1.26**	< 0.185
Calcium	NLE	NLE	NLE	921	**5270**	**4130**	**1810**	**1450**	**2420**	**716**	**3340**	**2560**	**1740**	**1550**	**4080**	**2640**	**620**	**2370**	**526**	**2480**	**824**	**748**	**2050**	**4140**
Chromium	12,000	150,000	2,800,000	269	**85.2**	**465**	**66.6**	**84.8**	**103**	**57.6**	**58.1**	**94.1**	**79.8**	**96.1**	**83.6**	**84.7**	**82.4**	**137**	**51.3**	**67.4**	**108**	**97.8**	**74.5**	**57.5**
Cobalt	2.3	30	0.02	2.5	**3.48**	**2.89**	**1.35**	**1.18**	**1.63**	**2.4**	**4.65**	**2.85**	**3**	**2.76**	**6.89**	**3.87**	**0.865**	**2.88**	**1.57**	**2.09**	**1.66**	**1.7**	**3**	**3.71**
Copper	310	4,100	2.2	8	**20.1**	**135**	**14**	**25.4**	**24.1**	**4.32**	**49.4**	**44.4**	**19.5**	**10.1**	**40.1**	**28.9**	**12.9**	**24.7**	**11.4**	**18.2**	**18.3**	**22.5**	**22.7**	**38.8**
Iron	5500	72,000	27	55,800	**27600**	**27400**	**21700**	**28100**	**27200**	**21200**	**23100**	**31400**	**24200**	**31700**	**32200**	**27800**	**21800**	**38100**	**17500**	**24000**	**38800**	**32400**	**26600**	**34900**
Lead	400	800	NLE	19.5	**181**	**112**	**17.4**	**90.1**	**134**	**4.48**	**87.2**	**90.6**	**141**	**59.1**	**1490**	**188**	**21**	**30**	**17.3**	**49.2**	**8.41**	**50.4**	**883**	**187**
Magnesium	NLE	NLE	NLE	7,230	**3000**	**2530**	**1880**	**2670**	**3560**	**1450**	**2820**	**3290**	**2170**	**3490**	**3000**	**2780**	**2400**	**4490**	**1720**	**2880**	**3530**	**3380**	**2460**	**2380**
Manganese	180	2,300	2.1	90.7	**132**	**43.1**	**29.3**	**21**	**39.9**	**91.7**	**101**	**80.9**	**75.7**	**40.3**	**152**	**91.1**	**16.9**	**95.2**	**38.2**	**60.9**	**27.1**	**38.6**	**35.2**	**222**
Mercury	1	4.3	0.0033	ND	**0.28**	**2.17**	**0.186**	**0.217**	**0.249**	**0.067**	**0.26**	**0.297**	**0.838**	**0.098**	**0.221**	**0.155**	**0.048**	**0.086**	**0.166**	**4.472**	**0.516**	**0.168**	**0.367**	**2.805**
Nickel	150	2,000	2	8.4	**17.3**	**15.4**	**5.91**	**6.73**	**7.54**	**3.99**	**12.6**	**17.9**	**12.7**	**12.3**	**19.4**	**15.3**	**3.94**	**14.4**	**5.29**	**7.6**	**9.07**	**6.45**	**11**	**16.1**
Potassium	NLE	NLE	NLE	15,400	**5970**	**5190**	**3620**	**5950**	**6710**	**3640**	**3530**	**6230**	**4600**	**7360**	**5170**	**4390**	**5820**	**10400**	**3240**	**5220**	**5180**	**7380**	**5110**	**3680**
Selenium	39	510	0.04	1.9	**1.04**	**1.45**	**1.29**	**1.18**	**0.752**	< 0.643	**1.16**	**0.698**	**0.722**	< 0.692	< 0.987	< 0.652	**0.648**	**0.896**	< 0.676	< 0.661	**0.995**	< 0.694	**0.847**	< 1.112
Silver	39	510	0.06	1.1	< 0.781	**124**	< 0.706	< 0.699	< 0.626	< 0.643	< 0.734	**1.93**	**1.71**	< 0.692	< 0.987	< 0.652	< 0.592	< 0.635	< 0.676	< 0.661	< 0.670	< 0.694	< 0.751	< 1.112
Sodium	NLE	NLE	NLE	51.6	**148**	**215**	**152**	**223**	**165**	**168**	**215**	**192**	**219**	**161**	**310**	**356**	**137**	**269**	**537**	**185**	**107**	**528**	**169**	**312**
Thallium	0.078	1	0.0011	ND	< 0.781	< 0.862	< 0.706	< 0.699	< 0.626	< 0.643	< 0.734	< 0.670	< 0.599	< 0.692	< 0.987	< 0.652	< 0.592	< 0.635	< 0.676	< 0.661	< 0.670	< 0.694	< 0.751	< 1.112
Vanadium	39	510	6.3	94.1	**121**	**71.4**	**37.9**	**37.6**	**53**	**58.3**	**50.3**	**107**	**39.5**	**60.9**	**48.6**	**62.4**	**37.1**	**78.1**	**29.6**	**38.5**	**58.2**	**52**	**73**	**42.1**
Zinc	2,300	31,000	29	81.4	**249**	**518**	**37.6**	**125**	**81.6**	**25**	**320**	**221**	**231**	**129**	**651**	**360**	**32.2**	**85.7**	**30.9**	**91**	**72.7**	**44.3**	**249**	**189**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-59	B-60	B-61	B-62	B-63	B-64	B-65	B-66	B-67	B-68	B-69	B-70	B-71	B-72	B-73	B-74	B-75	B-76	B-77	B-78
Sample Date					03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4376.23	4376.25	4376.27	4376.29	4376.31	4376.33	4376.35	4376.37	4382.03	4382.05	4382.07	4382.09	4382.11	4382.13	4382.15	4382.17	4382.19	4382.21	4382.23	4382.25
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
Acetone	6,100,000	63,000,000	240	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
Carbon Disulfide	82,000	370,000	21	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Methylene Chloride	36,000	310,000	2.2	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
2-Butanone	2,800,000	20,000,000	100	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
Benzene	1,100	5,400	0.2	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 640	< 620	< 680	< 610	< 590	< 710	< 1400	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
Toluene	500,000	4,500,000	59	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Tetrachloroethene	8,600	41,000	1.6	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Chlorobenzene	29,000	140,000	4.9	--	< 320	< 310	< 340	< 310	< 290	< 350	< 710	< 300	< 300	< 280	< 310	< 320	< 280	< 320	< 330	< 330	< 340	< 300	< 340	< 340
Ethylbenzene	5,400	27,000	1.5	--	< 640	< 620	< 680	< 610	< 590	< 710	**750** J	< 600	< 590	< 560	< 620	< 630	< 550	< 640	< 670	< 670	< 680	< 590	< 680	< 670
m+p-Xylenes	630,000	2,700,000	19	--	< 960	< 940	< 1000	< 920	< 880	< 1100	< 2100	< 890	< 890	< 840	< 920	< 950	< 830	< 950	< 1000	< 1000	< 1000	< 890	< 1000	< 1000
TICs	NLE	NLE	NLE	--	**4600**	**2100**	ND	ND	ND	ND	**38500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2200**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4376.22	4376.24	4376.26	4376.28	4376.3	4376.32	4376.34	4376.36	4382.02	4382.04	4382.06	4382.08	4382.1	4382.12	4382.14	4382.16	4382.18	4382.2	4382.22	4382.24
Aniline	43,000	300,000	3.7	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
1,4-Dichlorobenzene	2,400	12,000	0.4	--	**260** J	< 1200	< 1200	**610** J	< 1100	< 1300	**4200**	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	**230** J	< 1300	< 1100	< 1200	< 1100	**400** J
Benzyl alcohol	610,000	6,200,000	37	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
4-Methylphenol	610,000	6,200,000	110	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**1100** J	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Nitrobenzene	4,800	24,000	0.079	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Naphthalene	3,600	18,000	0.47	--	< 1300	< 1200	< 1200	**540** J	< 1100	< 1300	**10000**	**560** J	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	**300** J
4-Chloroaniline	2,400	8,600	0.13	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
2-Methylnaphthalene	23,000	220,000	14	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**520** J	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Acenaphthylene	NLE	NLE	NLE	--	< 1300	< 1200	< 1200	< 1400	**270** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	**180** J	< 1200	**490** J	< 1100	< 1200	< 1100	< 1400
Acenaphthene	340,000	3,300,000	410	--	< 1300	< 1200	< 1200	< 1400	**560** J	< 1300	< 2000	**480** J	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Dibenzofuran	7,800	100,000	11	--	< 1300	< 1200	< 1200	< 1400	**330** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Diethylphthalate	4,900,000	49,000,000	470	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	**220** J	< 1200	< 1200	**180** J	**150** J	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	**230** JB
Fluorene	230,000	2,200,000	400	--	< 1300	< 1200	< 1200	< 1400	**740** J	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Azobenzene	5,100	23,000	0.8	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Hexachlorobenzene	300	1,100	0.53	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Phenanthrene	NLE	NLE	NLE	--	**530** J	< 1200	< 1200	**180** J	**6300**	**260** J	< 2000	< 1200	< 1200	< 1200	**1000** J	**240** J	**150** J	**580** J	< 1200	**1300**	< 1100	< 1200	**140** J	**290** J
Anthracene	1,700,000	17,000,000	4,200	--	**150** J	< 1200	< 1200	< 1400	**1900**	< 1300	< 2000	< 1200	< 1200	<1200	**200** J	< 1100	< 1100	**250** J	< 1200	**510** J	< 1100	< 1200	< 1100	< 1400
Di-n-butylphthalate	610,000	6,200,000	170	--	**630** JB	**320** JB	**170** JB	**210** JB	**420** JB	< 1300	**2700** B	**650** JB	**220** JB	**680** JB	**610** JB	**440** JB	**520** JB	**530** JB	**740** JB	**230** JB	**130** JB	**220** JB	**160** JB	**920** JB
Fluoranthene	230,000	2,200,000	7,000	--	**630** J	< 1200	< 1200	**310** J	**8000**	**410** J	< 2000	**960** J	**750** J	<1200	**2100**	**510** J	**760** J	**1400**	<1200	**2400**	< 1100	**200** J	**180** J	**400** J
Benzidine	0.5	7.5	0.00024	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Pyrene	170,000	1,700,000	950	--	**630** J	< 1200	< 1200	**240** J	**6200**	**340** J	< 2000	**910** J	**680** J	< 1200	**1600**	**450** J	**700** J	**1300**	< 1200	**2400**	< 1100	**190** J	**190** J	**550** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzo(a)anthracene	150	2,100	10	--	**310** J	< 1200	< 1200	**240** J	**3600**	**220** J	< 2000	**290** J	**410** J	< 1200	**920** J	**260** J	**500** J	**780** J	< 1200	**1300**	< 1100	< 1200	< 1100	**160** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	< 1200	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Chrysene	15,000	210,000	1,100	--	**580** J	< 1200	< 1200	**230** J	**5400**	**350** J	< 2000	**460** J	**700** J	< 1200	**1600**	**640** J	**810** J	**1400**	< 1200	**2300**	< 1100	**200** J	**200** J	**470** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**800** J	**160** J	**180** J	**28000** D	**170** JB	**490** JB	**4900** B	**1900** B	**230** JB	**160** JB	< 1200	**190** JB	**330** JB	**920** JB	**280** JB	**350** JB	< 1100	**180** JB	**270** JB	**5000**
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1300	< 1200	< 1200	< 1400	< 1100	< 1300	< 2000	< 1200	< 1200	< 1200	< 1200	< 1100	< 1100	**260** J	< 1200	< 1300	< 1100	< 1200	< 1100	< 1400
Benzo(b)fluoranthene	150	2,100	35	--	**250** J	< 1200	< 1200	< 1400	**3400**	**170** J	< 2000	**300** J	**450** J	< 1200	**860** J	**400** J	**670** J	**880** J	< 1200	**1500**	< 1100	**130** J	< 1100	< 1400
Benzo(k)fluoranthene	1,500	21,000	350	--	**230** J	< 1200	< 1200	< 1400	**2300**	**150** J	< 2000	**310** J	**400** J	< 1200	**860** J	**340** J	**490** J	**890** J	< 1200	**1400**	< 1100	< 1200	< 1100	< 1400
Benzo(a)pyrene	15	210	4	--	**270** J	< 1200	< 1200	< 1400	**3100**	**180** J	< 2000	**250** J	**450** J	< 1200	**960** J	**290** J	**480** J	**890** J	< 1200	**1500**	< 1100	< 1200	< 1100	< 1400
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**150** J	< 1200	< 1200	< 1400	**1700**	< 1300	< 2000	< 1200	**200** J	< 1200	**650** J	**240** J	**200** J	**450** J	< 1200	**750** J	< 1100	< 1200	< 1100	< 1400
Dibenz(a,h)anthracene	15	210	11	--	< 1300	< 1200	< 1200	< 1400	**820** J	< 1300	< 2000	< 1200	< 1200	< 1200	**220** J	< 1100	< 1100	< 1200	< 1200	**290** J	< 1100	< 1200	< 1100	< 1400
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**160** J	< 1200	< 1200	< 1400	**1500**	< 1300	< 2000	< 1200	**200** J	< 1200	**700** J	**250** J	**180** J	**430** J	< 1200	**700** J	< 1100	< 1200	< 1100	< 1400
TICs	NLE	NLE	NLE	--	**168400**	**1700**	**4100**	**53800**	**13200**	**34900**	**55400**	**1800**	**15800**	**8450**	**26700**	**9570**	**6860**	**33300**	**11200**	**140400**	**7620**	**59300**	**39400**	**79900**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0094	< 0.0090	< 0.0094	< 0.0092	< 0.0093	< 0.0101	< 0.0165	< 0.0092	< 0.0091	< 0.0087	< 0.0091	< 0.0085	< 0.0084	< 0.0094	< 0.0094	< 0.0093	< 0.0088	< 0.0092	< 0.0089	< 0.0113
Heptachlor	0.11	0.38	0.00014	--	< 0.0070	< 0.0068	< 0.0070	< 0.0069	< 0.0070	< 0.0076	< 0.0124	< 0.0069	< 0.0068	< 0.0065	< 0.0068	< 0.0064	< 0.0063	< 0.0070	< 0.0071	< 0.0070	< 0.0066	< 0.0069	< 0.0067	< 0.0085
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0140	< 0.0135	< 0.0141	< 0.0138	< 0.0139	< 0.0152	< 0.0248	< 0.0138	< 0.0137	< 0.0131	< 0.0137	< 0.0128	< 0.0126	< 0.0140	< 0.0142	< 0.0139	< 0.0131	< 0.0138	< 0.0133	< 0.0169
Endosulfan I	370	3700	0.11	--	< 0.0117	< 0.0113	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	< 0.0114	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	< 0.0116	< 0.0109	< 0.0115	< 0.0111	< 0.0141
4,4'-DDE	1.4	5.1	0.05	--	**0.077**	**0.072**	**0.045**	**0.054**	**0.08**	**0.073**	< 0.0165	**0.052**	**0.153**	**0.074**	< 0.0091	**0.04**	**0.01**	**0.045**	**0.023**	**0.2**	**0.02**	**0.198**	**0.208**	**0.122**
Dieldrin	0.03	0.11	0.000061	--	< 0.0117	**0.022**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	**0.033**	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	**0.12**	< 0.0109	**0.121**	**0.128**	< 0.0141
Endrin	1.8	18	0.0068	--	< 0.0117	< 0.0113	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	< 0.0114	< 0.0109	< 0.0114	< 0.0107	< 0.0105	< 0.0117	< 0.0118	< 0.0116	< 0.0109	< 0.0115	< 0.0111	< 0.0141
Endosulfan II	370	3700	0.11	--	< 0.0094	< 0.0090	< 0.0094	< 0.0092	< 0.0093	< 0.0101	< 0.0165	< 0.0092	< 0.0091	< 0.0087	< 0.0091	< 0.0085	< 0.0084	< 0.0094	< 0.0094	< 0.0093	< 0.0088	< 0.0092	< 0.0089	< 0.0113
4,4'-DDD	2.0	7.2	0.01	--	**0.144**	**0.0135**	**0.0124**	**0.272**	**0.043**	**0.1**	**0.144**	**0.173**	**0.737**	**0.03**	< 0.0137	**0.058**	< 0.0126	**0.174**	**0.042**	**2.173**	**0.025**	**1.108**	**0.973**	**0.099**
4,4'-DDT	1.7	7	0.07	--	**0.078**	**0.0145**	< 0.0258	< 0.0254	**0.214**	< 0.0279	**0.658**	< 0.0253	**0.093**	**0.104**	< 0.0251	**0.029**	**0.048**	< 0.0257	< 0.0260	**0.121**	< 0.0241	**0.846**	**0.344**	**0.08**
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0117	**0.0113**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	**0.014**	**0.08**	**0.021**	< 0.0114	**0.011**	< 0.0105	**0.022**	< 0.0118	**0.209**	< 0.0109	**0.065**	**0.045**	**0.043**
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0117	**0.0113**	< 0.0117	< 0.0115	< 0.0116	< 0.0127	< 0.0206	< 0.0115	**0.062**	**0.023**	< 0.0114	< 0.0107	< 0.0105	**0.018**	< 0.0118	**0.204**	< 0.0109	**0.042**	**0.034**	**0.034**
Aroclor 1016	0.39	3.7	0.01	--	< 0.2621	< 0.2526	< 0.2630	< 0.2584	< 0.2603	**4.763**	< 0.4624	**0.014**	< 0.2552	< 0.2438	< 0.2555	< 0.2388	< 0.2343	< 0.2621	< 0.2642	< 0.2595	< 0.2451	< 0.2572	< 0.2486	< 0.0158
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4820	< 0.4645	< 0.4837	< 0.4752	< 0.4787	< 0.0261	< 0.8504	< 0.4729	< 0.4693	< 0.4485	< 0.4699	< 0.4392	< 0.4310	< 0.4820	< 0.4860	< 0.4773	< 0.4507	< 0.4730	< 0.4573	< 0.0290
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3744	< 0.3608	< 0.3757	< 0.3691	< 0.3718	< 0.0203	< 0.6605	< 0.3673	< 0.3645	< 0.3483	< 0.3650	< 0.3411	< 0.3347	< 0.3744	< 0.3775	< 0.3707	< 0.3501	< 0.3674	< 0.3552	**21.554**
Aroclor 1260	0.22	0.74	0.024	--	< 0.0842	< 0.0812	< 0.0845	< 0.0831	< 0.0837	< 0.0046	< 0.1486	< 0.0826	< 0.0820	< 0.0784	< 0.0821	< 0.0768	< 0.0753	< 0.0842	< 0.0849	< 0.0834	< 0.0788	< 0.0827	< 0.0799	< 0.0051

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-59	B-60	B-61	B-62	B-63	B-64	B-65	B-66	B-67	B-68	B-69	B-70	B-71	B-72	B-73	B-74	B-75	B-76	B-77	B-78
Sample Date					03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**7790**	**15400**	**8470**	**12400**	**11200**	**13900**	**10200**	**8630**	**9030**	**11700**	**17500**	**18100**	**6300**	**10700**	**18500**	**12000**	**9690**	**15000**	**13600**	**9350**
Antimony	3.1	41	0.03	ND	**1.3**	**4.46**	**4.48**	**1.95**	**0.648**	**0.627**	**10.3**	< 0.464	**5.21**	**0.537**	< 0.489	< 0.397	**0.53**	**6.95**	< 0.477	**1.11**	< 0.444	**9.21**	**5.47**	**1.52**
Arsenic	0.61	2.4	0.0013	22.9	**8.72**	**8.62**	**7.85**	**5.72**	**8.89**	**11.9**	**8.31**	**8.66**	**18.3**	**8.71**	**13.4**	**15.7**	**5.61**	**7.99**	**18.6**	**10.2**	**11.2**	**10.5**	**9.73**	**11**
Barium	1,500	19,000	12	32.3	**64.1**	**43.3**	**53.6**	**85**	**39.8**	**83.2**	**498**	**35.6**	**48.2**	**66.9**	**28**	**46.9**	**20.4**	**85.3**	**94.3**	**304**	**60.6**	**66.9**	**117**	**86.4**
Beryllium	16	200	1.3	2	**0.745**	**0.759**	**0.7**	**0.58**	**0.907**	**1.3**	**0.461**	**1.02**	**0.768**	**0.962**	**2.07**	**1.61**	**0.45**	**0.87**	**2.05**	**0.992**	**1.16**	**1.7**	**1.29**	**0.764**
Cadmium	7	80	0.05	ND	< 0.126	< 0.116	< 0.123	**2.25**	**0.124**	< 0.135	< 0.206	< 0.116	**5.63**	< 0.117	< 0.122	< 0.099	< 0.107	**0.751**	< 0.119	**1.67**	< 0.111	**0.152**	< 0.113	**0.27**
Calcium	NLE	NLE	NLE	921	**8930**	**1500**	**2460**	**3850**	**894**	**706**	**8150**	**431**	**4960**	**2150**	**1480**	**1760**	**5240**	**49400**	**4170**	**7270**	**765**	**1990**	**1020**	**2000**
Chromium	12,000	150,000	2,800,000	269	**75.4**	**62**	**61.5**	**107**	**69.1**	**119**	**90.7**	**99.2**	**92.2**	**80.8**	**194**	**196**	**48.4**	**76**	**254**	**89.7**	**110**	**103**	**101**	**74.9**
Cobalt	2.3	30	0.02	2.5	**3.06**	**4.93**	**3.56**	**4.81**	**3.02**	**2.48**	**5.68**	**1.42**	**6.07**	**2.4**	**1.76**	**2.73**	**2.18**	**2.96**	**0.695**	**5.47**	**1.72**	**3.21**	**1.97**	**4.69**
Copper	310	4,100	2.2	8	**63.5**	**12.6**	**16.1**	**91.7**	**16.6**	**72.5**	**145**	**18**	**69.9**	**10.6**	**7.53**	**36.6**	**23.5**	**23.4**	**28.2**	**115**	**3.76**	**15**	**13.4**	**58.5**
Iron	5500	72,000	27	55,800	**80600**	**25600**	**23200**	**37700**	**30600**	**40600**	**69200**	**29200**	**80500**	**18000**	**61600**	**50000**	**26100**	**27300**	**68200**	**36000**	**31000**	**36600**	**33200**	**47100**
Lead	400	800	NLE	19.5	**169**	**666**	**352**	**199**	**37.1**	**117**	**222**	**20.3**	**342**	**25.1**	**29.2**	**69.2**	**46.1**	**353**	**47.5**	**137**	**8.35**	**549**	**255**	**145**
Magnesium	NLE	NLE	NLE	7,230	**2380**	**2090**	**2330**	**1460**	**2120**	**3600**	**1640**	**2840**	**2810**	**2110**	**7490**	**7990**	**3750**	**3550**	**7730**	**4220**	**3260**	**4450**	**3830**	**2500**
Manganese	180	2,300	2.1	90.7	**455**	**178**	**165**	**210**	**99.7**	**41.8**	**324**	**27.8**	**340**	**55.5**	**47.8**	**60.6**	**113**	**495**	**104**	**102**	**62.5**	**48.7**	**31.2**	**663**
Mercury	1	4.3	0.0033	ND	**1.632**	**0.425**	**0.377**	**1.572**	**0.273**	**0.661**	**0.5**	**0.089**	**0.314**	**0.095**	**0.162**	**0.185**	**0.15**	**0.378**	**0.312**	**1.963**	**0.228**	**0.147**	**0.108**	**11.096**
Nickel	150	2,000	2	8.4	**12.7**	**11.3**	**9.06**	**56.7**	**11**	**10.9**	**27**	**7.08**	**22**	**8.05**	**8.48**	**11.6**	**8.26**	**11.7**	**6.96**	**29.1**	**6.82**	**16.6**	**9.07**	**27.8**
Potassium	NLE	NLE	NLE	15,400	**4350**	**3680**	**4030**	**2690**	**4670**	**8060**	**3290**	**6890**	**5610**	**3330**	**17900**	**14000**	**3140**	**5420**	**17600**	**5980**	**7430**	**8070**	**8300**	**4650**
Selenium	39	510	0.04	1.9	**0.882**	< 0.698	< 0.737	< 0.851	< 0.674	< 0.811	< 1.236	< 0.696	< 0.742	< 0.701	< 0.733	**1.08**	< 0.641	< 0.715	**4.02**	< 0.808	**0.732**	< 0.718	< 0.675	**0.965**
Silver	39	510	0.06	1.1	**3.49**	< 0.698	< 0.737	**2.93**	< 0.674	< 0.811	**5.8**	< 0.696	< 0.742	< 0.701	< 0.733	**1.36**	< 0.641	< 0.715	< 0.716	**35.6**	< 0.665	< 0.718	< 0.675	**2.58**
Sodium	NLE	NLE	NLE	51.6	**274**	**132**	**126**	**145**	**108**	**208**	**259**	**122**	**132**	**129**	**156**	**363**	**199**	**154**	**170**	**425**	**93**	**123**	**131**	**193**
Thallium	0.078	1	0.0011	ND	< 0.754	< 0.698	< 0.737	< 0.851	< 0.674	< 0.811	< 1.236	< 0.696	< 0.742	< 0.701	< 0.733	< 0.595	< 0.641	< 0.715	< 0.716	< 0.808	< 0.665	< 0.718	< 0.675	< 0.828
Vanadium	39	510	6.3	94.1	**38.5**	**47.7**	**40.9**	**27.1**	**62.8**	**61.8**	**29.4**	**44.7**	**52.8**	**48.5**	**85.7**	**81.8**	**31.2**	**60**	**91.2**	**87.1**	**49.7**	**62**	**57.6**	**71.7**
Zinc	2,300	31,000	29	81.4	**327**	**544**	**380**	**2820**	**108**	**116**	**375**	**70.7**	**1710**	**82.5**	**82.5**	**122**	**66.6**	**362**	**82.5**	**553**	**35.2**	**383**	**114**	**663**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-78 Dup	B-79	B-80	B-81	B-82	B-82 Dup	B-83	B-84	B-85	B-86	B-87	B-88	B-89	B-90	B-91	B-92	B-93	B-94	B-95	B-96
Sample Date					03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4382.27	4382.29	4382.31	4382.33	4382.35	4382.37	4382.39	4382.41	4382.43	4382.45	4382.47	4382.49	4389.03	4389.05	4389.07	4389.09	4389.11	4389.13	4389.15	4389.17
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 990	< 1000	< 840	< 1500	< 990	< 850	< 900	< 1300	< 920	< 1200	< 1700	< 990	< 930	< 950	< 890	< 840	< 940	< 980	< 980	< 880
Acetone	6,100,000	63,000,000	240	--	< 660	< 690	< 560	< 980	< 660	< 560	< 600	< 840	< 610	< 800	< 1200	< 660	< 620	< 640	< 600	< 560	< 630	< 650	< 650	< 590
Carbon Disulfide	82,000	370,000	21	--	< 330	< 340	< 280	< 490	< 330	< 280	< 300	< 420	< 310	< 400	< 580	< 330	< 310	< 320	< 300	< 280	< 310	< 330	< 330	< 290
Methylene Chloride	36,000	310,000	2.2	--	< 660	< 690	< 560	< 980	< 660	< 560	< 600	< 840	< 610	< 800	< 1200	< 660	**470**	< 640	< 600	< 560	< 630	< 650	< 650	< 590
2-Butanone	2,800,000	20,000,000	100	--	< 990	< 1000	< 840	< 1500	< 990	< 850	< 900	< 1300	< 920	< 1200	< 1700	< 990	< 930	< 950	< 890	< 840	< 940	< 980	< 980	< 880
Benzene	1,100	5,400	0.2	--	< 330	< 340	< 280	< 490	< 330	< 280	< 300	< 420	< 310	< 400	< 580	< 330	< 310	< 320	< 300	< 280	< 310	< 330	< 330	< 290
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 660	< 690	< 560	< 980	< 660	< 560	< 600	< 840	< 610	< 800	< 1200	< 660	< 620	< 640	< 600	< 560	< 630	< 650	< 650	< 590
Toluene	500,000	4,500,000	59	--	< 330	< 340	< 280	< 490	< 330	< 280	< 300	< 420	< 310	< 400	< 580	< 330	< 310	< 320	< 300	< 280	< 310	< 330	< 330	< 290
Tetrachloroethene	8,600	41,000	1.6	--	< 330	< 340	< 280	< 490	< 330	< 280	< 300	< 420	< 310	< 400	< 580	< 330	< 310	< 320	< 300	< 280	< 310	< 330	< 330	< 290
Chlorobenzene	29,000	140,000	4.9	--	< 330	< 340	< 280	**1400**	< 330	< 280	< 300	< 420	< 310	< 400	< 580	< 330	< 310	< 320	< 300	< 280	< 310	< 330	< 330	< 290
Ethylbenzene	5,400	27,000	1.5	--	< 660	< 690	< 560	< 980	< 660	< 560	< 600	< 840	< 610	< 800	< 1200	< 660	< 620	< 640	< 600	< 560	< 630	< 650	< 650	< 590
m+p-Xylenes	630,000	2,700,000	19	--	< 990	< 1000	< 840	< 1500	< 990	< 850	< 900	< 1300	< 920	< 1200	< 1700	< 990	< 930	< 950	< 890	< 840	< 940	< 980	< 980	< 880
TICs	NLE	NLE	NLE	--	ND	ND	ND	**55900**	ND	**1800**	ND	**2600**	**2300**	**22900**	**3900**	ND	ND	ND	**18400**	ND	ND	ND	ND	**2300**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4382.26	4382.28	4382.3	4382.32	4382.34	4382.36	4382.38	4382.4	4382.42	4382.44	4382.46	4382.48	4389.02	4389.04	4389.06	4389.08	4389.1	4389.12	4389.14	4389.16
Aniline	43,000	300,000	3.7	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	**410** J	< 2600	< 11000	< 1200	< 1100	**3200** JD	< 13000	< 1100	**270** J	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	**210** J	< 2600	< 11000	< 1200	< 1100	**3300** JD	< 13000	< 1100	< 1200	< 1100	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	**1600** JD	< 13000	< 1100	< 1200	< 1100	< 1100
Acenaphthylene	NLE	NLE	NLE	--	**240** J	**140** J	**390** J	**500** J	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	**1700** JD	< 1200	< 1100	< 8700	**7900** JD	**840** J	**290** J	< 1100	**310** J
Acenaphthene	340,000	3,300,000	410	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1300	< 1300	**170** J	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	**1400** JD	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	**170** JB	< 1300	< 1100	< 1200	< 1100	< 1000	**140** JB	**160** JB	**180** JB	< 1400	**400** JB	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Fluorene	230,000	2,200,000	400	--	< 1300	< 1300	**480** J	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	**3900** JD	< 1200	< 1100	< 8700	< 13000	< 1100	**190** J	< 1100	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	**400** J	**150** J	**3600**	**400** J	< 1100	**190** J	< 1200	**200** J	**210** J	**380** J	**630** J	**26000** D	< 1200	< 1100	**1000** JD	**9900** JD	**770** J	**830** J	< 1100	**380** J
Anthracene	1,700,000	17,000,000	4,200	--	**160** J	< 1300	**1600**	**240** J	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	**8600** JD	< 1200	< 1100	< 8700	**4700** JD	**600** J	**410** J	< 1100	**170** J
Di-n-butylphthalate	610,000	6,200,000	170	--	**1100** JB	**450** JB	**320** JB	**420** JB	< 1100	**250** JB	**220** JB	**160** JB	**690** JB	**150** JB	**1100** JB	< 11000	**1000** JB	**360** JB	**1400** JBD	< 13000	**680** JB	**410** JB	**860** JB	**590** JB
Fluoranthene	230,000	2,200,000	7,000	--	**700** J	**380** J	**8900**	**740** J	< 1100	**400** J	**190** J	**440** J	**450** J	**610** J	< 2600	**39000**	< 1200	**180** J	**1100** JD	**16000** D	**5200**	**1800**	< 1100	**660** J
Benzidine	0.5	7.5	0.00024	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	**810** J	**450** J	**8000**	**1200** J	< 1100	**330** J	**160** J	**430** J	**420** J	**520** J	< 2600	**31000** D	**150** J	**190** J	**1600** JD	**20000** D	**8200**	**2300**	< 1100	**840** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	**460** J	**260** J	**5200**	**400** J	< 1100	**150** J	< 1200	**270** J	**250** J	**250** J	< 2600	**19000** D	< 1200	< 1100	**1300** JD	**13000** JD	**3200**	**1000** J	< 1100	**530** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	**940** J	**480** J	**7200**	**1100** J	< 1100	**320** J	**200** J	**500** J	**450** J	**450** J	< 2600	**28000** D	**170** J	**200** J	**1600** JD	**22000** D	**6200**	**1900**	< 1100	**1700**
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**14000**	< 1300	< 1100	**210** J	< 1100	< 1000	< 1200	< 1200	< 1100	**580** J	**9300**	< 11000	< 1200	**320** J	**2000** JD	< 13000	< 1100	**340** J	< 1100	< 1100
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1300	< 1300	< 1100	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	< 11000	< 1200	< 1100	< 8700	< 13000	< 1100	< 1200	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	**440** J	**290** J	**6000**	**700** J	< 1100	**220** J	< 1200	**230** J	**220** J	**240** J	< 2600	**15000** D	< 1200	**150** J	< 8700	**11000** JD	**7300**	**1200** J	< 1100	**940** J
Benzo(k)fluoranthene	1,500	21,000	350	--	**470** J	**280** J	**4700**	**540** J	< 1100	**190** J	< 1200	**290** J	**260** J	**230** J	< 2600	**15000** D	< 1200	**140** J	< 8700	**11000** JD	**5000**	**970** J	< 1100	**720** J
Benzo(a)pyrene	15	210	4	--	**500** J	**330** J	**4800**	**890** J	< 1100	**190** J	< 1200	**270** J	**270** J	**250** J	< 2600	**17000** D	< 1200	< 1100	< 8700	**15000** D	**7900**	**990** J	< 1100	**780** J
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**200** J	< 1300	**2000**	< 1200	< 1100	< 1000	< 1200	**210** J	**180** J	< 1400	< 2600	**9200** JD	< 1200	< 1100	< 8700	**7800** JD	**2400**	**380** J	< 1100	**420** J
Dibenz(a,h)anthracene	15	210	11	--	< 1300	< 1300	**1000** J	< 1200	< 1100	< 1000	< 1200	< 1200	< 1100	< 1400	< 2600	**4500** JD	< 1200	< 1100	< 8700	**3100** JD	**1200**	< 1200	< 1100	**240** J
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1300	< 1300	**1700**	< 1200	< 1100	< 1000	< 1200	**230** J	**200** J	< 1400	< 2600	**9200** JD	< 1200	< 1100	< 8700	**8500** JD	**2000**	< 1200	< 1100	**440** J
TICs	NLE	NLE	NLE	--	**90500**	**13000**	**26190**	**15000**	**4300**	**11970**	**3500**	**17400**	**8000**	**43800**	**17800**	**11000**	**14300**	**25740**	**382500**	**12000**	**3600**	**30550**	**13910**	**47800**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0094	< 0.0092	< 0.0084	< 0.0089	< 0.0078	< 0.0078	< 0.0088	< 0.0087	< 0.0093	< 0.0091	< 0.0204	< 0.0083	< 0.0099	< 0.0085	< 0.0140	< 0.0201	< 0.0091	< 0.0094	< 0.0089	< 0.0091
Heptachlor	0.11	0.38	0.00014	--	< 0.0071	< 0.0069	< 0.0063	< 0.0067	< 0.0059	< 0.0058	< 0.0066	< 0.0065	< 0.0070	< 0.0068	< 0.0153	< 0.0062	< 0.0074	< 0.0064	< 0.0105	< 0.0151	< 0.0068	< 0.0071	< 0.0067	< 0.0069
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0141	< 0.0138	< 0.0125	< 0.0133	< 0.0117	< 0.0117	< 0.0133	< 0.0131	< 0.0139	< 0.0136	< 0.0306	< 0.0125	< 0.0148	< 0.0128	< 0.0210	< 0.0301	< 0.0136	< 0.0141	< 0.0134	< 0.0137
Endosulfan I	370	3700	0.11	--	< 0.0118	< 0.0115	< 0.0105	< 0.0111	< 0.0098	< 0.0097	< 0.0111	< 0.0109	< 0.0116	< 0.0113	< 0.0255	< 0.0104	< 0.0123	< 0.0107	< 0.0175	< 0.0251	< 0.0114	< 0.0118	< 0.0111	< 0.0114
4,4'-DDE	1.4	5.1	0.05	--	**0.127**	**0.025**	**0.075**	**0.071**	**0.009**	**0.019**	**0.016**	**0.056**	**0.058**	**0.051**	< 0.0204	**0.069**	**0.29**	**0.023**	< 0.0140	**0.093**	**0.037**	**0.109**	**0.016**	**0.018**
Dieldrin	0.03	0.11	0.000061	--	< 0.0118	**0.015**	< 0.0105	< 0.0111	< 0.0098	< 0.0097	< 0.0111	< 0.0109	< 0.0116	**0.017**	< 0.0255	< 0.0104	**0.085**	< 0.0107	< 0.0175	< 0.0251	< 0.0114	**0.017**	< 0.0111	< 0.0114
Endrin	1.8	18	0.0068	--	< 0.0118	< 0.0115	< 0.0105	< 0.0111	< 0.0098	< 0.0097	< 0.0111	< 0.0109	< 0.0116	< 0.0113	< 0.0255	< 0.0104	< 0.0123	< 0.0107	< 0.0175	< 0.0251	< 0.0114	< 0.0118	< 0.0111	< 0.0114
Endosulfan II	370	3700	0.11	--	< 0.0094	< 0.0092	< 0.0084	< 0.0089	< 0.0078	< 0.0078	< 0.0088	< 0.0087	< 0.0093	< 0.0091	< 0.0204	< 0.0083	< 0.0099	< 0.0085	< 0.0140	< 0.0201	< 0.0091	< 0.0094	< 0.0089	< 0.0091
4,4'-DDD	2.0	7.2	0.01	--	**0.16**	**0.037**	**0.102**	**0.306**	**0.012**	**0.018**	**0.021**	**0.09**	**0.069**	**0.096**	< 0.0306	**0.199**	**0.594**	**0.03**	**0.032**	**0.499**	**0.052**	**0.943**	**0.027**	**0.028**
4,4'-DDT	1.7	7	0.07	--	**0.044**	**0.039**	**0.045**	**0.058**	**0.026**	**0.062**	**0.037**	**0.057**	< 0.0255	**0.029**	< 0.0560	**0.038**	**1.811**	**0.027**	< 0.0385	**0.159**	< 0.0250	**0.03**	< 0.0245	< 0.0251
gamma-Chlordane	1.6	6.5	0.013	--	**0.072**	**0.02**	**0.031**	**0.016**	< 0.0098	**0.012**	< 0.0111	**0.018**	**0.02**	**0.012**	< 0.0255	**0.082**	**0.045**	**0.019**	< 0.0175	**0.039**	< 0.0114	**0.054**	< 0.0111	< 0.0114
alpha-Chlordane	1.6	6.5	0.013	--	**0.045**	**0.016**	**0.019**	**0.018**	< 0.0098	< 0.0097	< 0.0111	**0.014**	**0.012**	< 0.0113	< 0.0255	**0.055**	**0.038**	**0.015**	< 0.0175	**0.032**	< 0.0114	**0.033**	< 0.0111	< 0.0114
Aroclor 1016	0.39	3.7	0.01	--	< 0.2639	< 0.2573	< 0.2342	< 0.2490	< 0.2193	< 0.2182	< 0.2476	< 0.2437	< 0.2596	< 0.2537	< 0.0285	< 0.2326	< 0.0138	< 0.2392	< 0.0196	< 0.0281	< 0.2546	< 0.2634	< 0.2493	< 0.2557
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4854	< 0.4732	< 0.4308	< 0.4580	< 0.4034	< 0.4012	< 0.4555	< 0.4482	< 0.4775	< 0.4666	< 0.0525	< 0.4278	< 0.0254	< 0.4399	< 0.0361	< 0.0517	< 0.4683	< 0.4845	< 0.4585	< 0.4704
Aroclor 1242	0.22	0.74	0.0053	--	**20.585**	< 0.3675	< 0.3346	< 0.3557	< 0.3133	< 0.3116	< 0.3538	< 0.3481	< 0.3709	< 0.3624	**12.604**	< 0.3323	< 0.0197	< 0.3417	**50.742**	< 0.0401	< 0.3637	< 0.3763	< 0.3561	< 0.3653
Aroclor 1260	0.22	0.74	0.024	--	< 0.0848	< 0.0827	< 0.0753	< 0.0800	< 0.0705	< 0.0701	< 0.0796	< 0.0783	< 0.0835	< 0.0815	< 0.0092	< 0.0748	< 0.0044	< 0.0769	< 0.0063	< 0.0090	< 0.0818	< 0.0847	< 0.0801	< 0.0822

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-78 Dup	B-79	B-80	B-81	B-82	B-82 Dup	B-83	B-84	B-85	B-86	B-87	B-88	B-89	B-90	B-91	B-92	B-93	B-94	B-95	B-96
Sample Date					03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**15100**	**9400**	**6640**	**13000**	**5160**	**4060**	**21600**	**9310**	**6870**	**7390**	**13400**	**5840**	**10600**	**8310**	**8260**	**19600**	**7630**	**17200**	**17200**	**8990**
Antimony	3.1	41	0.03	ND	**1.19**	< 0.492	< 0.432	**4.89**	**0.553**	< 0.403	< 0.512	**0.461**	**88.4**	**122**	**3**	< 0.434	**6.9**	**0.712**	**1.62**	**1.6**	< 0.489	**0.482**	**0.482**	< 0.429
Arsenic	0.61	2.4	0.0013	22.9	**11**	**8.14**	**7.27**	**11.7**	**1.43**	**1.53**	**16.2**	**8.42**	**97.8**	**130**	**10.4**	**9.29**	**9.65**	**7.38**	**2.84**	**17.7**	**8.52**	**10.3**	**10.3**	**7.47**
Barium	1,500	19,000	12	32.3	**84**	**50.2**	**16.3**	**65**	**36.3**	**17.4**	**58.1**	**38.1**	**447**	**569**	**162**	**29.4**	**40.7**	**35.7**	**303**	**88.8**	**51.2**	**86.1**	**86.1**	**23.1**
Beryllium	16	200	1.3	2	**1.05**	**0.952**	**0.62**	**0.993**	**0.287**	**0.179**	**2.65**	**0.981**	**20**	**25.7**	**0.491**	**0.612**	**1.11**	**0.803**	< 0.168	**1.87**	**1.09**	**1.84**	**1.84**	**0.981**
Cadmium	7	80	0.05	ND	**0.217**	< 0.123	< 0.108	**0.42**	< 0.098	< 0.101	< 0.128	< 0.107	**9.24**	**12.7**	**1.25**	**0.241**	< 0.127	< 0.110	**8.99**	< 0.241	< 0.122	< 0.117	< 0.117	< 0.107
Calcium	NLE	NLE	NLE	921	**2270**	**1200**	**1790**	**2350**	**2420**	**2150**	**1510**	**515**	**2200**	**1280**	**3190**	**1580**	**2440**	**2470**	**4300**	**2350**	**2130**	**2740**	**2740**	**373**
Chromium	12,000	150,000	2,800,000	269	**146**	**88.8**	**68.4**	**106**	**20.9**	**17.1**	**325**	**92.2**	**104**	**141**	**69.6**	**48.4**	**85.1**	**73.2**	**31.4**	**162**	**104**	**168**	**168**	**101**
Cobalt	2.3	30	0.02	2.5	**4.63**	**2.34**	**1.1**	**2.79**	**2.88**	**2.11**	**1.05**	**1.22**	**94.4**	**130**	**6.1**	**2.28**	**3.06**	**2.74**	**1.64**	**4.49**	**1.37**	**3.64**	**3.64**	**0.984**
Copper	310	4,100	2.2	8	**53.6**	**13.1**	**9.16**	**20.6**	**18.6**	**13.2**	**13.2**	**8.4**	**136**	**162**	**1030**	**24.9**	**14.5**	**16.9**	**321**	**38.6**	**10**	**10.3**	**10.3**	**3.52**
Iron	5500	72,000	27	55,800	**48800**	**26000**	**18700**	**38700**	**10700**	**8140**	**72400**	**26300**	**23600**	**22400**	**40200**	**22200**	**31600**	**24400**	**14200**	**51100**	**27100**	**36200**	**36200**	**26600**
Lead	400	800	NLE	19.5	**400**	**44.3**	**18.8**	**235**	**62.9**	**43.6**	**25**	**39.8**	**314**	**158**	**300**	**68.5**	**298**	**94.4**	**118**	**118**	**30.9**	**49.2**	**49.2**	**9.51**
Magnesium	NLE	NLE	NLE	7,230	**2940**	**3050**	**2530**	**3520**	**1160**	**1360**	**10700**	**2960**	**1760**	**2080**	**1630**	**2000**	**3470**	**2930**	**486**	**5650**	**3240**	**5390**	**5390**	**3210**
Manganese	180	2,300	2.1	90.7	**713**	**57.7**	**24.4**	**70.2**	**46.5**	**57.2**	**21.7**	**27.7**	**172**	**171**	**204**	**218**	**89.7**	**72.1**	**87.6**	**82.5**	**38.2**	**51.8**	**51.8**	**22.5**
Mercury	1	4.3	0.0033	ND	**2.654**	**0.949**	**0.112**	**0.495**	**0.07**	**0.028**	**0.062**	**0.097**	**0.348**	**0.182**	**3.361**	**2.213**	**0.154**	**0.109**	**21.9**	**0.801**	**0.111**	**0.246**	**0.246**	< 0.022
Nickel	150	2,000	2	8.4	**24.2**	**12.6**	**3.86**	**11.7**	**10.5**	**5.94**	**6.7**	**6.52**	**103**	**138**	**43.1**	**8.43**	**12.3**	**10.2**	**7.6**	**20.2**	**7.48**	**13.3**	**13.3**	**4.05**
Potassium	NLE	NLE	NLE	15,400	**5730**	**6610**	**5120**	**7950**	**1370**	**1100**	**26400**	**7010**	**3960**	**4810**	**1780**	**3650**	**6620**	**4980**	**820**	**11200**	**7430**	**11800**	**11800**	**7510**
Selenium	39	510	0.04	1.9	< 0.856	**0.906**	< 0.647	< 0.731	< 0.586	< 0.605	< 0.768	< 0.642	**87.7**	**119**	< 1.671	< 0.651	< 0.761	< 0.650	< 1.007	< 1.449	< 0.734	**0.73**	**0.73**	< 0.643
Silver	39	510	0.06	1.1	**1.97**	**1.74**	< 0.647	**1.73**	< 0.586	< 0.605	< 0.768	< 0.642	**15.3**	**19.8**	**5.6**	< 0.651	< 0.761	< 0.650	**8.37**	**2.22**	< 0.734	**2.38**	**2.38**	< 0.643
Sodium	NLE	NLE	NLE	51.6	**223**	**145**	**108**	**223**	**236**	**261**	**107**	**108**	**89.6**	**200**	**241**	**177**	**133**	**126**	**266**	**772**	**100**	**117**	**117**	**107**
Thallium	0.078	1	0.0011	ND	< 0.856	< 0.737	< 0.647	< 0.731	< 0.586	< 0.605	< 0.768	< 0.642	**86.9**	**119**	< 1.671	< 0.651	< 0.761	< 0.650	< 1.007	< 1.449	< 0.734	< 0.703	< 0.703	< 0.643
Vanadium	39	510	6.3	94.1	**81.7**	**65**	**40.5**	**59.8**	**16.4**	**12.4**	**105**	**44.4**	**128**	**157**	**42.6**	**29.4**	**47.9**	**46.8**	**13.1**	**98.8**	**43.4**	**74.7**	**74.7**	**46.7**
Zinc	2,300	31,000	29	81.4	**803**	**77.3**	**37.2**	**146**	**63.9**	**37.3**	**85.7**	**54**	**311**	**330**	**851**	**358**	**302**	**99.4**	**9550**	**159**	**71.9**	**180**	**180**	**39.3**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-97	B-98	B-99	B-100	B-101	B-102	B-103	B-104	B-105	B-106	B-107	B-107 Dup	B-108	B-109	B-110	B-111	B-112	B-113	B-114	B-115
Sample Date					04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4389.19	4389.21	4389.23	4389.25	4389.27	4389.29	4389.31	4394.03	4394.05	4394.07	4394.09	4394.25	4394.11	4394.13	4394.15	4394.17	4394.19	4394.21	4394.23	4394.27
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
Acetone	6,100,000	63,000,000	240	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
Carbon Disulfide	82,000	370,000	21	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Methylene Chloride	36,000	310,000	2.2	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
2-Butanone	2,800,000	20,000,000	100	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
Benzene	1,100	5,400	0.2	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
Toluene	500,000	4,500,000	59	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Tetrachloroethene	8,600	41,000	1.6	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	**1600**	< 280	< 360	< 340	< 360
Chlorobenzene	29,000	140,000	4.9	--	< 290	< 780	< 330	< 380	< 300	< 340	< 340	< 480	< 300	< 320	< 270	< 290	< 300	< 340	< 320	< 300	< 280	< 360	< 340	< 360
Ethylbenzene	5,400	27,000	1.5	--	< 570	< 1600	< 650	< 770	< 600	< 680	< 680	< 960	< 600	< 650	< 550	< 570	< 610	< 690	< 640	< 600	< 550	< 730	< 670	< 720
m+p-Xylenes	630,000	2,700,000	19	--	< 860	< 2400	< 980	< 1200	< 900	< 1000	< 1000	< 1400	< 900	< 970	< 820	< 860	< 910	< 1000	< 960	< 890	< 830	< 1100	< 1000	< 1100
TICs	NLE	NLE	NLE	--	ND	**8200**	ND	**542400**	**7400**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4389.18	4389.2	4389.22	4389.24	4389.26	4389.28	4389.3	4394.02	4394.04	4394.06	4394.08	4394.24	4394.1	4394.12	4394.14	4394.16	4394.18	4394.2	4394.22	4394.26
Aniline	43,000	300,000	3.7	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzyl alcohol	610,000	6,200,000	37	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
4-Methylphenol	610,000	6,200,000	110	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Nitrobenzene	4,800	24,000	0.079	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	**950** J	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Naphthalene	3,600	18,000	0.47	--	**170** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
4-Chloroaniline	2,400	8,600	0.13	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
2-Methylnaphthalene	23,000	220,000	14	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Acenaphthylene	NLE	NLE	NLE	--	**420** J	< 1100	< 1300	**110** J	< 1200	< 1100	**740** J	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Acenaphthene	340,000	3,300,000	410	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**420** J
Dibenzofuran	7,800	100,000	11	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**180** J
Diethylphthalate	4,900,000	49,000,000	470	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	**140** JB	< 1200	< 1100	< 1300	**290** JB	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Fluorene	230,000	2,200,000	400	--	**290** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**380** J
Azobenzene	5,100	23,000	0.8	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Hexachlorobenzene	300	1,100	0.53	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Phenanthrene	NLE	NLE	NLE	--	**1700** J	**200** J	< 1300	**340** J	**150** J	< 1100	**270** J	< 16000	< 23000	**150** J	< 1200	< 1100	**400** J	**410** J	**610** J	**180** J	**210** J	**210** J	< 1100	**3900**
Anthracene	1,700,000	17,000,000	4,200	--	**460** J	< 1100	< 1300	**140** J	< 1200	< 1100	**190** J	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	**180** J	< 1000	< 1000	< 1100	< 1100	**1200** J
Di-n-butylphthalate	610,000	6,200,000	170	--	**1200** JB	**1500** B	**390** JB	**350** JB	**660** JB	**600** JB	**1300** JB	< 16000	< 23000	**21000** BD	**900** JB	**290** JB	**300** JB	**240** JB	**220** JB	**610** JB	**310** JB	**280** JB	**660** JB	**940** JB
Fluoranthene	230,000	2,200,000	7,000	--	**1900**	**410** J	**240** J	**690** J	**360** J	**150** J	**390** J	< 16000	< 23000	**330** J	< 1200	< 1100	**590** J	**650** J	**1500**	**380** J	**570** J	**420** J	**230** J	**5400**
Benzidine	0.5	7.5	0.00024	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Pyrene	170,000	1,700,000	950	--	**2000**	**500** J	**250** J	**710** J	**350** J	**180** J	**990** J	< 16000	< 23000	**310** J	< 1200	< 1100	**550** J	**550** J	**1300**	**330** J	**590** J	**380** J	**210** J	**3600**
Butylbenzylphthalate	260,000	910,000	200	--	< 1200	< 1100	< 1300	< 1100	< 1200	**120** J	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzo(a)anthracene	150	2,100	10	--	**1100** J	**260** J	< 1300	**370** J	**200** J	< 1100	**380** J	< 16000	< 23000	**170** J	< 1200	< 1100	**280** J	**320** J	**760** J	**170** J	**270** J	**190** J	**120** J	**1600**
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Chrysene	15,000	210,000	1,100	--	**1900**	**490** J	**230** J	**670** J	**330** J	**190** J	**800** J	< 16000	< 23000	**320** J	**130** J	< 1100	**560** J	**600** J	**1300**	**370** J	**700** J	**440** J	**260** J	**2800**
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**580** J	**250** J	< 1300	**260** J	< 1200	**160** J	< 1400	< 16000	< 23000	**140** J	< 1200	< 1100	**210** J	**150** J	**190** J	**120** J	< 1000	**180** J	< 1100	**500** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1200	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	< 1200
Benzo(b)fluoranthene	150	2,100	35	--	**810** J	**310** J	< 1300	**450** J	**190** J	< 1100	**440** J	< 16000	< 23000	**190** J	< 1200	< 1100	**290** J	**320** J	**880** J	**250** J	**380** J	**260** J	**140** J	**2100**
Benzo(k)fluoranthene	1,500	21,000	350	--	**960** J	**290** J	< 1300	**430** J	**210** J	< 1100	**440** J	< 16000	< 23000	**170** J	< 1200	< 1100	**280** J	**290** J	**790** J	**220** J	**320** J	**230** J	**120** J	**1600**
Benzo(a)pyrene	15	210	4	--	**1100** J	**280** J	< 1300	**410** J	**210** J	**120** J	**760** J	< 16000	< 23000	**200** J	< 1200	< 1100	**300** J	**330** J	**890** J	**180** J	**240** J	**230** J	**120** J	**1900**
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**510** J	< 1100	< 1300	< 1100	< 1200	< 1100	**280** J	< 16000	< 23000	**140** J	< 1200	< 1100	**180** J	**220** J	**420** J	< 1000	**160** J	**190** J	< 1100	**780** J
Dibenz(a,h)anthracene	15	210	11	--	**210** J	< 1100	< 1300	< 1100	< 1200	< 1100	< 1400	< 16000	< 23000	< 1100	< 1200	< 1100	< 1300	< 1100	< 1100	< 1000	< 1000	< 1100	< 1100	**360** J
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**520** J	< 1100	< 1300	< 1100	**120** J	< 1100	**400** J	< 16000	< 23000	**150** J	< 1200	< 1100	**190** J	**240** J	**410** J	< 1000	**170** J	**210** J	< 1100	**700** J
TICs	NLE	NLE	NLE	--	**20450**	**30500**	**50300**	**109000**	**8390**	**4290**	**7100**	**9900**	ND	**23500**	**37000**	**6500**	**49900**	**16000**	**13900**	**14200**	**37940**	**20160**	**8740**	**114500**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0094	< 0.0091	< 0.0103	< 0.0087	< 0.0089	< 0.0089	< 0.0110	< 0.0125	< 0.0092	< 0.0088	< 0.0096	< 0.0094	< 0.0098	< 0.0089	< 0.0092	< 0.0090	< 0.0087	< 0.0090	< 0.0090	< 0.0101
Heptachlor	0.11	0.38	0.00014	--	< 0.0070	< 0.0068	< 0.0078	< 0.0065	< 0.0067	< 0.0067	< 0.0083	< 0.0094	< 0.0069	< 0.0066	< 0.0072	< 0.0071	< 0.0073	< 0.0067	< 0.0069	< 0.0068	< 0.0066	< 0.0067	< 0.0068	< 0.0076
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0140	< 0.0137	< 0.0155	< 0.0130	< 0.0134	< 0.0134	< 0.0166	< 0.0187	< 0.0138	< 0.0132	< 0.0143	< 0.0141	< 0.0147	< 0.0134	< 0.0138	< 0.0135	< 0.0131	< 0.0135	< 0.0135	< 0.0151
Endosulfan I	370	3700	0.11	--	< 0.0117	< 0.0114	< 0.0129	< 0.0109	< 0.0112	< 0.0111	< 0.0138	< 0.0156	< 0.0115	< 0.0110	< 0.0120	< 0.0118	< 0.0122	< 0.0112	< 0.0115	< 0.0113	< 0.0109	< 0.0112	< 0.0113	< 0.0126
4,4'-DDE	1.4	5.1	0.05	--	**0.031**	**0.122**	< 0.0103	**0.025**	**0.029**	**0.012**	**0.107**	**0.013**	**0.074**	**0.129**	< 0.0096	**0.03**	**0.171**	**0.04**	**0.031**	**0.04**	**0.379**	**0.076**	**0.053**	**0.069**
Dieldrin	0.03	0.11	0.000061	--	< 0.0117	**0.016**	< 0.0129	< 0.0109	< 0.0112	**0.026**	**0.019**	< 0.0156	**0.02**	**0.014**	< 0.0120	< 0.0118	< 0.0122	< 0.0112	**0.017**	< 0.0113	**0.034**	< 0.0112	**0.019**	**0.018**
Endrin	1.8	18	0.0068	--	< 0.0117	< 0.0114	< 0.0129	< 0.0109	< 0.0112	< 0.0111	< 0.0138	< 0.0156	< 0.0115	< 0.0110	< 0.0120	< 0.0118	< 0.0122	< 0.0112	< 0.0115	< 0.0113	< 0.0109	< 0.0112	< 0.0113	< 0.0126
Endosulfan II	370	3700	0.11	--	< 0.0094	< 0.0091	< 0.0103	< 0.0087	< 0.0089	< 0.0089	< 0.0110	< 0.0125	< 0.0092	< 0.0088	< 0.0096	< 0.0094	< 0.0098	< 0.0089	< 0.0092	< 0.0090	< 0.0087	< 0.0090	< 0.0090	< 0.0101
4,4'-DDD	2.0	7.2	0.01	--	**0.06**	**0.172**	< 0.0155	**0.049**	**0.024**	< 0.0134	**0.118**	< 0.0187	**0.054**	**0.071**	< 0.0143	**0.022**	**0.156**	**0.046**	**0.089**	**0.043**	**0.213**	**0.089**	**0.039**	**0.035**
4,4'-DDT	1.7	7	0.07	--	< 0.0257	**0.081**	< 0.0284	**0.024**	< 0.0245	< 0.0245	**0.131**	**0.066**	**0.191**	**0.169**	**0.029**	**0.065**	**0.244**	**0.078**	**0.052**	**0.036**	**0.12**	< 0.0247	**0.11**	**0.039**
gamma-Chlordane	1.6	6.5	0.013	--	**0.015**	**0.031**	< 0.0129	< 0.0109	< 0.0112	< 0.0111	**0.019**	< 0.0156	**0.04**	**0.024**	**0.013**	**0.018**	**0.026**	**0.027**	**0.018**	< 0.0113	**0.025**	**0.016**	**0.018**	< 0.0126
alpha-Chlordane	1.6	6.5	0.013	--	**0.014**	**0.028**	< 0.0129	< 0.0109	< 0.0112	< 0.0111	**0.016**	< 0.0156	**0.035**	**0.021**	< 0.0120	< 0.0118	**0.025**	**0.021**	< 0.0115	< 0.0113	**0.022**	< 0.0112	**0.014**	< 0.0126
Aroclor 1016	0.39	3.7	0.01	--	< 0.2622	< 0.2549	< 0.0145	< 0.2432	< 0.2498	< 0.2493	< 0.0155	< 0.0874	< 0.2575	< 0.2470	< 0.0069	< 0.2637	< 0.0686	< 0.2499	< 0.2571	< 0.2527	< 0.2449	< 0.2511	< 0.2521	< 0.0706
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4822	< 0.4689	< 0.0266	< 0.4472	< 0.4595	< 0.4586	< 0.0284	< 0.1607	< 0.4736	< 0.4543	< 0.1231	< 0.4850	< 0.1261	< 0.4597	< 0.4729	< 0.4649	< 0.4504	< 0.4619	< 0.4637	< 0.1298
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3745	< 0.3642	< 0.0207	< 0.3474	< 0.3569	< 0.3562	< 0.0221	< 0.1248	< 0.3678	< 0.3529	< 0.0956	< 0.3767	< 0.0979	< 0.3571	< 0.3673	< 0.3611	< 0.3498	< 0.3588	< 0.3601	< 0.1008
Aroclor 1260	0.22	0.74	0.024	--	< 0.0843	< 0.0819	< 0.0047	< 0.0782	< 0.0803	< 0.0801	< 0.0050	< 0.0281	< 0.0828	< 0.0794	< 0.0215	< 0.0848	< 0.0220	< 0.0803	< 0.0826	< 0.0812	< 0.0787	< 0.0807	< 0.0810	< 0.0227

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-97	B-98	B-99	B-100	B-101	B-102	B-103	B-104	B-105	B-106	B-107	B-107 Dup	B-108	B-109	B-110	B-111	B-112	B-113	B-114	B-115
Sample Date					04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/01/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**11300**	**8190**	**8450**	**9740**	**11300**	**8510**	**9250**	**15800**	**18500**	**12500**	**11700**	**16800**	**11300**	**7480**	**9860**	**15100**	**8570**	**13400**	**11300**	**9530**
Antimony	3.1	41	0.03	ND	< 0.431	**0.539**	**152**	**0.975**	< 0.440	< 0.443	**3.13**	**16.4**	< 0.485	< 0.497	**2.37**	< 0.476	< 0.439	< 0.480	**1.04**	< 0.419	**0.496**	< 0.466	< 0.463	**0.865**
Arsenic	0.61	2.4	0.0013	22.9	**11.2**	**9.81**	**12.6**	**7.94**	**10.9**	**8.28**	**12.7**	**11.4**	**15.4**	**7.56**	**10.4**	**13.2**	**7.67**	**4.87**	**12.3**	**12.4**	**8.65**	**16**	**7.84**	**12.6**
Barium	1,500	19,000	12	32.3	**67.4**	**47.2**	**42.4**	**43.7**	**34.2**	**30.3**	**57.1**	**135**	**123**	**79.7**	**48.7**	**35.1**	**59.6**	**35.1**	**67.2**	**64.4**	**32.3**	**61.2**	**36**	**82.9**
Beryllium	16	200	1.3	2	**1.41**	**0.947**	**0.824**	**1.24**	**0.932**	**0.961**	**0.89**	**0.971**	**1.7**	**0.855**	**0.807**	**1.06**	**0.896**	**0.569**	**0.591**	**1.4**	**0.789**	**1.45**	**0.734**	**0.561**
Cadmium	7	80	0.05	ND	< 0.108	< 0.115	< 0.132	< 0.119	< 0.110	< 0.111	**0.309**	**0.589**	< 0.121	**0.316**	**0.761**	< 0.119	< 0.110	< 0.120	**0.814**	< 0.105	**0.156**	< 0.116	< 0.116	**0.584**
Calcium	NLE	NLE	NLE	921	**2490**	**1590**	**2390**	**876**	**1700**	**1380**	**5510**	**17200**	**1560**	**1650**	**1940**	**1770**	**1860**	**2660**	**3590**	**1360**	**810**	**1210**	**618**	**4530**
Chromium	12,000	150,000	2,800,000	269	**137**	**83**	**71.6**	**92.7**	**82.7**	**94.3**	**88.4**	**99.4**	**208**	**81.1**	**92.3**	**114**	**80.7**	**115**	**60.4**	**157**	**74.9**	**172**	**77**	**114**
Cobalt	2.3	30	0.02	2.5	**2.14**	**2.09**	**4.73**	**2.61**	**3.24**	**1.69**	**2.98**	**6.85**	**1.96**	**2.31**	**2.25**	**2**	**2.47**	**2.45**	**2.83**	**1.52**	**2.68**	**1.73**	**2**	**6.71**
Copper	310	4,100	2.2	8	**12.5**	**23.5**	**17.5**	**11.8**	**11.2**	**4.88**	**31.1**	**88.3**	**33.5**	**15.1**	**35.4**	**16**	**34.4**	**15.2**	**24.6**	**25.6**	**31.3**	**21.3**	**9.57**	**50.6**
Iron	5500	72,000	27	55,800	**34300**	**30000**	**47000**	**25800**	**36200**	**25300**	**27400**	**29000**	**52200**	**22900**	**26000**	**31600**	**22700**	**17600**	**33000**	**39900**	**24100**	**43700**	**24100**	**89300**
Lead	400	800	NLE	19.5	**26.6**	**50.3**	**298**	**79.7**	**129**	**17.9**	**637**	**1010**	**146**	**65.7**	**158**	**63.6**	**58.2**	**293**	**266**	**44.1**	**50.9**	**47.7**	**33.9**	**170**
Magnesium	NLE	NLE	NLE	7,230	**4400**	**2550**	**2390**	**3000**	**1520**	**3000**	**2910**	**3420**	**6690**	**2300**	**2950**	**4170**	**2490**	**1920**	**1980**	**5270**	**2180**	**5620**	**2370**	**1790**
Manganese	180	2,300	2.1	90.7	**53.4**	**112**	**168**	**41.2**	**127**	**30.6**	**86.7**	**141**	**40.4**	**73.1**	**74.6**	**106**	**49.9**	**63.9**	**86.9**	**27.4**	**66.3**	**33.2**	**57.3**	**779**
Mercury	1	4.3	0.0033	ND	**0.183**	**0.508**	**0.177**	**0.105**	**0.154**	**0.058**	**0.362**	**0.826**	**0.259**	**0.195**	**0.098**	**0.079**	**0.145**	**0.103**	**0.192**	**0.128**	**4.776**	**0.171**	**0.132**	**0.361**
Nickel	150	2,000	2	8.4	**9.6**	**8.47**	**21.4**	**9.37**	**12.3**	**7.53**	**14**	**13.1**	**8.59**	**10.1**	**8.26**	**6.36**	**8.22**	**6.19**	**10.6**	**6.28**	**7.24**	**7.13**	**5.56**	**21.3**
Potassium	NLE	NLE	NLE	15,400	**9320**	**5790**	**4530**	**6500**	**3380**	**6790**	**5560**	**8110**	**18400**	**5470**	**6010**	**7810**	**4950**	**3730**	**4490**	**13700**	**5650**	**13800**	**5870**	**3900**
Selenium	39	510	0.04	1.9	< 0.646	< 0.692	< 0.794	< 0.714	< 0.660	< 0.665	< 0.866	**1.09**	**1.1**	< 0.745	< 0.677	**0.719**	< 0.658	< 0.720	**0.772**	**1.2**	< 0.678	**1.14**	< 0.695	**0.841**
Silver	39	510	0.06	1.1	**2.03**	**2.43**	< 0.794	< 0.714	< 0.660	< 0.665	**1.16**	**27**	**6.5**	**4.54**	**1.19**	< 0.714	**5.28**	**1.58**	< 0.724	< 0.628	< 0.678	< 0.699	< 0.695	**6.58**
Sodium	NLE	NLE	NLE	51.6	**158**	**131**	**123**	**116**	**150**	**220**	**145**	**7940**	**3170**	**1570**	**932**	**276**	**1020**	**602**	**647**	**507**	**339**	**581**	**265**	**310**
Thallium	0.078	1	0.0011	ND	< 0.646	< 0.692	< 0.794	< 0.714	< 0.660	< 0.665	< 0.866	< 0.972	< 0.728	< 0.745	< 0.677	< 0.714	< 0.658	< 0.720	< 0.724	< 0.628	< 0.678	< 0.699	< 0.695	< 0.675
Vanadium	39	510	6.3	94.1	**64.4**	**48.2**	**75.1**	**53.1**	**105**	**41.3**	**77.1**	**62**	**96**	**49**	**57.2**	**58.4**	**45.2**	**34.4**	**45.6**	**71.7**	**47.9**	**69.7**	**54.2**	**36.9**
Zinc	2,300	31,000	29	81.4	**143**	**204**	**622**	**110**	**281**	**55.9**	**424**	**1010**	**133**	**108**	**166**	**60**	**56.1**	**51.5**	**185**	**58.6**	**71.4**	**59.2**	**37.3**	**449**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-116	B-117	B-118	B-119	B-120	B-121	B-122	B-123	B-124	B-124 Dup	B-125	B-126	B-127	B-128	B-129	B-130	B-131	B-132	B-133	B-133 Dup
Sample Date					04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4394.29	4394.31	4394.33	4394.35	4394.37	4394.39	4394.41	4394.43	4394.45	4394.47	4401.03	4401.05	4401.07	4401.09	4401.11	4401.13	4401.15	4401.17	4401.19	4401.39
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
Acetone	6,100,000	63,000,000	240	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
Carbon Disulfide	82,000	370,000	21	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Methylene Chloride	36,000	310,000	2.2	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
2-Butanone	2,800,000	20,000,000	100	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
Benzene	1,100	5,400	0.2	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	**2500**	< 330	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
Toluene	500,000	4,500,000	59	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	**1500**	< 330	< 340
Tetrachloroethene	8,600	41,000	1.6	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Chlorobenzene	29,000	140,000	4.9	--	< 370	< 300	< 260	< 320	< 260	< 320	< 300	< 300	< 310	< 320	< 270	< 330	< 310	< 290	< 270	< 250	< 290	< 380	< 330	< 340
Ethylbenzene	5,400	27,000	1.5	--	< 740	< 600	< 530	< 650	< 520	< 640	< 610	< 600	< 620	< 640	< 540	< 660	< 630	< 590	< 550	< 510	< 580	< 760	< 660	< 670
m+p-Xylenes	630,000	2,700,000	19	--	< 1100	< 900	< 790	< 970	< 780	< 970	< 910	< 890	< 920	< 960	< 810	< 990	< 940	< 880	< 820	< 760	< 880	< 1100	< 980	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**42400**	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4394.28	4394.3	4394.32	4394.34	4394.36	4394.38	4394.4	4394.42	4394.44	4394.46	4401.02	4401.04	4401.06	4401.08	4401.1	4401.12	4401.14	4401.16	4401.18	4401.38
Aniline	43,000	300,000	3.7	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Fluorene	230,000	2,200,000	400	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	**150** J	< 1100	**220** J	**400** J	**600** J	< 1100	< 1100	< 1300	< 11000	< 1100	**260** J	**190** J	**300** J	**180** J	**240** J	< 1100	< 1100	< 1300	< 1100	< 1100
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	< 1100	< 1100	**120** J	**150** J	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Di-n-butylphthalate	610,000	6,200,000	170	--	**410** JB	**490** JB	**680** JB	**1400** B	**490** JB	**1100** JB	**620** JB	**550** JB	< 11000	**360** JB	**620** JB	**360** JB	**720** JB	**130** JB	**480** JB	**430** JB	< 1100	**180** JB	**150** JB	**120** JB
Fluoranthene	230,000	2,200,000	7,000	--	**280** J	**240** J	**390** J	**1000** J	**840** J	**150** J	< 1100	< 1300	< 11000	**140** J	**520** J	**390** J	**620** J	**320** J	**560** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	**240** J	**430** J	**390** J	**920** J	**880** J	**170** J	< 1100	**180** J	< 11000	**200** J	**470** J	**350** J	**490** J	**330** J	**480** J	< 1100	< 1100	< 1300	< 1100	< 1100
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	**130** J	**160** J	**200** J	**510** J	**450** J	< 1100	< 1100	< 1300	< 11000	< 1100	**270** J	**190** J	**280** J	**160** J	**250** J	< 1100	< 1100	< 1300	< 1100	< 1100
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	**260** J	**340** J	**410** J	**960** J	**740** J	**250** J	< 1100	**190** J	< 11000	**170** J	**530** J	**400** J	**460** J	**380** J	**610** J	< 1100	< 1100	< 1300	< 1100	< 1100
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**140** J	**290** J	**170** J	**670** J	**650** J	**190** J	**130** J	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	**200** J	**240** J	< 1100	< 1100	**220** J	< 1100	< 1100
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	**160** J	< 1100	**200** J	**590** J	**480** J	**170** J	< 1100	< 1300	< 11000	**120** J	**270** J	**230** J	**210** J	**190** J	**340** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(k)fluoranthene	1,500	21,000	350	--	**120** J	< 1100	**210** J	**550** J	**470** J	**120** J	< 1100	< 1300	< 11000	**120** J	**250** J	**220** J	**260** J	**190** J	**300** J	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(a)pyrene	15	210	4	--	**140** J	< 1100	**230** J	**520** J	**420** J	**170** J	< 1100	< 1300	< 11000	**130** J	**260** J	**220** J	**270** J	**170** J	**280** J	< 1100	< 1100	< 1300	< 1100	< 1100
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	< 1100	**150** J	**240** J	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	**150** J	**180** J	**160** J	**120** J	**230** J	< 1100	< 1100	< 1300	< 1100	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1300	< 1100	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**120** J	< 1100	**170** J	**230** J	< 1100	< 1100	< 1100	< 1300	< 11000	< 1100	**160** J	**190** J	**180** J	**140** J	**240** J	< 1100	< 1100	< 1300	< 1100	< 1100
TICs	NLE	NLE	NLE	--	**10900**	**12210**	**26950**	**24500**	**10070**	**17700**	**2900**	**5480**	ND	**1830**	**25000**	**23300**	**8700**	**20100**	**18200**	**10600**	**2370**	**14900**	**5710**	**2030**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0092	**0.013**	< 0.0090	< 0.0088	< 0.0087	< 0.0090	< 0.0087	< 0.0105	< 0.0090	< 0.0086	< 0.0089	< 0.0088	< 0.0087	< 0.0090	< 0.0090	< 0.0091	< 0.0088	< 0.0101	< 0.0084	< 0.0084
Heptachlor	0.11	0.38	0.00014	--	< 0.0069	**1.267**	< 0.0068	< 0.0066	< 0.0065	< 0.0068	< 0.0065	< 0.0078	< 0.0067	< 0.0064	< 0.0067	< 0.0066	< 0.0065	< 0.0068	< 0.0068	< 0.0068	< 0.0066	< 0.0076	< 0.0063	< 0.0063
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0138	**0.482**	< 0.0135	< 0.0132	< 0.0131	< 0.0135	< 0.0130	< 0.0157	< 0.0134	< 0.0129	< 0.0133	< 0.0132	< 0.0130	< 0.0135	< 0.0135	< 0.0136	< 0.0131	< 0.0152	< 0.0126	< 0.0126
Endosulfan I	370	3700	0.11	--	< 0.0115	< 0.0115	< 0.0113	< 0.0110	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
4,4'-DDE	1.4	5.1	0.05	--	**0.032**	**0.071**	**0.197**	**0.044**	< 0.0087	**0.03**	**0.022**	**0.036**	**0.027**	**0.019**	**0.079**	**0.119**	**0.042**	**0.275**	**0.071**	**0.093**	**0.041**	**0.011**	**0.017**	**0.01**
Dieldrin	0.03	0.11	0.000061	--	< 0.0115	< 0.0115	< 0.0113	< 0.0110	< 0.0109	**0.012**	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
Endrin	1.8	18	0.0068	--	< 0.0115	**0.29**	< 0.0113	< 0.0110	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	< 0.0110	< 0.0108	< 0.0113	< 0.0113	< 0.0113	< 0.0109	< 0.0127	< 0.0105	< 0.0105
Endosulfan II	370	3700	0.11	--	< 0.0092	< 0.0092	< 0.0090	< 0.0088	< 0.0087	< 0.0090	< 0.0087	< 0.0105	< 0.0090	< 0.0086	< 0.0089	< 0.0088	< 0.0087	< 0.0090	< 0.0090	< 0.0091	< 0.0088	< 0.0101	< 0.0084	< 0.0084
4,4'-DDD	2.0	7.2	0.01	--	**0.015**	**0.156**	**0.056**	**0.08**	< 0.0131	**0.026**	**0.022**	**0.059**	**0.02**	**0.015**	**0.031**	**0.05**	< 0.0130	**0.0184**	**0.096**	**0.038**	**0.025**	< 0.0152	< 0.0126	< 0.0126
4,4'-DDT	1.7	7	0.07	--	**0.048**	**1.025**	**0.257**	**0.181**	< 0.0240	< 0.0248	**0.074**	**0.075**	**0.062**	**0.025**	**0.162**	**0.194**	**0.029**	**0.394**	**0.04**	< 0.0250	< 0.0241	< 0.0279	**0.025**	< 0.0231
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0115	**7.144**	**0.021**	**0.028**	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	**0.019**	< 0.0108	**0.027**	**0.031**	< 0.0113	**0.089**	< 0.0127	< 0.0105	< 0.0105
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0115	**7.929**	**0.02**	**0.018**	< 0.0109	< 0.0113	< 0.0109	< 0.0131	< 0.0112	< 0.0107	< 0.0111	**0.019**	< 0.0108	**0.022**	**0.016**	< 0.0113	**0.087**	< 0.0127	< 0.0105	< 0.0105
Aroclor 1016	0.39	3.7	0.01	--	< 0.2571	< 0.2571	< 0.2521	< 0.2468	< 0.0122	< 0.2528	< 0.2434	< 0.0733	< 0.0125	< 0.2405	< 0.2486	< 0.2466	< 0.2425	< 0.2527	< 0.2527	< 0.2542	< 0.2452	< 0.0710	< 0.2361	< 0.2356
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4728	< 0.4729	< 0.4637	< 0.4540	< 0.0225	< 0.4650	< 0.4477	< 0.1347	< 0.0231	< 0.4423	< 0.4572	< 0.4536	< 0.4461	< 0.4648	< 0.4647	< 0.4675	< 0.4510	< 0.1306	< 0.4342	< 0.4333
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3673	< 0.3673	< 0.3602	< 0.3526	< 0.0175	< 0.3612	< 0.3477	< 0.1046	< 0.0179	< 0.3435	< 0.3551	< 0.3523	< 0.3465	< 0.3610	< 0.3609	< 0.3631	< 0.3503	< 0.1014	< 0.3372	< 0.3365
Aroclor 1260	0.22	0.74	0.024	--	< 0.0826	< 0.0826	< 0.0810	< 0.0793	**3.406**	< 0.0813	< 0.0782	< 0.0235	**0.665**	< 0.0773	< 0.0799	< 0.0793	< 0.0780	< 0.0812	< 0.0812	< 0.0817	< 0.0788	< 0.0228	< 0.0759	< 0.0757

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-116	B-117	B-118	B-119	B-120	B-121	B-122	B-123	B-124	B-124 Dup	B-125	B-126	B-127	B-128	B-129	B-130	B-131	B-132	B-133	B-133 Dup
Sample Date					04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/05/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**13900**	**14300**	**6990**	**11600**	**6710**	**11600**	**13300**	**15000**	**10100**	**14500**	**12200**	**8630**	**8800**	**7380**	**11900**	**16100**	**12600**	**8370**	**14300**	**8280**
Antimony	3.1	41	0.03	ND	< 0.456	**1.8**	< 0.469	**1.08**	**0.821**	< 0.458	< 0.439	< 0.552	**3.26**	< 0.460	< 0.387	< 0.425	< 0.455	< 0.442	< 0.458	**0.804**	< 0.434	< 0.517	< 0.413	< 0.437
Arsenic	0.61	2.4	0.0013	22.9	**11.3**	**12.5**	**9.08**	**13.9**	**7.83**	**9.84**	**7.08**	**8.79**	**8.04**	**12.2**	**9.27**	**7.91**	**6.24**	**7.68**	**12.6**	**21.7**	**14**	**4.56**	**8.66**	**6.33**
Barium	1,500	19,000	12	32.3	**51.4**	**78.1**	**38.9**	**50.6**	**11.2**	**56.2**	**55**	**77.2**	**51.4**	**43.6**	**40.3**	**27.2**	**13.7**	**47.2**	**53**	**41.4**	**50.6**	**28.3**	**19**	**20**
Beryllium	16	200	1.3	2	**1.26**	**1.54**	**0.737**	**0.948**	**0.529**	**1.08**	**1.34**	**1.23**	**0.62**	**1.19**	**0.969**	**0.78**	**0.482**	**0.724**	**1.21**	**1.24**	**0.861**	**0.699**	**1.62**	**1.1**
Cadmium	7	80	0.05	ND	**0.641**	**1.68**	< 0.117	**0.255**	**0.935**	< 0.115	< 0.110	< 0.138	**1.67**	< 0.115	**0.155**	< 0.106	< 0.114	< 0.110	< 0.115	< 0.107	**1.78**	< 0.129	< 0.103	**0.411**
Calcium	NLE	NLE	NLE	921	**2780**	**10400**	**1170**	**1600**	**1530**	**2810**	**2380**	**2930**	**5090**	**3170**	**1080**	**668**	**479**	**811**	**1570**	**2200**	**1700**	**334**	**111**	**215**
Chromium	12,000	150,000	2,800,000	269	**123**	**95.7**	**66.4**	**115**	**76.7**	**77.8**	**75.7**	**78.1**	**50.4**	**117**	**88.6**	**88.3**	**62.9**	**66**	**132**	**109**	**76**	**69.1**	**141**	**82.4**
Cobalt	2.3	30	0.02	2.5	**3.39**	**2.58**	**1.71**	**2.13**	**1.8**	**2.79**	**3.8**	**3.03**	**2.75**	**2.62**	**2.96**	**1.24**	**1.01**	**2.11**	**2.05**	**6.01**	**2.42**	**1.25**	**1.46**	**1.09**
Copper	310	4,100	2.2	8	**20.6**	**28.7**	**10.9**	**70.4**	**19.9**	**45.4**	**12**	**11.1**	**10.7**	**13.6**	**14.2**	**16.6**	**0.718**	**10.8**	**25**	**5.07**	**4.94**	< 0.775	**4.13**	< 0.656
Iron	5500	72,000	27	55,800	**34700**	**27800**	**18900**	**47000**	**26600**	**32900**	**27900**	**34000**	**24600**	**36600**	**27400**	**25700**	**18700**	**20100**	**36400**	**84400**	**19700**	**15200**	**43800**	**21500**
Lead	400	800	NLE	19.5	**56.6**	**77.6**	**43.8**	**126**	**23.7**	**159**	**96.8**	**270**	**85.5**	**35.6**	**125**	**56.5**	**6.93**	**43.1**	**54.7**	**58.4**	**128**	**6.89**	**5.61**	**6.43**
Magnesium	NLE	NLE	NLE	7,230	**4020**	**7320**	**1860**	**3650**	**1400**	**2930**	**3250**	**3530**	**1430**	**4350**	**2330**	**2490**	**1130**	**1830**	**4070**	**2220**	**2170**	**1690**	**4630**	**2260**
Manganese	180	2,300	2.1	90.7	**85.6**	**136**	**21.6**	**76.4**	**41.9**	**54**	**183**	**101**	**82.3**	**85.1**	**98.4**	**22.5**	**26.2**	**40.9**	**44.9**	**233**	**81.6**	**13.8**	**20.3**	**13.5**
Mercury	1	4.3	0.0033	ND	**0.078**	**0.13**	**0.13**	**0.209**	**0.025**	**0.121**	**0.089**	**0.132**	**0.099**	**0.083**	**0.189**	**0.066**	< 0.023	**0.105**	**0.122**	**0.064**	**0.085**	< 0.027	< 0.023	**0.027**
Nickel	150	2,000	2	8.4	**9.49**	**9.24**	**6.05**	**9.79**	**8.7**	**7.69**	**11.3**	**10.8**	**8.04**	**7.86**	**8.33**	**4.79**	**3.68**	**6.01**	**7.11**	**14.4**	**6.47**	**4.39**	**5.85**	**5.18**
Potassium	NLE	NLE	NLE	15,400	**9450**	**7530**	**4860**	**8570**	**4520**	**7210**	**6770**	**6770**	**2080**	**10500**	**5660**	**6140**	**3320**	**4640**	**10400**	**4880**	**4580**	**4380**	**12900**	**5900**
Selenium	39	510	0.04	1.9	**0.943**	< 0.709	< 0.703	**0.986**	< 0.693	**0.72**	< 0.658	< 0.827	< 0.635	< 0.690	**0.802**	**0.759**	< 0.682	< 0.663	**0.924**	**1.09**	< 0.652	< 0.775	< 0.619	< 0.656
Silver	39	510	0.06	1.1	< 0.685	< 0.709	< 0.703	< 0.670	< 0.693	< 0.687	< 0.658	< 0.827	< 0.635	< 0.690	< 0.581	< 0.638	< 0.682	**5.91**	**1.84**	< 0.642	< 0.652	< 0.775	< 0.619	< 0.656
Sodium	NLE	NLE	NLE	51.6	**311**	**346**	**178**	**297**	**182**	**180**	**172**	**197**	**267**	**301**	**130**	**142**	**77.9**	**74.1**	**248**	**216**	**139**	**197**	**99.5**	**75.9**
Thallium	0.078	1	0.0011	ND	< 0.685	< 0.709	< 0.703	< 0.670	< 0.693	< 0.687	< 0.658	< 0.827	< 0.635	< 0.690	< 0.581	< 0.638	< 0.682	< 0.663	< 0.688	< 0.642	< 0.652	< 0.775	< 0.619	< 0.656
Vanadium	39	510	6.3	94.1	**60.3**	**50**	**34.9**	**55.7**	**100**	**44.7**	**47**	**44.9**	**52.4**	**61.3**	**51.6**	**44.4**	**85.3**	**35.1**	**49.7**	**165**	**41.6**	**37.1**	**70.8**	**38.7**
Zinc	2,300	31,000	29	81.4	**78.4**	**146**	**63.4**	**356**	**68.6**	**139**	**231**	**252**	**137**	**87.8**	**64.1**	**37.1**	**20.2**	**52.8**	**71.5**	**96.1**	**54.2**	**27**	**47.8**	**34.8**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-134	B-135	B-136	B-137	B-138	B-139	B-140	B-141	B-142	B-143	B-144	B-145	B-145 Dup	B-146	B-147	B-148	B-149	B-150	B-151	B-152
Sample Date					04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4401.21	4401.23	4401.25	4401.27	4401.29	4401.31	4401.33	4401.35	4401.37	4401.43	4401.45	4401.47	4401.41	4405.03	4405.05	4405.07	4405.09	4405.11	4405.13	4405.15
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
Acetone	6,100,000	63,000,000	240	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
Carbon Disulfide	82,000	370,000	21	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Methylene Chloride	36,000	310,000	2.2	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	**2300**	**570** J	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
2-Butanone	2,800,000	20,000,000	100	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
Benzene	1,100	5,400	0.2	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
Toluene	500,000	4,500,000	59	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Tetrachloroethene	8,600	41,000	1.6	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Chlorobenzene	29,000	140,000	4.9	--	< 290	< 280	< 580	< 320	< 310	< 280	< 340	< 330	< 310	< 290	< 310	< 330	< 440	< 310	< 290	< 240	< 300	< 320	< 310	< 270
Ethylbenzene	5,400	27,000	1.5	--	< 580	< 560	< 1200	< 650	< 620	< 560	< 670	< 660	< 630	< 580	< 610	< 660	< 870	< 630	< 590	< 480	< 600	< 640	< 620	< 550
m+p-Xylenes	630,000	2,700,000	19	--	< 870	< 840	< 1800	< 970	< 930	< 830	< 1000	< 990	< 940	< 870	< 920	< 980	< 1300	< 940	< 880	< 720	< 900	< 960	< 930	< 820
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4401.2	4401.22	4401.24	4401.26	4401.28	4401.3	4401.32	4401.34	4401.36	4401.42	4401.44	4401.46	4401.4	4405.02	4405.04	4405.06	4405.08	4405.1	4405.12	4405.14
Aniline	43,000	300,000	3.7	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**8800** JD	< 1100	< 1100	**13000** JD	< 54000	**2000** J	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	**8900** JD	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1200	< 1400	< 1100	< 14000	< 1200	**400** J	< 1300	**720000** D	< 1100	< 1100	**950000** D	< 54000	**150000** JD	< 1100	< 1400	**130** J	< 1100	< 1100	**330** J	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**230000** D	< 1100	< 1100	**380000** D	< 54000	**48000**	< 1100	< 1400	< 1200	< 1100	< 1100	**130** J	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	**270** J	< 58000	< 1100	< 1100	**6000** JD	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**1300000** D	< 1100	< 1100	**1700000** D	**5800** JD	**230000** JD	< 1100	< 1400	**350** J	< 1100	< 1100	**790** J	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**600000** D	< 1100	< 1100	**910000** D	< 54000	**120000**	< 1100	< 1400	**120** J	< 1100	< 1100	**380** J	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1200	< 1400	**130** JB	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Fluorene	230,000	2,200,000	400	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**970000** D	< 1100	< 1100	**1500000** D	< 54000	**170000** JD	< 1100	< 1400	**270** J	< 1100	< 1100	**670** J	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	< 1200	**210** J	< 1100	< 14000	**430** J	**360** J	**440** J	**4900000** D	**510** J	< 1100	**8000000** D	**37000** JD	**1200000** D	< 1100	**750** J	**2600**	**1200**	**340** J	**7400**	**590** J
Anthracene	1,700,000	17,000,000	4,200	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	**140** J	**2000000** D	**130** J	< 1100	**4000000** D	**9800** JD	**280000** JD	< 1100	**180** J	**600** J	< 1100	< 1100	**1400**	**150** J
Di-n-butylphthalate	610,000	6,200,000	170	--	**630** JB	< 1400	**710** JB	< 14000	**330** JB	**420** JB	**270** JB	< 58000	**260** JB	**220** JB	< 55000	< 54000	< 11000	**630** JB	**590** JB	**470** JB	**800** JB	**220** JB	**900** JB	**690** JB
Fluoranthene	230,000	2,200,000	7,000	--	**240** J	**280** J	< 1100	< 14000	**880** J	**410** J	**880** J	**4500000** D	**520** J	< 1100	**7200000** D	**39000** JD	**1100000** D	**140** J	**1200** J	**4000**	**2100**	**480** J	**7900**	**820** J
Benzidine	0.5	7.5	0.00024	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	**220** J	**380** J	< 1100	< 14000	**800** J	**550** J	**1200** J	**2900000** D	**490** J	< 1100	**7400000** D	**47000** JD	**1100000** D	**210** J	**1600**	**3900**	**2000**	**520** J	**8600**	**1200**
Butylbenzylphthalate	260,000	910,000	200	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	< 1200	**170** J	< 1100	< 14000	**470** J	**220** J	**570** J	**1900000** D	**250** J	< 1100	**2500000** JD	**22000** JD	**390000** JD	< 1100	**700** J	**1700**	**660** J	**260** J	**2900**	**450** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	**260** J	**340** J	< 1100	< 14000	**720** J	**460** J	**1100** J	**2400000** D	**410** J	**120** J	**3800000** JD	**31000** JD	**570000** D	**190** J	**1100** J	**2800**	**1400**	**450** J	**4800**	**700** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1200	< 1400	**140** J	< 14000	**130** J	< 1100	**160** J	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	**360** J	< 1200	**140** J	**260** J	< 1100	**310** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	< 58000	< 1100	< 1100	< 55000	< 54000	< 11000	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	**140** J	**170** J	< 1100	< 14000	**410** J	**160** J	**570** J	**2500000** D	**270** J	< 1100	**5400000** D	**15000** JD	**240000** JD	< 1100	**790** J	**1400**	**520** J	**180** J	**2600**	**500** J
Benzo(k)fluoranthene	1,500	21,000	350	--	**120** J	**180** J	< 1100	< 14000	**400** J	**190** J	**760** J	**2200000** D	**200** J	< 1100	**3100000** D	**18000** JD	**240000** JD	< 1100	**790** J	**1300**	**650** J	**250** J	**2700**	**520** J
Benzo(a)pyrene	15	210	4	--	**130** J	**180** J	< 1100	< 14000	**430** J	**180** J	**590** J	**2500000** D	**230** J	< 1100	**4500000** D	**18000** JD	**300000** JD	**120** J	**750** J	**1600**	**490** J	**230** J	**2700**	**500** J
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1200	< 1400	< 1100	< 14000	**150** J	**170** J	< 1300	**670000** D	< 1100	< 1100	**1200000** D	**8200** JD	**190000** JD	< 1100	< 1400	**570** J	**300** J	**130** J	**800** J	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 1200	< 1400	< 1100	< 14000	< 1200	< 1100	< 1300	**410000** D	< 1100	< 1100	**850000** D	< 54000	**100000**	< 1100	< 1400	< 1200	< 1100	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1200	< 1400	< 1100	< 14000	**170** J	**210** J	< 1300	**520000** D	< 1100	< 1100	**940000** D	< 54000	**120000**	**160** J	< 1400	**530** J	**330** J	**150** J	**770** J	< 1100
TICs	NLE	NLE	NLE	--	**12700**	**8790**	**9100**	ND	**25380**	**5170**	**9350**	**4326000**	**1500**	**3100**	**5810000**	ND	**781460**	**7090**	**3660**	**5790**	**11590**	**4440**	**13170**	**1400**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0097	< 0.0109	< 0.0087	< 0.0111	< 0.0091	< 0.0087	< 0.0098	< 0.0092	< 0.0091	< 0.0086	< 0.0089	< 0.0085	< 0.0092	< 0.0090	< 0.0110	< 0.0090	< 0.0095	< 0.0088	< 0.0091	< 0.0087
Heptachlor	0.11	0.38	0.00014	--	< 0.0073	< 0.0082	< 0.0065	< 0.0083	< 0.0068	< 0.0066	< 0.0074	< 0.0069	< 0.0069	< 0.0061	< 0.0067	< 0.0064	< 0.0069	< 0.0067	< 0.0082	< 0.0068	< 0.0071	< 0.0066	< 0.0068	< 0.0065
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0146	< 0.0164	< 0.0130	< 0.0167	< 0.0136	< 0.0131	< 0.0148	< 0.0139	< 0.0137	< 0.0129	< 0.0134	< 0.0127	< 0.0137	< 0.0134	< 0.0165	< 0.0135	< 0.0142	< 0.0132	< 0.0137	< 0.0130
Endosulfan I	370	3700	0.11	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	< 0.0107	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	< 0.0113	< 0.0119	< 0.0110	< 0.0114	< 0.0108
4,4'-DDE	1.4	5.1	0.05	--	**0.078**	**0.697**	**0.01**	**0.402**	**0.061**	**0.113**	**0.064**	< 0.0092	**0.061**	**0.02**	**0.287**	**0.032**	< 0.0092	**0.052**	**0.487**	**0.039**	**0.273**	**0.202**	**0.039**	**0.012**
Dieldrin	0.03	0.11	0.000061	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	**0.017**	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	**0.025**	**0.019**	**0.015**	< 0.0114	**0.016**
Endrin	1.8	18	0.0068	--	< 0.0121	< 0.0137	< 0.0108	< 0.0139	< 0.0113	< 0.0109	< 0.0123	< 0.0116	< 0.0114	< 0.0107	< 0.0111	< 0.0106	< 0.0115	< 0.0112	< 0.0137	< 0.0113	< 0.0119	< 0.0110	< 0.0114	< 0.0108
Endosulfan II	370	3700	0.11	--	< 0.0097	< 0.0109	< 0.0087	< 0.0111	< 0.0091	< 0.0087	< 0.0098	< 0.0092	< 0.0091	< 0.0086	< 0.0089	< 0.0085	< 0.0092	< 0.0090	< 0.0110	< 0.0090	< 0.0095	< 0.0088	< 0.0091	< 0.0087
4,4'-DDD	2.0	7.2	0.01	--	**0.06**	**3.857**	< 0.0130	**1.179**	**0.067**	**0.194**	< 0.0148	< 0.0139	**0.066**	**0.021**	< 0.0134	**0.054**	< 0.0137	**0.031**	**0.616**	**0.035**	**0.267**	**0.135**	**0.091**	< 0.0130
4,4'-DDT	1.7	7	0.07	--	**0.091**	**1.261**	< 0.0239	**1.381**	**0.027**	**0.045**	**0.341**	< 0.0254	**0.056**	< 0.0236	< 0.0245	**0.102**	< 0.0252	**0.136**	**0.343**	**0.097**	**0.219**	**0.39**	**0.038**	**0.04**
gamma-Chlordane	1.6	6.5	0.013	--	**0.018**	**0.296**	< 0.0108	**0.075**	< 0.0113	< 0.0109	< 0.0123	< 0.0116	**0.038**	**0.044**	< 0.0111	**0.018**	< 0.0115	< 0.0112	< 0.0137	**0.018**	**0.042**	**0.029**	**0.018**	< 0.0108
alpha-Chlordane	1.6	6.5	0.013	--	**0.014**	**0.2**	< 0.0108	**0.055**	< 0.0113	< 0.0109	< 0.0123	< 0.0116	**0.027**	**0.038**	< 0.0111	**0.024**	< 0.0115	< 0.0112	< 0.0137	**0.018**	**0.046**	**0.036**	**0.016**	< 0.0108
Aroclor 1016	0.39	3.7	0.01	--	< 0.0679	< 0.0765	< 0.2429	< 0.0779	< 0.2535	< 0.2448	< 0.0138	< 0.2588	< 0.2558	< 0.2401	< 0.2495	< 0.2371	< 0.2566	< 0.2510	< 0.0769	< 0.2529	< 0.2655	< 0.2457	< 0.2551	< 0.2430
Aroclor 1221	0.14	0.54	0.000069	--	< 0.1249	< 0.1408	< 0.4468	< 0.1433	< 0.4662	< 0.4503	< 0.0253	< 0.4761	< 0.4705	< 0.4417	< 0.4589	< 0.4362	< 0.4719	< 0.4617	< 0.1415	< 0.4651	< 0.4883	< 0.4520	< 0.4693	< 0.4470
Aroclor 1242	0.22	0.74	0.0053	--	< 0.0970	< 0.1093	< 0.3470	< 0.1113	< 0.3621	< 0.3497	< 0.0197	< 0.3698	< 0.3654	< 0.3431	< 0.3564	< 0.3388	< 0.3665	< 0.3586	< 0.1099	< 0.3613	< 0.3792	< 0.3511	< 0.3645	< 0.3472
Aroclor 1260	0.22	0.74	0.024	--	< 0.0218	< 0.0246	< 0.0781	< 0.0250	< 0.0815	< 0.0787	< 0.0044	< 0.0832	< 0.0822	< 0.0772	< 0.0802	< 0.0762	< 0.0825	< 0.0807	< 0.0247	< 0.0813	< 0.0853	< 0.0790	< 0.0820	< 0.0781

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-134	B-135	B-136	B-137	B-138	B-139	B-140	B-141	B-142	B-143	B-144	B-145	B-145 Dup	B-146	B-147	B-148	B-149	B-150	B-151	B-152
Sample Date					04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/08/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**12100**	**8960**	**5180**	**11800**	**5850**	**7720**	**8850**	**18900**	**13100**	**5890**	**9190**	**5200**	**16100**	**13700**	**8750**	**14000**	**9920**	**9490**	**7670**	**8010**
Antimony	3.1	41	0.03	ND	< 0.477	**46.9**	< 0.426	**23.5**	**0.464**	**2.22**	**5.93**	**1.07**	< 0.445	< 0.402	< 0.457	< 0.398	**2.02**	< 0.432	**62.3**	**0.86**	< 0.474	< 0.432	**0.572**	< 0.461
Arsenic	0.61	2.4	0.0013	22.9	**11.1**	**10.1**	**4.38**	**15.7**	**8.31**	**11.3**	**9.38**	**7.03**	**9.69**	**6.27**	**8.11**	**5.03**	**9.78**	**8.3**	**7.49**	**13.4**	**13.2**	**6.97**	**2.21**	**2.74**
Barium	1,500	19,000	12	32.3	**60.5**	**783**	**11.2**	**208**	**27.8**	**46.9**	**58.5**	**984**	**74.6**	**17.9**	**37.3**	**13.9**	**558**	**53.8**	**112**	**39.8**	**51.5**	**43.1**	**50.3**	**17.1**
Beryllium	16	200	1.3	2	**1.19**	**1.02**	**0.51**	**1.26**	**0.579**	**0.75**	**0.706**	**2.4**	**0.815**	**0.573**	**0.677**	**0.405**	**1.78**	**1.16**	**0.672**	**0.903**	**0.918**	**0.766**	**0.325**	**0.261**
Cadmium	7	80	0.05	ND	< 0.119	**2.67**	< 0.107	**0.499**	**0.207**	< 0.117	**0.131**	**3.27**	< 0.111	< 0.101	< 0.114	< 0.100	**0.929**	< 0.108	**0.484**	< 0.119	**0.371**	< 0.108	< 0.099	**0.152**
Calcium	NLE	NLE	NLE	921	**829**	**8310**	**589**	**3470**	**1110**	**686**	**2730**	**57700**	**5320**	**522**	**949**	**536**	**41900**	**21400**	**4210**	**2460**	**1270**	**1340**	**50500**	**23500**
Chromium	12,000	150,000	2,800,000	269	**137**	**84.8**	**45.2**	**127**	**67**	**87**	**62.6**	**24.9**	**81.3**	**53.1**	**74**	**65**	**57.6**	**325**	**107**	**81.2**	**78.8**	**71.9**	**23.4**	**28.1**
Cobalt	2.3	30	0.02	2.5	**1.5**	**5.71**	**0.938**	**3.93**	**1.15**	**1.2**	**3.12**	**3.92**	**1.62**	**1.24**	**1.86**	**0.758**	**4.48**	**5.64**	**4.07**	**2.22**	**2.54**	**2.22**	**2.29**	**4**
Copper	310	4,100	2.2	8	**18.8**	**81.2**	< 0.639	**36.8**	**18.1**	**24.6**	**19.6**	**25.5**	**4.59**	**8.95**	**6.96**	**1.36**	**15.6**	**692**	**129**	**11.1**	**23**	**11.4**	**15.9**	**16.8**
Iron	5500	72,000	27	55,800	**34700**	**25100**	**12500**	**43100**	**23500**	**27500**	**25300**	**5060**	**22100**	**15900**	**19900**	**15900**	**13800**	**25600**	**19900**	**30700**	**27700**	**22100**	**9540**	**13600**
Lead	400	800	NLE	19.5	**56.8**	**4000**	**4.94**	**808**	**33.6**	**91.5**	**521**	**64.3**	**63.3**	**15.1**	**35.3**	**12.5**	**201**	**35.8**	**645**	**65.7**	**59.9**	**41.7**	**12.1**	**9.11**
Magnesium	NLE	NLE	NLE	7,230	**3910**	**2950**	**964**	**3920**	**1310**	**1980**	**2190**	**17100**	**2930**	**1190**	**1670**	**969**	**13700**	**4170**	**2000**	**3210**	**2150**	**1960**	**2660**	**5280**
Manganese	180	2,300	2.1	90.7	**23.7**	**255**	**13.7**	**143**	**25.5**	**20.1**	**74.1**	**1910**	**42.2**	**18.5**	**49.7**	**14.5**	**1530**	**94.1**	**78.4**	**46.2**	**55.7**	**53.2**	**81.1**	**95.1**
Mercury	1	4.3	0.0033	ND	**0.105**	**0.37**	< 0.025	**0.371**	**0.068**	**0.149**	**0.211**	**0.078**	**0.059**	**0.034**	**0.259**	**0.058**	**0.261**	**0.11**	**0.488**	**0.082**	**0.229**	**0.144**	**0.065**	**0.062**
Nickel	150	2,000	2	8.4	**6.5**	**22.4**	**4.83**	**10.9**	**4.59**	**5.57**	**6.99**	**7.61**	**5.53**	**5.91**	**5.32**	**3.02**	**11.7**	**15.6**	**10.9**	**6.44**	**8.36**	**7.53**	**4.3**	**14.1**
Potassium	NLE	NLE	NLE	15,400	**9980**	**4940**	**2680**	**8880**	**3380**	**5320**	**4210**	**2060**	**5210**	**2980**	**4250**	**2830**	**4730**	**5120**	**4180**	**7050**	**5240**	**4810**	**1660**	**1620**
Selenium	39	510	0.04	1.9	**1.24**	**1.26**	< 0.639	**1.86**	< 0.681	**1.13**	**0.879**	**2.36**	**0.695**	< 0.603	< 0.686	< 0.597	**1.67**	< 0.648	< 0.799	< 0.712	< 0.711	< 0.648	< 0.597	< 0.691
Silver	39	510	0.06	1.1	**6.67**	< 0.758	< 0.639	< 0.891	**0.978**	**2.89**	< 0.743	< 0.724	< 0.668	< 0.603	**1.26**	< 0.597	< 0.691	< 0.648	**1.45**	< 0.712	< 0.711	**2.06**	< 0.597	< 0.691
Sodium	NLE	NLE	NLE	51.6	**178**	**198**	**109**	**207**	**79.1**	**216**	**103**	**16700**	**108**	**96.7**	**248**	**79.3**	**13400**	**231**	**192**	**177**	**157**	**146**	**123**	**365**
Thallium	0.078	1	0.0011	ND	< 0.715	< 0.758	< 0.639	< 0.891	< 0.681	< 0.704	< 0.743	< 0.724	< 0.668	< 0.603	< 0.686	< 0.597	< 0.691	< 0.648	< 0.799	< 0.712	< 0.711	< 0.648	< 0.597	< 0.691
Vanadium	39	510	6.3	94.1	**43.8**	**42.9**	**23.6**	**52.3**	**46.2**	**36.4**	**43.8**	**18.4**	**46.5**	**33**	**59**	**70.9**	**45.9**	**63.5**	**51.5**	**52.2**	**47.9**	**42.8**	**15.3**	**92.8**
Zinc	2,300	31,000	29	81.4	**67.7**	**1020**	**20.3**	**478**	**94**	**46.9**	**509**	**385**	**59.3**	**33.9**	**46.4**	**24.9**	**120**	**432**	**412**	**58.4**	**90**	**60.3**	**41.3**	**96.5**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-153	B-154	B-155	B-156	B-157	B-157 Dup	B-158	B-159	B-160	B-161	B-162	B-163	B-164	B-165	B-166	B-166 Dup	B-167	B-168	B-169	B-170
Sample Date					04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4405.17	4405.19	4405.21	4405.23	4405.25	4405.27	4413.03	4413.05	4413.07	4413.09	4413.11	4413.13	4413.15	4413.17	4413.19	4413.29	4413.21	4413.23	4413.25	4413.27
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	**66** J	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
Acetone	6,100,000	63,000,000	240	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	**1100**	< 720	< 680	< 660	< 680	< 550	< 620	< 670
Carbon Disulfide	82,000	370,000	21	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Methylene Chloride	36,000	310,000	2.2	--	< 550	< 630	**4100**	**400**	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
2-Butanone	2,800,000	20,000,000	100	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	< 1500	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
Benzene	1,100	5,400	0.2	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
Toluene	500,000	4,500,000	59	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Tetrachloroethene	8,600	41,000	1.6	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Chlorobenzene	29,000	140,000	4.9	--	< 270	< 310	< 280	< 270	< 260	< 270	< 390	< 400	< 880	< 290	< 310	< 560	< 500	< 360	< 340	< 330	< 340	< 280	< 310	< 340
Ethylbenzene	5,400	27,000	1.5	--	< 550	< 630	< 570	< 540	< 530	< 540	< 790	< 810	< 1800	< 570	< 620	< 1100	< 1000	< 720	< 680	< 660	< 680	< 550	< 620	< 670
m+p-Xylenes	630,000	2,700,000	19	--	< 820	< 940	< 850	< 800	< 790	< 800	< 1200	< 1200	< 2600	< 860	< 930	< 1700	< 1500	< 1100	< 1000	< 990	< 1000	< 830	< 940	< 1000
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	**3000**	**5200**	**4900**	**10000**	ND	**3800**	ND	ND	**7000**	ND	ND	ND	ND	**2000**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4405.16	4405.18	4405.2	4405.22	4405.24	4405.26	4413.02	4413.04	4413.06	4413.08	4413.1	4413.12	4413.14	4413.16	4413.18	4413.28	4413.2	4413.22	4413.24	4413.26
Aniline	43,000	300,000	3.7	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**7500**	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	**650** J	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**2600**	< 2100	**21000** JD	< 1200	< 1200	< 1200	< 1200	< 1200
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1100	< 1100	< 1100	**730** J	**210** J	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**4300**	< 2100	**9700**	< 1200	< 1200	< 1200	< 1200	< 1200
Acenaphthylene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	**220** J	**220** J	< 1200	< 1200	< 1200	< 1200	< 1200
Acenaphthene	340,000	3,300,000	410	--	< 1100	**210** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**3800**	< 2100	**34000** D	**220** J	< 1200	< 1200	< 1200	< 1200
Dibenzofuran	7,800	100,000	11	--	< 1100	**130** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**850** J	< 2100	**14000** JD	< 1200	< 1200	< 1200	< 1200	< 1200
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Fluorene	230,000	2,200,000	400	--	< 1100	**300** J	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**1300**	< 2100	**28000** JD	**160** J	< 1200	< 1200	< 1200	< 1200
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Phenanthrene	NLE	NLE	NLE	--	**170** J	**1400**	**680** J	**390** J	**250** J	< 1200	< 1200	**350** J	**220** J	< 1200	< 1200	< 1200	< 1200	**710** J	**230000** D	**2200**	**220** J	< 1200	**350** J	< 1200
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	**380** J	**160** J	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**1600**	< 2100	**58000** D	**520** J	< 1200	< 1200	< 1200	< 1200
Di-n-butylphthalate	610,000	6,200,000	170	--	**460** JB	**600** JB	**390** JB	**440** JB	**1300** B	**640** JB	**240** JB	**950** JB	**540** JB	**290** JB	**720** JB	**410** JB	< 1200	**860** JB	**850** JB	**650** JB	**1200** B	**360** JB	**690** JB	**640** JB
Fluoranthene	230,000	2,200,000	7,000	--	**300** J	**2100**	**1100** J	**750** J	**600** J	**150** J	< 1200	**630** J	**410** J	**350** J	**290** J	**350** J	< 1200	**1400** J	**190000** D	**6100**	**430** J	< 1200	**600** J	< 1200
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Pyrene	170,000	1,700,000	950	--	**320** J	**2700**	**1200**	**840** J	**540** J	**260** J	**130** J	**770** J	**450** J	**320** J	**260** J	**280** J	**4300**	**1500** J	**210000** D	**6300**	**380** J	< 1200	**550** J	**130** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzo(a)anthracene	150	2,100	10	--	**190** J	**480** J	**530** J	**410** J	**330** J	**160** J	< 1200	**400** J	**210** J	**180** J	**160** J	**200** J	**1900**	**700** J	**80000** D	**2700**	**220** J	< 1200	**290** J	< 1200
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**380** J	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Chrysene	15,000	210,000	1,100	--	**310** J	**800** J	**780** J	**650** J	**590** J	**230** J	< 1200	**740** J	**400** J	**340** J	**290** J	**340** J	**2800**	**1500** J	**130000** D	**4700**	**390** J	< 1200	**570** J	< 1200
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1100	< 1100	< 1100	< 1100	**190** J	**190** J	**130** J	**130** J	**170** J	< 1200	< 1200	< 1200	**810** J	**270** J	**2300**	< 1200	< 1200	< 1200	< 1200	< 1200
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	< 1200	< 2100	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Benzo(b)fluoranthene	150	2,100	35	--	**140** J	**370** J	**450** J	**450** J	**330** J	< 1200	< 1200	**350** J	**200** J	**200** J	**150** J	**180** J	**1100** J	**740** J	**44000** D	**2700**	**170** J	< 1200	**290** J	< 1200
Benzo(k)fluoranthene	1,500	21,000	350	--	**160** J	**410** J	**500** J	**420** J	**370** J	< 1200	< 1200	**360** J	**200** J	**180** J	**150** J	**190** J	**1200**	**920** J	**50000** D	**2400**	**210** J	< 1200	**270** J	< 1200
Benzo(a)pyrene	15	210	4	--	**160** J	**390** J	**470** J	**450** J	**380** J	< 1200	< 1200	**390** J	**200** J	**190** J	**170** J	**200** J	**1400**	**740** J	**65000** D	**3000**	**210** J	< 1200	**330** J	< 1200
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	< 1100	< 1100	< 1100	**260** J	< 1200	< 1200	**280** J	**140** J	**160** J	< 1200	**140** J	**530** J	**390** J	**35000** D	**1100** J	< 1200	< 1200	**220** J	< 1200
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1100	< 1100	< 1100	< 1200	< 1200	< 1200	< 1200	< 1300	< 1200	< 1200	< 1200	**180** J	< 2100	**14000**	**330** J	< 1200	< 1200	< 1200	< 1200
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**120** J	< 1100	< 1100	< 1100	**260** J	< 1200	< 1200	**330** J	**170** J	**170** J	< 1200	< 1200	**510** J	**460** J	**37000** D	**1100** J	< 1200	< 1200	**250** J	< 1200
TICs	NLE	NLE	NLE	--	**13020**	**5650**	**3680**	**4000**	**66650**	**7720**	**11520**	**14490**	**7730**	**26540**	**37270**	**64540**	**452800**	**30500**	**138400**	**13580**	**44800**	**31940**	**51000**	**11290**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0093	< 0.0090	< 0.0088	< 0.0092	< 0.0094	< 0.0094	< 0.0099	< 0.0094	< 0.0110	< 0.0093	< 0.0095	< 0.0097	< 0.0102	< 0.0180	< 0.0095	< 0.0096	< 0.0094	< 0.0095	< 0.0092	< 0.0092
Heptachlor	0.11	0.38	0.00014	--	< 0.0070	< 0.0067	< 0.0066	< 0.0069	< 0.0071	< 0.0071	< 0.0074	< 0.0071	< 0.0083	< 0.0070	< 0.0071	< 0.0072	< 0.0077	< 0.0135	< 0.0071	< 0.0072	< 0.0071	< 0.0071	< 0.0069	< 0.0069
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0139	< 0.0135	< 0.0132	< 0.0139	< 0.0141	< 0.0142	< 0.0148	< 0.0142	< 0.0165	< 0.0140	< 0.0143	< 0.0145	< 0.0153	< 0.0270	< 0.0142	< 0.0114	< 0.0141	< 0.0142	< 0.0139	< 0.0138
Endosulfan I	370	3700	0.11	--	< 0.0116	< 0.0112	< 0.0110	< 0.0115	< 0.0118	< 0.0118	< 0.0123	< 0.0118	< 0.0138	< 0.0117	< 0.0119	< 0.0121	< 0.0128	< 0.0225	< 0.0119	< 0.0120	< 0.0118	< 0.0118	< 0.0116	< 0.0115
4,4'-DDE	1.4	5.1	0.05	--	< 0.0093	**0.077**	**0.063**	**0.057**	**0.137**	**0.098**	< 0.0099	**0.077**	**0.034**	**0.025**	**0.032**	**0.033**	< 0.0102	**0.118**	**0.049**	**0.029**	**0.072**	**0.035**	**0.035**	**0.028**
Dieldrin	0.03	0.11	0.000061	--	< 0.0116	**0.014**	**0.016**	< 0.0115	< 0.0118	**0.027**	< 0.0123	**0.021**	< 0.0138	< 0.0117	**0.018**	**0.055**	< 0.0128	**0.027**	**0.031**	< 0.0120	< 0.0118	< 0.0118	**0.027**	< 0.0115
Endrin	1.8	18	0.0068	--	< 0.0116	< 0.0112	< 0.0110	< 0.0115	< 0.0118	< 0.0118	< 0.0123	< 0.0118	< 0.0138	< 0.0117	< 0.0119	< 0.0121	< 0.0128	< 0.0225	< 0.0119	< 0.0120	< 0.0118	< 0.0118	< 0.0116	< 0.0115
Endosulfan II	370	3700	0.11	--	< 0.0093	< 0.0090	< 0.0088	< 0.0092	< 0.0094	< 0.0094	< 0.0099	< 0.0094	< 0.0110	< 0.0093	< 0.0095	< 0.0097	< 0.0102	< 0.0180	< 0.0095	< 0.0096	< 0.0094	< 0.0095	< 0.0092	< 0.0092
4,4'-DDD	2.0	7.2	0.01	--	< 0.0139	**0.181**	**0.028**	**0.032**	**0.153**	**0.104**	**0.099**	**0.147**	**0.082**	**0.031**	**0.049**	**0.085**	< 0.0153	**0.201**	**0.134**	**0.089**	**0.078**	**0.026**	**0.055**	**0.027**
4,4'-DDT	1.7	7	0.07	--	< 0.0255	**0.028**	**0.154**	**0.193**	**0.057**	**0.044**	< 0.0271	**0.073**	< 0.0303	**0.048**	< 0.0262	< 0.0265	< 0.0281	**0.063**	**0.069**	**0.036**	< 0.0259	< 0.0260	< 0.0254	< 0.0252
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0116	**0.014**	**0.012**	< 0.0115	**0.083**	**0.046**	< 0.0123	**0.088**	**0.015**	< 0.0117	**0.051**	**0.014**	< 0.0128	**0.045**	**0.04**	**0.034**	< 0.0118	< 0.0118	< 0.0116	< 0.0115
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0116	**0.013**	**0.013**	< 0.0115	**0.068**	**0.027**	< 0.0123	**0.046**	< 0.0138	< 0.0117	**0.032**	< 0.0121	< 0.0128	**0.026**	**0.025**	**0.019**	< 0.0118	< 0.0118	< 0.0116	< 0.0115
Aroclor 1016	0.39	3.7	0.01	--	< 0.0130	< 0.2513	< 0.2473	< 0.2587	< 0.2639	< 0.2642	< 0.0138	< 0.0132	< 0.0772	< 0.2610	< 0.2663	< 0.0676	< 0.0143	< 0.1258	< 0.2657	< 0.0673	< 0.2636	< 0.2647	< 0.2588	< 0.2567
Aroclor 1221	0.14	0.54	0.000069	--	< 0.0239	< 0.4622	< 0.4549	< 0.4758	< 0.4853	< 0.4859	< 0.0254	< 0.0243	< 0.1419	< 0.4800	< 0.4898	< 0.1243	< 0.0263	< 0.2314	< 0.4887	< 0.1238	< 0.4848	< 0.4869	< 0.4759	< 0.4721
Aroclor 1242	0.22	0.74	0.0053	--	< 0.0186	< 0.3590	< 0.3533	< 0.3696	< 0.3769	< 0.3774	**0.0197**	**6.71**	< 0.1102	< 0.3728	< 0.3805	< 0.0965	**5654.281**	< 0.1798	< 0.3796	< 0.0962	< 0.3766	< 0.3782	< 0.3697	< 0.3667
Aroclor 1260	0.22	0.74	0.024	--	**20.06**	< 0.0808	< 0.0795	< 0.0831	< 0.0848	< 0.0849	< 0.0044	< 0.0042	< 0.0248	< 0.0839	< 0.0856	< 0.0217	< 0.0046	< 0.0404	< 0.0854	< 0.0216	< 0.0847	< 0.0851	< 0.0832	< 0.0825

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[(1)]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-153	B-154	B-155	B-156	B-157	B-157 Dup	B-158	B-159	B-160	B-161	B-162	B-163	B-164	B-165	B-166	B-166 Dup	B-167	B-168	B-169	B-170
Sample Date					04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/09/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99	04/13/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**13800**	**11900**	**5400**	**15400**	**10400**	**12300**	**12100**	**13400**	**15200**	**15600**	**13900**	**10200**	**10600**	**17900**	**8800**	**12800**	**11300**	**12500**	**8590**	**13400**
Antimony	3.1	41	0.03	ND	< 0.447	< 0.429	< 0.466	< 0.447	< 0.431	< 0.467	**1.12**	**1.16**	**0.668**	< 0.480	< 0.480	**0.546**	< 0.524	< 0.924	< 0.418	< 0.414	< 0.478	< 0.496	< 0.471	< 0.488
Arsenic	0.61	2.4	0.0013	22.9	**10.4**	**11.2**	**4.1**	**11.8**	**14.3**	**29.2**	**15.3**	**15.4**	**16**	**9.79**	**11.8**	**16.7**	**12.6**	**18.9**	**7.72**	**12.2**	**28**	**19.4**	**11.9**	**13.4**
Barium	1,500	19,000	12	32.3	**57.5**	**89**	**12.8**	**56.9**	**87.4**	**66.6**	**87.7**	**50.2**	**86.1**	**16.9**	**88.4**	**129**	**39.2**	**53.3**	**40.8**	**51.3**	**78.3**	**60.2**	**68.8**	**70.6**
Beryllium	16	200	1.3	2	**0.895**	**1.86**	**0.413**	**0.985**	**1.31**	**1.57**	**1.06**	**1.35**	**1.44**	**2.09**	**1.97**	**1.26**	**1.56**	**1.7**	**0.766**	**1.32**	**1.36**	**1.79**	**1.19**	**1.99**
Cadmium	7	80	0.05	ND	< 0.112	**1.69**	< 0.116	**0.428**	< 0.108	< 0.117	**0.225**	**1.24**	**0.655**	< 0.120	< 0.120	**0.995**	**0.251**	**0.69**	**0.606**	**0.322**	< 0.119	< 0.124	< 0.118	< 0.122
Calcium	NLE	NLE	NLE	921	**2380**	**6570**	**312**	**1460**	**2720**	**1430**	**2770**	**1290**	**1480**	**175**	**1720**	**1710**	**2460**	**1160**	**469**	**636**	**1280**	**2080**	**4680**	**4250**
Chromium	12,000	150,000	2,800,000	269	**88.6**	**196**	**49.5**	**87.8**	**136**	**173**	**116**	**146**	**177**	**160**	**204**	**117**	**120**	**150**	**89.1**	**140**	**160**	**142**	**104**	**180**
Cobalt	2.3	30	0.02	2.5	**2.46**	**1.47**	**1.04**	**3.25**	**2.26**	**1.05**	**2.2**	**2.38**	**1.92**	**2.73**	**0.874**	**1.23**	**2.21**	**2.6**	**1.66**	**2.69**	**0.906**	**2.71**	**1.11**	**1.98**
Copper	310	4,100	2.2	8	**19.7**	**5.33**	< 0.698	**21**	**22.1**	**4.4**	**44.7**	**49.3**	**52.9**	**18.1**	**17.5**	**33.9**	**9.45**	**91.4**	**35.1**	**37.4**	**6.96**	**6.2**	**7.83**	**6.91**
Iron	5500	72,000	27	55,800	**47.8**	**42800**	**13300**	**27800**	**33400**	**42200**	**31000**	**43600**	**48700**	**56900**	**45600**	**28000**	**36200**	**43600**	**25800**	**44700**	**39400**	**43800**	**27600**	**40100**
Lead	400	800	NLE	19.5	**47.8**	**12.8**	**15.5**	**93.3**	**31.8**	**16.1**	**111**	**75.2**	**95**	**10.9**	**15.5**	**38.9**	**14.8**	**91.6**	**44.6**	**57.4**	**16.8**	**12.9**	**16**	**12.5**
Magnesium	NLE	NLE	NLE	7,230	**3270**	**6360**	**1130**	**2900**	**4210**	**5450**	**3380**	**4510**	**5420**	**7450**	**7090**	**3710**	**4110**	**4410**	**2450**	**5050**	**5200**	**5890**	**3500**	**6110**
Manganese	180	2,300	2.1	90.7	**62.4**	**34.4**	**24.5**	**95.5**	**24.9**	**19.6**	**148**	**43.5**	**67.7**	**18.9**	**23.1**	**29.7**	**24.9**	**40.6**	**22.5**	**31.9**	**18.8**	**16.7**	**16.4**	**25.5**
Mercury	1	4.3	0.0033	ND	**0.144**	**0.107**	**0.046**	**0.116**	**0.461**	**0.142**	**1.17**	**0.355**	**0.463**	**0.088**	**0.378**	**0.859**	**0.148**	**0.766**	**2.36**	**6.31**	**0.15**	**0.042**	**0.065**	**0.068**
Nickel	150	2,000	2	8.4	**7.7**	**8.06**	**3.28**	**12**	**10.8**	**7.33**	**8.57**	**8.17**	**10.8**	**9.52**	**7.56**	**9.04**	**15.1**	**13**	**7.73**	**10.9**	**5.15**	**11.2**	**6.33**	**17.5**
Potassium	NLE	NLE	NLE	15,400	**6560**	**16900**	**3080**	**6730**	**10900**	**14400**	**7150**	**10400**	**13600**	**20300**	**17600**	**9440**	**10300**	**10800**	**6220**	**13100**	**13400**	**17100**	**9040**	**15500**
Selenium	39	510	0.04	1.9	**0.759**	**1.32**	< 0.698	**0.841**	**1.56**	**1.72**	**0.813**	**0.886**	**1.36**	< 0.719	**1.6**	**2.62**	**1.55**	< 1.387	**0.638**	< 0.621	**1.61**	**1.02**	**1.83**	**1.45**
Silver	39	510	0.06	1.1	< 0.671	< 0.643	< 0.698	< 0.671	**5.8**	< 0.700	**3.64**	**2.4**	**2.58**	< 0.719	**4.23**	< 0.793	< 0.786	< 1.387	**0.877**	**0.849**	**3.86**	< 0.744	< 0.706	< 0.731
Sodium	NLE	NLE	NLE	51.6	**258**	**357**	**103**	**228**	**197**	**279**	**158**	**305**	**283**	**129**	**119**	**124**	**341**	**347**	**120**	**239**	**129**	**192**	**199**	**165**
Thallium	0.078	1	0.0011	ND	< 0.671	< 0.643	< 0.698	< 0.671	< 0.646	< 0.700	< 0.714	< 0.741	< 0.845	< 0.719	< 0.720	< 0.793	< 0.786	< 1.387	< 0.627	< 0.621	< 0.717	< 0.744	< 0.706	< 0.731
Vanadium	39	510	6.3	94.1	**52.8**	**75.6**	**37.9**	**73.1**	**51.4**	**62.9**	**55.9**	**63.8**	**67.5**	**62**	**63.5**	**35.8**	**43.3**	**81.7**	**44.8**	**70.7**	**55.9**	**42.6**	**32.4**	**60.8**
Zinc	2,300	31,000	29	81.4	**59.5**	**64.9**	**255**	**205**	**169**	**74.3**	**152**	**98.5**	**117**	**76**	**88**	**140**	**83.4**	**135**	**73.1**	**94.9**	**47.4**	**64.3**	**51.3**	**84.5**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-171	B-172	B-173	B-173 Dup	B-174	B-175	B-176	B-177	B-178	B-179	B-180	B-180 Dup	B-181	B-182	B-183	B-184	B-185	B-186	B-187	B-188
Sample Date					05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/11/99	05/11/99	05/11/99	05/11/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4469.03	4469.05	4469.07	4469.13	4469.09	4469.11	4473.03	4473.05	4473.07	4473.09	4473.11	4473.13	4473.15	4473.17	4473.19	4473.21	4474.03	4474.05	4474.07	4474.09
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
Acetone	6,100,000	63,000,000	240	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
Carbon Disulfide	82,000	370,000	21	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Methylene Chloride	36,000	310,000	2.2	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	**1000**	< 550	< 670	< 610	< 720	< 640	< 690	**2900**	**7600**	**1300**	**620**
2-Butanone	2,800,000	20,000,000	100	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
Benzene	1,100	5,400	0.2	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
Toluene	500,000	4,500,000	59	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Tetrachloroethene	8,600	41,000	1.6	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Chlorobenzene	29,000	140,000	4.9	--	< 280	< 260	< 270	< 300	< 310	< 280	< 360	< 320	< 260	< 240	< 280	< 330	< 310	< 360	< 320	< 340	< 320	< 360	< 220	< 250
Ethylbenzene	5,400	27,000	1.5	--	< 560	< 530	< 540	< 590	< 610	< 570	< 720	< 640	< 520	< 490	< 550	< 670	< 610	< 720	< 640	< 690	< 650	< 720	< 450	< 500
m+p-Xylenes	630,000	2,700,000	19	--	< 840	< 790	< 800	< 890	< 920	< 850	< 1100	< 960	< 770	< 730	< 830	< 1000	< 920	< 1100	< 960	< 1000	< 970	< 1100	< 670	< 750
TICs	NLE	NLE	NLE	--	**3700**	**3500**	**3600**	**4400**	**2300**	**2200**	**5700**	**4800**	**3800**	**1800**	**2000**	**2700**	ND	**4200**	**4000**	**2700**	**1200**	ND	ND	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4469.02	4469.04	4469.06	4469.12	4469.08	4469.1	4473.02	4473.04	4473.06	4473.08	4473.1	4473.12	4473.14	4473.16	4473.18	4473.2	4474.02	4474.04	4474.06	4474.08
Aniline	43,000	300,000	3.7	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**210** J	< 1000	< 1100	< 1100	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	**280** J	< 1000	**110** J	< 1000	< 1100	< 1100	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1100	< 1100	< 1200	**130** J	< 1100	< 1100	**160** J	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**400** J	< 1000	< 1100	< 1100	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**340** J	< 1000	< 1100	< 1100	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Fluorene	230,000	2,200,000	400	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	**150** J	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**540** J	< 1000	< 1100	< 1100	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1100	**140** J	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	**1500**	**360** J	**110** J	**1400**	**140** J	< 1200	**120** J	< 1000	**220** J	**790** J	**310** J	**6900**	**210** J	**120** J	< 1100	< 1100
Anthracene	1,700,000	17,000,000	4,200	--	< 1100	< 1100	< 1100	< 1200	**240** J	< 1100	< 1100	**340** J	< 1000	< 1200	< 1000	< 1000	< 1200	**180** J	< 1000	**1800**	< 1000	< 1100	< 1100	< 1100
Di-n-butylphthalate	610,000	6,200,000	170	--	**550** JB	**430** JB	**150** JB	**490** JB	< 1000	**810** JB	**120** JB	**390** JB	**390** JB	**350** JB	**570** JB	**260** JB	**610** JB	**660** JB	**560** JB	**160** JB	**350** JB	**430** JB	**830** JB	**430** JB
Fluoranthene	230,000	2,200,000	7,000	--	< 1100	< 1100	< 1100	**210** J	**2400**	**840** J	**190** J	**1800**	**220** J	< 1200	**160** J	**200** J	**400** J	**1100** J	**540** J	**9500**	**270** J	**200** J	< 1100	**180** J
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	< 1100	**120** J	< 1100	**190** J	**2500**	**680** J	**200** J	**1400**	**210** J	< 1200	**140** J	**160** J	**390** J	**1300**	**390** J	**6900**	**320** J	**180** J	< 1100	**170** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	**200** J	< 1000	< 1000	< 1200	< 1100	< 1000	**170** J	< 1000	< 1100	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	< 1100	< 1100	< 1100	< 1200	**930** J	**320** J	**110** J	**740** J	**120** J	< 1200	< 1000	< 1000	**210** J	**530** J	**280** J	**3900**	**150** J	< 1100	< 1100	< 1100
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	< 1100	**120** J	< 1100	**240** J	**1600**	**640** J	**240** J	**1200**	**230** J	< 1200	**190** J	**190** J	**410** J	**1300**	**550** J	**5700**	**330** J	**200** J	< 1100	**200** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1100	< 1100	< 1100	< 1200	**110** J	< 1100	< 1100	**140** J	**120** J	**240** J	**260** J	**120** J	**170** J	**130** J	**300** J	**180** J	**170** J	**260** J	**150** J	**140** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	< 1000	< 1000	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	< 1100	< 1100	< 1100	**130** J	**830** J	**350** J	< 1100	**600** J	< 1000	< 1200	< 1000	< 1000	**280** J	**480** J	**330** J	**3700**	**120** J	< 1100	< 1100	< 1100
Benzo(k)fluoranthene	1,500	21,000	350	--	< 1100	< 1100	< 1100	**130** J	**890** J	**320** J	< 1100	**530** J	< 1000	< 1200	< 1000	< 1000	**220** J	**430** J	**270** J	**3300**	**110** J	< 1100	< 1100	< 1100
Benzo(a)pyrene	15	210	4	--	< 1100	< 1100	< 1100	< 1200	**930** J	**370** J	< 1100	**690** J	**110** J	< 1200	< 1000	< 1000	**260** J	**500** J	**280** J	**3200**	**140** J	< 1100	< 1100	< 1100
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1100	< 1100	< 1100	< 1200	**350** J	**260** J	< 1100	**390** J	< 1000	< 1200	< 1000	< 1000	< 1200	**360** J	**150** J	**1100**	< 1000	< 1100	< 1100	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1100	< 1100	< 1200	< 1000	< 1100	< 1100	< 1200	< 1000	< 1200	< 1000	< 1000	< 1200	< 1100	< 1000	**640** J	< 1000	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1100	< 1100	< 1100	< 1200	**370** J	**270** J	< 1100	**390** J	< 1000	< 1200	< 1000	< 1000	< 1200	**400** J	**140** J	**880** J	< 1000	< 1100	< 1100	< 1100
TICs	NLE	NLE	NLE	--	**4300**	**7320**	**11930**	**13440**	**1800**	**11670**	**10300**	**24400**	**25830**	**76990**	**18120**	**19590**	**30270**	**49920**	**14340**	**13470**	**59880**	**46550**	**17580**	**41880**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0088	< 0.0087	< 0.0093	< 0.0092	< 0.0080	< 0.0087	< 0.0086	< 0.0095	< 0.0086	< 0.0094	< 0.0084	< 0.0084	< 0.0092	< 0.0092	< 0.0086	< 0.0086	< 0.0088	< 0.0089	< 0.0086	< 0.0089
Heptachlor	0.11	0.38	0.00014	--	< 0.0066	< 0.0065	< 0.0069	< 0.0069	< 0.0060	< 0.0065	< 0.0064	< 0.0071	< 0.0064	< 0.0070	< 0.0063	< 0.0063	< 0.0069	< 0.0069	< 0.0065	< 0.0064	< 0.0066	< 0.0067	< 0.0064	< 0.0067
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0132	< 0.0130	< 0.0139	< 0.0138	< 0.0121	< 0.0131	< 0.0129	< 0.0142	< 0.0128	< 0.0140	< 0.0125	< 0.0126	< 0.0138	< 0.0138	< 0.0129	< 0.0129	< 0.0132	< 0.0134	< 0.0128	< 0.0134
Endosulfan I	370	3700	0.11	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	< 0.0115	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
4,4'-DDE	1.4	5.1	0.05	--	**0.017**	**0.079**	**0.011**	**0.013**	< 0.0080	< 0.0087	**0.137**	**0.141**	**0.134**	**0.105**	**0.091**	**0.097**	**0.533**	**0.419**	**0.077**	< 0.0086	**0.16**	**0.113**	**0.042**	**0.409**
Dieldrin	0.03	0.11	0.000061	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	**0.027**	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
Endrin	1.8	18	0.0068	--	< 0.0110	< 0.0108	< 0.0116	< 0.0115	< 0.0100	< 0.0109	< 0.0107	< 0.0118	< 0.0107	< 0.0117	< 0.0105	< 0.0105	< 0.0115	< 0.0115	< 0.0108	< 0.0107	< 0.0110	< 0.0112	< 0.0107	< 0.0111
Endosulfan II	370	3700	0.11	--	< 0.0088	< 0.0087	< 0.0093	< 0.0092	< 0.0080	< 0.0087	< 0.0086	< 0.0095	< 0.0086	< 0.0094	< 0.0084	< 0.0084	< 0.0092	< 0.0092	< 0.0086	< 0.0086	< 0.0088	< 0.0089	< 0.0086	< 0.0089
4,4'-DDD	2.0	7.2	0.01	--	**0.016**	**0.06**	**0.022**	**0.03**	< 0.0121	< 0.0131	**0.115**	**0.212**	**0.178**	**0.084**	**0.04**	**0.181**	**1.833**	**1.171**	**0.039**	< 0.0129	**0.102**	**0.347**	**0.043**	**0.651**
4,4'-DDT	1.7	7	0.07	--	< 0.0241	**0.245**	< 0.0255	< 0.0253	**0.103**	< 0.0240	**0.289**	**0.075**	**0.351**	**0.232**	**0.239**	**0.234**	**0.787**	**0.691**	**0.124**	**0.032**	**0.293**	**0.117**	**0.035**	**0.229**
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0110	**0.021**	< 0.0116	< 0.0115	< 0.0100	< 0.0109	**0.015**	**0.034**	**0.02**	**0.016**	**0.013**	**0.021**	**0.023**	**0.044**	< 0.0108	< 0.0107	**0.04**	< 0.0112	< 0.0107	**0.045**
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0110	**0.025**	< 0.0116	< 0.0115	< 0.0100	< 0.0109	**0.016**	**0.027**	**0.016**	**0.015**	**0.012**	**0.018**	**0.022**	**0.039**	< 0.0108	< 0.0107	**0.031**	< 0.0112	< 0.0107	**0.032**
Aroclor 1016	0.39	3.7	0.01	--	< 0.2456	**0.021**	< 0.2592	< 0.2575	< 0.2251	< 0.2445	< 0.2405	< 0.2654	< 0.2396	< 0.2621	< 0.2342	< 0.2355	< 0.2583	< 0.2570	< 0.2412	< 0.2406	< 0.2468	< 0.2501	< 0.2395	< 0.2493
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4517	**0.025**	< 0.4767	< 0.4735	< 0.4140	< 0.4497	< 0.4423	< 0.4882	< 0.4406	< 0.4820	< 0.4307	< 0.4332	< 0.4750	< 0.4727	< 0.4436	< 0.4426	< 0.4539	< 0.4599	< 0.4405	< 0.4585
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3508	< 0.3472	< 0.3703	< 0.3678	< 0.3215	< 0.3493	< 0.3436	< 0.3792	< 0.3422	< 0.3744	< 0.3345	< 0.3365	< 0.3690	< 0.3671	< 0.3446	< 0.3438	< 0.3525	< 0.3572	< 0.3421	< 0.3561
Aroclor 1260	0.22	0.74	0.024	--	< 0.0789	< 0.0781	< 0.0833	< 0.0828	< 0.0723	< 0.0786	< 0.0773	< 0.0853	< 0.0770	< 0.0842	< 0.0753	< 0.0757	< 0.0830	< 0.0826	< 0.0775	< 0.0774	< 0.0793	< 0.0804	< 0.0770	< 0.0801

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-171	B-172	B-173	B-173 Dup	B-174	B-175	B-176	B-177	B-178	B-179	B-180	B-180 Dup	B-181	B-182	B-183	B-184	B-185	B-186	B-187	B-188
Sample Date					05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/07/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/10/99	05/11/99	05/11/99	05/11/99	05/11/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**7570**	**10100**	**17500**	**15400**	**5890**	**9640**	**10300**	**8820**	**10500**	**9270**	**12500**	**10700**	**9240**	**13100**	**13500**	**12900**	**8850**	**8550**	**11300**	**7930**
Antimony	3.1	41	0.03	ND	**4.07**	**5.14**	**0.969**	**0.871**	**0.983**	**0.753**	**3.78**	**1.17**	**0.809**	**13.7**	**3.01**	**6.39**	**2.41**	**1.13**	**5.23**	**0.573**	**0.796**	**0.791**	< 0.441	**0.787**
Arsenic	0.61	2.4	0.0013	22.9	**7.71**	**6.62**	**16.4**	**20.5**	**2.89**	**6.62**	**7.48**	**8.18**	**7.44**	**7.35**	**8.83**	**6.7**	**7.27**	**10.4**	**7.44**	**8.02**	**9580**	**6.53**	**5.91**	**6.97**
Barium	1,500	19,000	12	32.3	**30.3**	**51.3**	**61.2**	**112**	**21.5**	**15**	**79.3**	**54.9**	**66.4**	**84.8**	**286**	**495**	**53.3**	**80.1**	**46**	**37**	**9.88**	**41.1**	**30.1**	**77**
Beryllium	16	200	1.3	2	**0.499**	**0.578**	**1.66**	**1.69**	**0.526**	**0.49**	**0.652**	**0.818**	**0.925**	**0.638**	**0.925**	**0.688**	**0.744**	**1.01**	**0.773**	**0.898**	**44.6**	**0.574**	**0.571**	**0.682**
Cadmium	7	80	0.05	ND	< 0.106	**0.6**	< 0.119	< 0.117	**0.974**	< 0.103	**0.768**	**0.656**	**1.28**	**0.792**	**0.809**	**1.24**	**1.01**	**0.791**	**0.803**	**0.489**	**0.599**	**0.6**	**0.38**	**0.829**
Calcium	NLE	NLE	NLE	921	**1390**	**3200**	**769**	**992**	**1910**	**852**	**2670**	**3690**	**2290**	**11200**	**11200**	**28300**	**3790**	**1690**	**3900**	**1580**	**1500**	**4630**	**434**	**1480**
Chromium	12,000	150,000	2,800,000	269	**52.2**	**54.8**	**198**	**192**	**30.9**	**53.4**	**60**	**82**	**85**	**62.8**	**92.5**	**64.6**	**73.3**	**102**	**88.6**	**90.1**	**87.9**	**98**	**49.9**	**66.1**
Cobalt	2.3	30	0.02	2.5	**1.76**	**2.21**	**1.37**	**1.36**	**3.32**	**1.2**	**2.72**	**2.38**	**2.77**	**3.41**	**3.25**	**3.34**	**2.76**	**2.74**	**2.15**	**2.67**	**2.52**	**2.8**	**2.5**	**2.86**
Copper	310	4,100	2.2	8	**14.8**	**14.1**	**23.9**	**23.6**	**43.5**	**7.17**	**23.8**	**18.5**	**18.2**	**38.7**	**11.7**	**17.7**	**17.7**	**23.1**	**15.9**	**11**	**12.4**	**97.5**	**7.67**	**13.2**
Iron	5500	72,000	27	55,800	**18400**	**18000**	**46600**	**49400**	**12100**	**20800**	**21100**	**20800**	**22400**	**19500**	**28500**	**22400**	**21500**	**23400**	**27400**	**28800**	**23100**	**17000**	**21800**	**20400**
Lead	400	800	NLE	19.5	**71.2**	**81**	**41.1**	**37.5**	**57.7**	**8.47**	**164**	**88.5**	**50.3**	**191**	**1210**	**1660**	**106**	**40.5**	**87.1**	**48.2**	**36.1**	**40.7**	**14.6**	**77.1**
Magnesium	NLE	NLE	NLE	7,230	**1080**	**1440**	**5090**	**4900**	**1300**	**1160**	**2170**	**2250**	**2300**	**2700**	**2940**	**2930**	**2250**	**2390**	**2100**	**3170**	**2560**	**2220**	**1460**	**1650**
Manganese	180	2,300	2.1	90.7	**32.8**	**57.1**	**22.8**	**18.6**	**56.4**	**26.6**	**71.4**	**39.1**	**73.2**	**91.1**	**61.7**	**96.4**	**61.1**	**79.4**	**48.8**	**71.2**	**61.1**	**57.8**	**60.8**	**110**
Mercury	1	4.3	0.0033	ND	**0.124**	**0.201**	**0.093**	**0.076**	**0.05**	**0.061**	**0.354**	**0.521**	**0.42**	**0.981**	**0.475**	**0.453**	**0.565**	**1.12**	**0.314**	**0.102**	**0.416**	**0.274**	**0.347**	**0.355**
Nickel	150	2,000	2	8.4	**5.9**	**8.26**	**8**	**8.69**	**11.5**	**4.78**	**7.43**	**8**	**8.73**	**9**	**10.2**	**9.42**	**7.39**	**9.23**	**8.53**	**8.57**	**8.12**	**6.94**	**6.27**	**6.8**
Potassium	NLE	NLE	NLE	15,400	**2240**	**3090**	**14800**	**15400**	**1670**	**3000**	**3510**	**4620**	**4480**	**3650**	**5810**	**3860**	**4710**	**4460**	**4630**	**6890**	**5340**	**3340**	**3050**	**3260**
Selenium	39	510	0.04	1.9	**0.743**	**1.03**	**1.44**	**2.33**	< 0.619	< 0.615	< 0.593	< 0.678	**0.929**	< 0.774	**0.667**	**0.69**	< 0.787	**1.19**	< 0.665	**0.643**	**0.687**	**0.614**	< 0.662	**0.795**
Silver	39	510	0.06	1.1	< 0.635	< 0.659	< 0.714	< 0.701	< 0.619	< 0.615	< 0.593	**1.88**	**1.32**	< 0.774	< 0.558	< 0.652	**2.83**	**24.2**	< 0.665	< 0.593	**2.8**	< 0.609	< 0.662	**2.32**
Sodium	NLE	NLE	NLE	51.6	**131**	**216**	**200**	**186**	**143**	**67.4**	**136**	**133**	**276**	**175**	**131**	**156**	**156**	**157**	**155**	**236**	**161**	**207**	**128**	**110**
Thallium	0.078	1	0.0011	ND	< 0.635	< 0.659	< 0.714	< 0.701	< 0.619	< 0.615	< 0.593	< 0.678	< 0.619	< 0.774	< 0.558	< 0.652	< 0.787	< 0.706	< 0.665	< 0.593	< 0.653	< 0.609	< 0.662	< 0.682
Vanadium	39	510	6.3	94.1	**42.9**	**37.5**	**74**	**50.2**	**27.3**	**46**	**47.1**	**47.3**	**50.2**	**42.9**	**59.3**	**47.1**	**43.8**	**52.2**	**79.3**	**81.8**	**47.1**	**42.1**	**46.5**	**38.5**
Zinc	2,300	31,000	29	81.4	**169**	**118**	**88.9**	**104**	**71.7**	**30.3**	**220**	**101**	**72.8**	**198**	**1280**	**786**	**135**	**153**	**187**	**51.6**	**65**	**53.5**	**27.8**	**87.3**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-189	B-189 Dup	B-190	B-191	B-192	B-193	B-194	B-195	B-196	B-197	B-198	B-199	B-199 Dup	B-200	B-201	B-202	B-203	B-204	B-205	B-206
Sample Date					05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4474.11	4474.13	4474.15	4474.17	4474.19	4474.21	4474.23	4474.25	4481.03	4481.05	4481.07	4481.09	4481.13	4481.11	4481.15	4481.17	4481.19	4481.21	4481.23	4481.25
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
Acetone	6,100,000	63,000,000	240	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
Carbon Disulfide	82,000	370,000	21	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Methylene Chloride	36,000	310,000	2.2	--	620 J	**440** J	**950**	< 610	< 720	< 550	< 580	< 600	**1600**	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
2-Butanone	2,800,000	20,000,000	100	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
Benzene	1,100	5,400	0.2	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
Toluene	500,000	4,500,000	59	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Tetrachloroethene	8,600	41,000	1.6	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Chlorobenzene	29,000	140,000	4.9	--	< 350	< 290	< 280	< 310	< 360	< 270	< 290	< 300	< 260	< 290	< 310	< 310	< 280	< 300	< 390	< 260	< 350	< 310	< 380	< 280
Ethylbenzene	5,400	27,000	1.5	--	< 690	< 590	< 550	< 610	< 720	< 550	< 580	< 600	< 530	< 590	< 630	< 620	< 560	< 600	< 790	< 520	< 700	< 620	< 750	< 560
m+p-Xylenes	630,000	2,700,000	19	--	< 1000	< 880	< 830	< 920	< 1100	< 820	< 870	< 900	< 790	< 880	< 940	< 930	< 840	< 900	< 1200	< 780	< 1100	< 920	< 1100	< 850
TICs	NLE	NLE	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	**5500**	**2900**	ND	**2700**	**3000**	**6600**	ND	**3500**	ND	**3900**	**3000**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4474.1	4474.12	4474.14	4474.16	4474.18	4474.2	4474.22	4474.24	4481.02	4481.04	4481.06	4481.08	4481.12	4481.1	4481.14	4481.16	4481.18	4481.2	4481.22	4481.24
Aniline	43,000	300,000	3.7	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Naphthalene	3,600	18,000	0.47	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**210** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**760** J	**1700** JD	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Dibenzofuran	7,800	100,000	11	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**220** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	**95** J	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Fluorene	230,000	2,200,000	400	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**550** J	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Azobenzene	5,100	23,000	0.8	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	**2000**	< 1100	< 1100
Phenanthrene	NLE	NLE	NLE	--	< 930	< 1100	< 1000	**240** J	< 990	< 1000	< 930	< 990	< 900	< 990	**190** J	**5900**	**12000** JD	< 1100	< 1000	**360** J	**770** J	**520** J	**210** J	< 1100
Anthracene	1,700,000	17,000,000	4,200	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1400**	**3000** JD	< 1100	< 1000	< 1100	**190** J	**120** J	< 1100	< 1100
Di-n-butylphthalate	610,000	6,200,000	170	--	**880** JB	**180** JB	**390** JB	**450** JB	**610** JB	**900** JB	**610** JB	**550** JB	**240** JB	< 990	**100** JB	**160** JB	< 12000	**260** JB	**170** JB	**630** JB	**180** JB	**430** JB	**120** JB	**390** JB
Fluoranthene	230,000	2,200,000	7,000	--	< 930	< 1100	**190** J	**340** J	< 990	< 1000	< 930	< 990	< 900	< 990	**270** J	**9300**	**21000** D	< 1100	**320** J	**530** J	**1500**	**800** J	**450** J	**120** J
Benzidine	0.5	7.5	0.00024	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Pyrene	170,000	1,700,000	950	--	< 930	< 1100	**180** J	**350** J	< 990	< 1000	< 930	< 990	< 900	< 990	**230** J	**7300**	**21000** D	< 1100	**270** J	**430** J	**1200**	**720** J	**390** J	**130** J
Butylbenzylphthalate	260,000	910,000	200	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(a)anthracene	150	2,100	10	--	< 930	< 1100	**110** J	**180** J	< 990	< 1000	< 930	< 990	< 900	< 990	**130** J	**3900**	**11000** JD	< 1100	**190** J	**240** J	**680** J	**410** J	**230** J	< 1100
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Chrysene	15,000	210,000	1,100	--	< 930	< 1100	**220** J	**370** J	< 990	< 1000	< 930	< 990	< 900	< 990	**250** J	**6900**	**19000** D	< 1100	**350** J	**430** J	**1300**	**750** J	**460** J	< 1100
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**130** J	< 1100	**120** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	**120** J	< 1100	**180** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	< 1100	< 12000	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	< 930	< 1100	**120** J	**150** J	< 990	< 1000	< 930	< 990	< 900	< 990	**120** J	**3900**	**11000** JD	< 1100	**220** J	**190** J	**500** J	**360** J	**240** J	< 1100
Benzo(k)fluoranthene	1,500	21,000	350	--	< 930	< 1100	< 1000	**150** J	< 990	< 1000	< 930	< 990	< 900	< 990	**100** J	**2200**	**9800** JD	< 1100	**150** J	**190** J	**510** J	**330** J	**200** J	< 1100
Benzo(a)pyrene	15	210	4	--	< 930	< 1100	**140** J	**170** J	< 990	< 1000	< 930	< 990	< 900	< 990	**110** J	**3900**	**13000** D	< 1100	**200** J	**200** J	**580** J	**410** J	**230** J	< 1100
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 930	< 1100	**130** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**2100**	**6800** JD	< 1100	**120** J	**140** J	**410** J	**180** J	**170** J	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 930	< 1100	< 1000	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1200**	**2100** JD	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 930	< 1100	**160** J	< 1200	< 990	< 1000	< 930	< 990	< 900	< 990	< 980	**1900**	**6600** JD	< 1100	< 1000	**140** J	**430** J	**180** J	**190** J	< 1100
TICs	NLE	NLE	NLE	--	**11790**	**10670**	**181600**	**32280**	**16810**	**14430**	**35520**	**12320**	**11330**	**6040**	**8440**	**17080**	ND	**12930**	**10740**	**22210**	**21480**	**18760**	**13060**	**14120**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0086	< 0.0088	< 0.0091	< 0.0090	< 0.0087	< 0.0088	< 0.0084	< 0.0088	< 0.0087	< 0.0090	< 0.0095	< 0.0093	< 0.0101	< 0.0087	< 0.0086	< 0.0095	< 0.0093	< 0.0092	< 0.0091	< 0.0087
Heptachlor	0.11	0.38	0.00014	--	< 0.0065	< 0.0066	< 0.0069	< 0.0067	< 0.0065	< 0.0066	< 0.0063	< 0.0066	< 0.0065	< 0.0067	< 0.0071	< 0.0070	< 0.0076	< 0.0065	< 0.0064	< 0.0071	< 0.0070	< 0.0069	< 0.0068	< 0.0065
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0130	< 0.0133	< 0.0137	< 0.0135	< 0.0131	< 0.0132	< 0.0126	< 0.0132	< 0.0130	< 0.0135	< 0.0142	< 0.0140	< 0.0152	< 0.0131	< 0.0129	< 0.0143	< 0.0139	< 0.0138	< 0.0136	< 0.0131
Endosulfan I	370	3700	0.11	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
4,4'-DDE	1.4	5.1	0.05	--	< 0.0086	< 0.0088	**0.173**	**0.2**	**0.023**	< 0.0088	< 0.0084	< 0.0088	**0.019**	< 0.0090	**0.088**	**0.128**	**0.155**	**2.108**	**0.035**	**0.459**	**0.066**	**0.143**	**0.049**	**0.033**
Dieldrin	0.03	0.11	0.000061	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
Endrin	1.8	18	0.0068	--	< 0.0108	< 0.0111	< 0.0114	< 0.0112	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	< 0.0107	< 0.0119	< 0.0116	< 0.0115	< 0.0114	< 0.0109
Endosulfan II	370	3700	0.11	--	< 0.0086	< 0.0088	< 0.0091	< 0.0090	< 0.0087	< 0.0088	< 0.0084	< 0.0088	< 0.0087	< 0.0090	< 0.0095	< 0.0093	< 0.0101	< 0.0087	< 0.0086	< 0.0095	< 0.0093	< 0.0092	< 0.0091	< 0.0087
4,4'-DDD	2.0	7.2	0.01	--	< 0.0130	< 0.0133	**0.208**	**0.228**	**0.055**	< 0.0132	< 0.0126	< 0.0132	**0.021**	< 0.0135	**0.066**	**0.094**	**0.176**	**2.548**	**0.053**	**0.316**	**0.134**	**0.399**	**0.13**	**0.082**
4,4'-DDT	1.7	7	0.07	--	< 0.0238	< 0.0243	**0.186**	**0.185**	**0.272**	< 0.0241	< 0.0231	< 0.0241	**0.056**	< 0.0247	**0.129**	**0.047**	**0.085**	**3.771**	**0.119**	**0.188**	**0.033**	**0.326**	**0.088**	< 0.0240
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0108	< 0.0111	**0.028**	**0.023**	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	**0.014**	< 0.0117	< 0.0126	**0.036**	< 0.0107	**0.015**	< 0.0116	**0.072**	**0.022**	< 0.0109
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0108	< 0.0111	**0.024**	**0.022**	< 0.0109	< 0.0110	< 0.0105	< 0.0110	< 0.0108	< 0.0112	< 0.0119	< 0.0117	< 0.0126	< 0.0109	**0.011**	**0.014**	< 0.0116	**0.064**	**0.018**	< 0.0109
Aroclor 1016	0.39	3.7	0.01	--	< 0.2421	< 0.2476	< 0.2558	< 0.2517	< 0.2437	< 0.2457	< 0.2352	< 0.2458	< 0.2426	< 0.2518	< 0.2656	< 0.2615	< 0.0708	< 0.2441	< 0.2405	< 0.2663	< 0.2599	< 0.2570	< 0.2543	< 0.2442
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4453	< 0.4554	< 0.4704	< 0.4629	< 0.4483	< 0.4519	< 0.4327	< 0.4522	< 0.4461	< 0.4632	< 0.4886	< 0.4810	< 0.1303	< 0.4490	< 0.4423	< 0.4898	< 0.4780	< 0.4726	< 0.4678	< 0.4492
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3458	< 0.3537	< 0.3654	< 0.3595	< 0.3482	< 0.3510	< 0.3361	< 0.3512	< 0.3465	< 0.3598	< 0.3795	< 0.3736	< 0.1012	< 0.3487	< 0.3436	< 0.3804	< 0.3713	< 0.3671	< 0.3633	< 0.3489
Aroclor 1260	0.22	0.74	0.024	--	< 0.0778	< 0.0796	< 0.0822	< 0.0809	< 0.0783	< 0.0790	< 0.0756	< 0.0790	< 0.0780	< 0.0809	< 0.0854	< 0.0841	< 0.0228	< 0.0785	< 0.0773	< 0.0856	< 0.0855	< 0.0826	< 0.0817	< 0.0785

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-189	B-189 Dup	B-190	B-191	B-192	B-193	B-194	B-195	B-196	B-197	B-198	B-199	B-199 Dup	B-200	B-201	B-202	B-203	B-204	B-205	B-206
Sample Date					05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/11/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99	05/13/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**10900**	**10700**	**10300**	**9870**	**10100**	**9160**	**8210**	**14900**	**6890**	**10700**	**22200**	**8390**	**8450**	**11500**	**10400**	**14100**	**10900**	**19400**	**14100**	**5720**
Antimony	3.1	41	0.03	ND	**0.518**	< 0.417	**1.89**	**1.41**	**1.16**	**0.462**	**0.561**	**0.794**	**1.23**	**1.08**	**0.553**	**0.867**	**1.2**	**2.21**	**1.64**	**0.741**	**1.25**	**0.967**	**1.64**	< 0.456
Arsenic	0.61	2.4	0.0013	22.9	**5.86**	**5.27**	**8.19**	**7.76**	**9.5**	**5.49**	**4.87**	**7.61**	**6.18**	**6.06**	**25.6**	**4.61**	**5.35**	**3.55**	**8.68**	**6.78**	**6.08**	**6.65**	**11.6**	**3.76**
Barium	1,500	19,000	12	32.3	**19.7**	**18.7**	**53.8**	**43.8**	**34**	**16.5**	**12.1**	**29.8**	**86.1**	**23.9**	**49.6**	**40.8**	**43.9**	**47.3**	**35**	**82.6**	**35.6**	**116**	**53.2**	**33.7**
Beryllium	16	200	1.3	2	**0.584**	**0.557**	**0.817**	**0.754**	**0.806**	**0.511**	**0.533**	**0.801**	**0.541**	**0.802**	**1.91**	**0.733**	**0.674**	**2.64**	**0.774**	**0.878**	**1.25**	**1.48**	**1.25**	**0.672**
Cadmium	7	80	0.05	ND	**0.343**	**0.281**	**0.798**	**0.606**	**1.57**	**0.36**	**0.382**	**0.405**	**1.14**	**0.592**	**2.33**	**1.34**	**1.33**	**26.6**	**1.98**	**0.873**	**0.719**	**2.41**	**1.91**	**2.31**
Calcium	NLE	NLE	NLE	921	**206**	**244**	**2550**	**3230**	**1470**	**210**	**493**	**893**	**2590**	**1840**	**923**	**2920**	**20200**	**2980**	**1540**	**1480**	**352**	**4340**	**2660**	**7480**
Chromium	12,000	150,000	2,800,000	269	**62.6**	**48.1**	**84**	**93.5**	**78.3**	**47.7**	**51.6**	**70.9**	**52.7**	**86**	**132**	**76**	**101**	**33**	**79.5**	**77.2**	**101**	**109**	**106**	**56.8**
Cobalt	2.3	30	0.02	2.5	**3.04**	**2.92**	**2.79**	**3.15**	**2.51**	**1.87**	**2.66**	**3.92**	**2.75**	**1.34**	**4.01**	**2.27**	**3.03**	**4.25**	**2.28**	**2.13**	**1.24**	**4.2**	**4.74**	**1.4**
Copper	310	4,100	2.2	8	**8.61**	**11.6**	**22.4**	**66.4**	**24.7**	**10.9**	**5.2**	**7.97**	**21.2**	**10.9**	**19.3**	**16.7**	**39.3**	**45**	**15.5**	**4.87**	**120**	**11.3**	**41.2**	**40.4**
Iron	5500	72,000	27	55,800	**20800**	**19100**	**23000**	**23700**	**26800**	**18900**	**19800**	**28900**	**18100**	**22700**	**121000**	**19400**	**19500**	**9340**	**28000**	**21200**	**24700**	**26000**	**35000**	**24500**
Lead	400	800	NLE	19.5	**5.49**	**5.15**	**77**	**51**	**47.5**	**8.31**	**4.88**	**7.71**	**107**	**8.16**	**22.3**	**153**	**86.6**	**42**	**54.4**	**15.8**	**28.5**	**26.3**	**66**	**75.3**
Magnesium	NLE	NLE	NLE	7,230	**1490**	**1430**	**2250**	**2530**	**2630**	**1300**	**1320**	**2150**	**1650**	**2960**	**2640**	**2270**	**3750**	**1820**	**2110**	**2150**	**3070**	**2950**	**3700**	**1250**
Manganese	180	2,300	2.1	90.7	**81.3**	**82.2**	**59.6**	**68.1**	**69.1**	**35.1**	**108**	**147**	**59.1**	**31.4**	**105**	**48.3**	**120**	**41.5**	**48.8**	**24.8**	**16.4**	**312**	**84.9**	**31.6**
Mercury	1	4.3	0.0033	ND	**0.254**	**0.301**	**0.392**	**0.35**	**0.297**	**0.192**	**0.293**	**0.219**	**1.75**	**16.6**	**216**	**4.84**	**0.764**	**0.526**	**0.938**	**1.68**	**0.381**	**0.587**	**1.47**	**0.297**
Nickel	150	2,000	2	8.4	**10.3**	**6.5**	**11.5**	**9.81**	**7.57**	**5.24**	**4.34**	**8.73**	**9.29**	**5.07**	**19.7**	**7.46**	**9.64**	**19**	**10.2**	**7.01**	**5.55**	**12.4**	**12.6**	**5.03**
Potassium	NLE	NLE	NLE	15,400	**3470**	**3150**	**4460**	**4210**	**5030**	**2720**	**3190**	**4270**	**2950**	**4960**	**4830**	**4130**	**4000**	**1730**	**4430**	**3770**	**6700**	**4200**	**7720**	**2090**
Selenium	39	510	0.04	1.9	< 0.656	< 0.625	**1.33**	**0.68**	**1.12**	**0.978**	**1.07**	**0.925**	**1.16**	**1.07**	**3.17**	**1.1**	**1.18**	< 0.625	< 0.602	**1.04**	**1.17**	**0.848**	**1.17**	**0.75**
Silver	39	510	0.06	1.1	< 0.656	< 0.625	**1.74**	**1.52**	< 0.611	< 0.677	< 0.616	< 0.632	< 0.667	< 0.625	< 0.742	< 0.718	< 0.744	< 0.625	< 0.602	**0.864**	< 0.714	< 0.632	< 0.605	< 0.684
Sodium	NLE	NLE	NLE	51.6	**122**	**176**	**237**	**251**	**139**	**79**	**104**	**168**	**137**	**128**	**165**	**155**	**214**	**123**	**129**	**160**	**120**	**230**	**374**	**313**
Thallium	0.078	1	0.0011	ND	< 0.656	< 0.625	< 0.680	< 0.634	< 0.611	< 0.677	< 0.616	< 0.632	< 0.667	< 0.625	< 0.742	< 0.718	< 0.744	< 0.625	< 0.602	< 0.667	< 0.714	< 0.632	< 0.605	< 0.684
Vanadium	39	510	6.3	94.1	**52.4**	**45.7**	**54**	**49.3**	**54.4**	**46.4**	**49**	**63.9**	**38.8**	**41.9**	**222**	**40.5**	**42.8**	**25.3**	**68.2**	**47**	**48.2**	**60.3**	**60.8**	**23.5**
Zinc	2,300	31,000	29	81.4	**28**	**28.5**	**99.5**	**65.5**	**76.8**	**15.9**	**17.1**	**31.1**	**167**	**34.3**	**133**	**172**	**151**	**332**	**123**	**70.7**	**43.8**	**167**	**105**	**138**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-207	B-208	B-209	B-210	B-211	B-212	B-212 Dup	B-213	B-214	B-215	B-216	B-217	B-217 Dup	B-218	B-219	B-220	B-221	B-222	B-223	B-224
Sample Date					05/13/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4481.27	4484.03	4484.05	4484.07	4484.09	4484.11	4484.13	4490.03	4490.05	4490.07	4490.09	4490.11	4490.13	4490.15	4490.17	4490.19	4490.21	4490.23	4490.25	4490.27
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
Acetone	6,100,000	63,000,000	240	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	< 640
Carbon Disulfide	82,000	370,000	21	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Methylene Chloride	36,000	310,000	2.2	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	**460** J
2-Butanone	2,800,000	20,000,000	100	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
Benzene	1,100	5,400	0.2	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	**4800**	< 520	< 630	< 640	< 640
Toluene	500,000	4,500,000	59	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Tetrachloroethene	8,600	41,000	1.6	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Chlorobenzene	29,000	140,000	4.9	--	< 320	< 300	< 330	< 300	< 300	< 320	< 350	< 320	< 330	< 260	< 270	< 360	< 350	< 280	< 260	< 320	< 260	< 320	< 320	< 320
Ethylbenzene	5,400	27,000	1.5	--	< 630	< 610	< 660	< 590	< 590	< 640	< 690	< 650	< 650	< 510	< 530	< 720	< 690	< 570	< 520	< 640	< 520	< 630	< 640	< 640
m+p-Xylenes	630,000	2,700,000	19	--	< 950	< 910	< 980	< 890	< 890	< 960	< 1000	< 970	< 980	< 770	< 800	< 1100	< 1000	< 850	< 780	< 960	< 780	< 950	< 970	< 950
TICs	NLE	NLE	NLE	--	**3400**	ND	ND	ND	ND	ND	ND	ND	**990**	**1500**	**1000**	**8900**	**1900**	ND	ND	**1700**	**1400**	ND	**2800**	ND
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4481.26	4484.02	4484.04	4484.06	4484.08	4484.1	4484.12	4490.02	4490.04	4490.06	4490.08	4490.1	4490.12	4490.14	4490.16	4490.18	4490.2	4490.22	4490.24	4490.26
Aniline	43,000	300,000	3.7	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1100	**270** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Fluorene	230,000	2,200,000	400	--	< 1100	**130** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Phenanthrene	NLE	NLE	NLE	--	**490** J	**1200** J	**120** J	< 1100	**170** J	**490** J	< 1200	**140** J	< 12000	< 1000	< 1100	**120** J	< 10000	< 1000	**400** J	< 12000	< 1300	**120** J	< 12000	**210** J
Anthracene	1,700,000	17,000,000	4,200	--	**130** J	**480** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Di-n-butylphthalate	610,000	6,200,000	170	--	**370** JB	**340** JB	**230** JB	**110** JB	**140** JB	**150** JB	< 1200	**150** JB	< 12000	**150** JB	**150** JB	**570** JB	< 10000	**290** JB	**900** JB	< 12000	**960** JB	**1600** B	< 12000	**13000** BD
Fluoranthene	230,000	2,200,000	7,000	--	**1200**	**3000**	**320** J	< 1100	**470** J	**460** J	**200** J	**270** J	< 12000	**170** J	**120** J	**280** J	< 10000	< 1000	**540** J	< 12000	**210** J	**150** J	< 12000	**540** J
Benzidine	0.5	7.5	0.00024	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Pyrene	170,000	1,700,000	950	--	**1000** J	**2300**	**340** J	< 1100	**430** J	**440** J	**190** J	**250** J	< 12000	**190** J	**120** J	**280** J	< 10000	< 1000	**650** J	< 12000	**230** J	**200** J	< 12000	**500** J
Butylbenzylphthalate	260,000	910,000	200	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(a)anthracene	150	2,100	10	--	**490** J	**1400**	**200** J	< 1100	**250** J	**200** J	< 1200	**140** J	< 12000	**110** J	< 1100	**180** J	< 10000	< 1000	**320** J	< 12000	**140** J	< 1100	< 12000	**280** J
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Chrysene	15,000	210,000	1,100	--	**940** J	**2200**	**400** J	< 1100	**510** J	**400** J	**200** J	**310** J	< 12000	**250** J	< 1100	**400** J	< 10000	< 1000	**730** J	< 12000	**250** J	**210** J	< 12000	**570** J
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1100	**120** J	< 1100	< 1100	**110** J	**120** J	< 1200	**210** J	< 12000	**140** J	**130** J	**160** J	< 10000	< 1000	**120** J	< 12000	**760** J	**190** J	< 12000	**140** J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	**420** J	**1600**	**320** J	< 1100	**320** J	**150** J	< 1200	**140** J	< 12000	< 1000	**110** J	**260** J	< 10000	< 1000	**290** J	< 12000	< 1300	< 1100	< 12000	**310** J
Benzo(k)fluoranthene	1,500	21,000	350	--	**430** J	**1200**	**310** J	< 1100	**290** J	**130** J	< 1200	**120** J	< 12000	< 1000	< 1100	**170** J	< 10000	< 1000	**220** J	< 12000	< 1300	< 1100	< 12000	**190** J
Benzo(a)pyrene	15	210	4	--	**450** J	**1500**	**330** J	< 1100	**300** J	**160** J	< 1200	< 1100	< 12000	< 1000	< 1100	**210** J	< 10000	< 1000	**280** J	< 12000	< 1300	< 1100	< 12000	**260** J
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**260** J	**650** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	**240** J	< 12000	< 1300	< 1100	< 12000	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 1100	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	< 1100	< 12000	< 1300	< 1100	< 12000	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**270** J	**590** J	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 12000	< 1000	< 1100	< 1100	< 10000	< 1000	**280** J	< 12000	< 1300	< 1100	< 12000	< 1100
TICs	NLE	NLE	NLE	--	**28020**	**12790**	**5950**	**10240**	**16210**	**11050**	**22750**	**44000**	**34900**	**27800**	**38360**	**30520**	**5000**	**5150**	**40600**	ND	**22060**	**40710**	ND	**19960**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0091	< 0.0088	< 0.0090	< 0.0089	< 0.0087	< 0.0090	< 0.0089	< 0.0091	< 0.0097	< 0.0083	< 0.0083	< 0.0085	< 0.0077	< 0.0080	< 0.0088	< 0.0096	< 0.0095	< 0.0092	< 0.0089	< 0.0092
Heptachlor	0.11	0.38	0.00014	--	< 0.0068	< 0.0066	< 0.0067	< 0.0067	< 0.0065	< 0.0067	< 0.0067	< 0.0068	< 0.0073	< 0.0062	< 0.0062	< 0.0064	< 0.0058	< 0.0060	< 0.0066	< 0.0072	< 0.0071	< 0.0069	< 0.0067	< 0.0069
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0137	< 0.0132	< 0.0134	< 0.0134	< 0.0130	< 0.0134	< 0.0133	< 0.0136	< 0.0145	< 0.0125	< 0.0124	< 0.0128	< 0.0115	< 0.0120	< 0.0132	< 0.0143	< 0.0142	< 0.0138	< 0.0134	< 0.0139
Endosulfan I	370	3700	0.11	--	< 0.0114	< 0.0110	< 0.0112	< 0.0111	< 0.0108	**0.018**	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	< 0.0107	< 0.0096	< 0.0100	< 0.0110	< 0.0119	< 0.0119	< 0.0115	< 0.0111	< 0.0115
4,4'-DDE	1.4	5.1	0.05	--	**0.07**	**0.028**	**0.037**	< 0.0089	**0.055**	**0.018**	**0.034**	**0.087**	**0.07**	**0.058**	**0.091**	**0.175**	< 0.0077	< 0.0080	**0.138**	**0.475**	**0.246**	**0.065**	**0.208**	**0.075**
Dieldrin	0.03	0.11	0.000061	--	< 0.0114	**0.012**	**0.021**	< 0.0111	< 0.0108	< 0.0112	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	**0.037**	< 0.0096	< 0.0100	< 0.0110	**0.029**	**0.037**	< 0.0115	**0.031**	< 0.0115
Endrin	1.8	18	0.0068	--	< 0.0114	< 0.0110	< 0.0112	< 0.0111	< 0.0108	< 0.0112	< 0.0111	< 0.0114	< 0.0121	< 0.0104	< 0.0104	< 0.0107	< 0.0096	< 0.0100	< 0.0110	< 0.0119	< 0.0119	< 0.0115	< 0.0111	< 0.0115
Endosulfan II	370	3700	0.11	--	< 0.0091	< 0.0088	< 0.0090	< 0.0089	< 0.0087	**0.037**	< 0.0089	< 0.0091	< 0.0097	< 0.0083	< 0.0083	< 0.0085	< 0.0077	< 0.0080	< 0.0088	< 0.0096	< 0.0095	< 0.0092	< 0.0089	< 0.0092
4,4'-DDD	2.0	7.2	0.01	--	**0.184**	**0.035**	**0.05**	< 0.0134	**0.078**	< 0.0134	**0.054**	**0.13**	**0.132**	**0.047**	**0.023**	**0.344**	**0.027**	< 0.0120	**0.096**	**9.331**	**0.464**	**0.201**	**3.632**	**0.176**
4,4'-DDT	1.7	7	0.07	--	**0.028**	**0.037**	**0.067**	< 0.0245	**0.237**	< 0.0246	< 0.0244	**0.054**	**0.235**	**0.306**	**0.049**	**0.493**	**0.027**	< 0.0220	**0.232**	**0.492**	**0.354**	**0.074**	**0.327**	**0.089**
gamma-Chlordane	1.6	6.5	0.013	--	**0.021**	< 0.0110	**0.015**	< 0.0111	**0.014**	< 0.0112	< 0.0111	**0.069**	**0.037**	< 0.0104	< 0.0104	**0.038**	< 0.0096	< 0.0100	< 0.0110	**0.066**	**0.043**	< 0.0115	**0.314**	**0.024**
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0114	< 0.0110	**0.013**	< 0.0111	**0.012**	< 0.0112	< 0.0111	**0.063**	**0.034**	< 0.0104	< 0.0104	**0.029**	< 0.0096	< 0.0100	< 0.0110	**0.052**	**0.049**	< 0.0115	**0.241**	**0.015**
Aroclor 1016	0.39	3.7	0.01	--	< 0.2549	< 0.2456	< 0.2507	< 0.2497	< 0.2428	< 0.2510	< 0.2484	< 0.2544	< 0.0136	< 0.2327	< 0.2322	< 0.2386	< 0.2150	< 0.2245	< 0.2460	< 0.2677	< 0.2659	< 0.2575	< 0.2495	< 0.2586
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4688	< 0.4517	< 0.4611	< 0.4592	< 0.4465	< 0.4616	< 0.4570	< 0.4679	< 0.0250	< 0.4281	< 0.4271	< 0.4389	< 0.3955	< 0.4129	< 0.4525	< 0.4923	< 0.4891	< 0.4737	< 0.4588	< 0.4757
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3641	< 0.3508	< 0.3581	< 0.3567	< 0.3468	< 0.3585	< 0.3549	< 0.3634	< 0.0194	< 0.3325	< 0.3317	< 0.3409	< 0.3072	< 0.3207	< 0.3514	< 0.3824	< 0.3799	< 0.3679	< 0.3564	< 0.3695
Aroclor 1260	0.22	0.74	0.024	--	< 0.0819	< 0.0789	< 0.0806	< 0.0802	< 0.0780	< 0.0807	< 0.0799	< 0.0818	**3.268**	< 0.0748	< 0.0746	< 0.0767	< 0.0691	< 0.0722	< 0.0791	< 0.0860	< 0.0855	< 0.0828	< 0.0802	< 0.0831

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-207	B-208	B-209	B-210	B-211	B-212	B-212 Dup	B-213	B-214	B-215	B-216	B-217	B-217 Dup	B-218	B-219	B-220	B-221	B-222	B-223	B-224
Sample Date					05/13/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/14/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99	05/17/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**13500**	**9700**	**6940**	**11700**	**5310**	**9390**	**6870**	**6990**	**11400**	**4710**	**7750**	**11200**	**9660**	**7980**	**10000**	**8180**	**7640**	**6220**	**6760**	**7340**
Antimony	3.1	41	0.03	ND	**1.1**	**0.892**	**2.07**	**0.74**	< 0.425	< 0.418	< 0.386	**0.952**	**63.9**	**0.856**	**0.894**	**2.27**	**0.547**	**0.399**	**0.778**	**5.68**	**3.59**	**0.931**	**0.938**	**2.9**
Arsenic	0.61	2.4	0.0013	22.9	**10.3**	**7.01**	**6.48**	**17.7**	**7.21**	**7.54**	**7.26**	**7.99**	**6.25**	**3.43**	**6.51**	**8.43**	**3.88**	**3.31**	**6.38**	**5.2**	**5.27**	**6.04**	**6.42**	**6.96**
Barium	1,500	19,000	12	32.3	**52.8**	**29**	**27.5**	**37.6**	**66.7**	**34.9**	**27.4**	**54.2**	**70.3**	**16.5**	**20.3**	**93**	**20.7**	**14.5**	**50.4**	**569**	**103**	**16.9**	**40.9**	**27.5**
Beryllium	16	200	1.3	2	**1.04**	**0.751**	**0.663**	**0.916**	**0.557**	**0.51**	**0.468**	**0.694**	**0.753**	**0.389**	**0.624**	**0.916**	**0.482**	**0.378**	**0.773**	**0.807**	**0.489**	**0.666**	**0.622**	**0.665**
Cadmium	7	80	0.05	ND	**3.64**	**0.625**	**0.567**	**0.8**	**0.886**	**0.512**	**0.403**	**0.327**	**0.765**	**0.261**	**0.854**	**1.38**	**0.315**	**0.305**	**0.533**	**4.25**	**1.1**	**0.442**	**1.04**	**0.407**
Calcium	NLE	NLE	NLE	921	**4670**	**2760**	**1540**	432	**1480**	**1640**	**1330**	424	**5430**	517	**2010**	**2620**	**2460**	**2430**	**1080**	**15700**	**3890**	319	**1190**	787
Chromium	12,000	150,000	2,800,000	269	**67.7**	**68.9**	**59.9**	**84.2**	**45.8**	**41.9**	**43.1**	**73.1**	**73.5**	**31.8**	**56.6**	**96**	**54.2**	**45.7**	**80.7**	**44.3**	**41.6**	**78**	**62.9**	**69.7**
Cobalt	2.3	30	0.02	2.5	**5.82**	**2.19**	**1.61**	**1.52**	**1.89**	**1.99**	**1.79**	**1.38**	**2.96**	**1.41**	**2.8**	**2.83**	**4.57**	**4.8**	**2.73**	**4.72**	**2.74**	**0.751**	**2.22**	**1.05**
Copper	310	4,100	2.2	8	**19.1**	**14.5**	**11.7**	**12**	**29.7**	**13.9**	**15.6**	**21.6**	**14.4**	**17.5**	**30.1**	**32.5**	**48.6**	**50**	**13.9**	**30**	**19.7**	**31.1**	**38.6**	**24.6**
Iron	5500	72,000	27	55,800	**33400**	**24300**	**20800**	**30700**	**17100**	**17200**	**15300**	**21700**	**23300**	**12000**	**18500**	**29000**	**18000**	**16300**	**20800**	**15000**	**16700**	**20700**	**17400**	**21300**
Lead	400	800	NLE	19.5	**280**	**40.6**	**49.8**	**11.3**	**105**	**53.1**	**58.2**	**53**	**179**	**83.3**	**38.7**	**312**	**31.9**	**24.7**	**38.2**	**5050**	**786**	**25.9**	**59.3**	**42.7**
Magnesium	NLE	NLE	NLE	7,230	**2970**	**2910**	**1970**	**3070**	**1000**	**1140**	**1080**	**2140**	**2600**	**1260**	**2160**	**3540**	**3480**	**3010**	**2080**	**2100**	**1630**	**2260**	**1390**	**2010**
Manganese	180	2,300	2.1	90.7	**105**	**64**	**28**	**28**	**33.8**	**109**	**75.9**	**14.7**	**61**	**33**	**67.1**	**68.7**	**71**	**79.5**	**51.2**	**83.3**	**60.3**	**12**	**47.1**	**18.7**
Mercury	1	4.3	0.0033	ND	**0.225**	**0.069**	**0.069**	< 0.024	**0.445**	**0.108**	**0.149**	**0.96**	**0.583**	**0.216**	**1.521**	**0.709**	**0.891**	**0.211**	**2.36**	**0.51**	**0.56**	**0.232**	**0.339**	**0.362**
Nickel	150	2,000	2	8.4	**16**	**6.12**	**5.73**	**5.34**	**5.95**	**5.26**	**5.3**	**4.5**	**9.42**	**4.22**	**8.56**	**8.74**	**11**	**11.2**	**7.32**	**13.3**	**7.57**	**3.09**	**7.98**	**4.3**
Potassium	NLE	NLE	NLE	15,400	**5120**	**5590**	**4430**	**6230**	**1820**	**1860**	**1960**	**5030**	**4880**	**2600**	**3660**	**6790**	**3460**	**2620**	**4410**	**2070**	**2480**	**5670**	**2580**	**4600**
Selenium	39	510	0.04	1.9	**1.05**	**1.24**	**1.26**	**1.46**	**0.795**	**1.18**	**1.34**	**1.55**	**0.924**	< 0.669	**1.02**	**1.42**	**0.584**	**0.618**	**1.17**	**1.31**	**1.12**	**1.15**	**0.813**	**1.52**
Silver	39	510	0.06	1.1	**0.79**	< 0.637	< 0.731	< 0.665	**0.715**	< 0.628	< 0.579	< 0.684	< 0.751	< 0.669	< 0.629	< 0.666	< 0.528	< 0.567	**11.1**	< 0.770	< 0.810	**0.58**	**3.04**	< 0.632
Sodium	NLE	NLE	NLE	51.6	**349**	**224**	**222**	**186**	**141**	**226**	**113**	**159**	**334**	**156**	**219**	**263**	**346**	**347**	**186**	**184**	**113**	**238**	**106**	**165**
Thallium	0.078	1	0.0011	ND	< 0.585	< 0.637	< 0.731	< 0.665	< 0.638	< 0.628	< 0.579	< 0.684	< 0.751	< 0.669	< 0.629	< 0.666	< 0.528	< 0.567	< 0.637	< 0.770	< 0.810	< 0.546	< 0.608	< 0.632
Vanadium	39	510	6.3	94.1	**43.3**	**42.1**	**38.1**	**48.3**	**26.9**	**20.5**	**23.2**	**37.5**	**47.7**	**25.5**	**40**	**56.6**	**55.6**	**62.5**	**47.6**	**32.1**	**29.9**	**33.9**	**41.4**	**34.6**
Zinc	2,300	31,000	29	81.4	**374**	**101**	**87.4**	**49.3**	**128**	**99.4**	**96.4**	**40.1**	**270**	**41.5**	**74.8**	**133**	**47.3**	**36.8**	**73.3**	**1190**	**530**	**34.5**	**62.9**	**42.9**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-225	B-226	B-227	B-228	B-229	B-229 Dup	B-230	B-231	B-232	B-233	B-234	B-235	B-236	B-237	B-238	B-239	B-240	B-241	B-242	B-243
Sample Date					06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99
Volatile Organic Compounds (µg/kg)																								
Lab Sample ID (VOCs only collected 24 in bgs)					4533.03	4533.05	4533.07	4533.09	4533.11	4533.13	4533.15	4533.17	4533.19	4533.21	4533.23	4533.25	4533.27	4533.29	4533.31	4533.33	4533.35	4533.37	4533.39	4533.41
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
Acetone	6,100,000	63,000,000	240	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
Carbon Disulfide	82,000	370,000	21	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Methylene Chloride	36,000	310,000	2.2	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
2-Butanone	2,800,000	20,000,000	100	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
Benzene	1,100	5,400	0.2	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
Toluene	500,000	4,500,000	59	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Tetrachloroethene	8,600	41,000	1.6	--	< 250	< 320	< 290	< 300	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Chlorobenzene	29,000	140,000	4.9	--	< 250	< 320	< 290	**690**	< 300	< 270	< 310	< 240	< 350	< 340	< 300	< 290	< 280	< 330	< 260	< 300	< 310	< 300	< 270	< 280
Ethylbenzene	5,400	27,000	1.5	--	< 500	< 640	< 580	< 590	< 590	< 530	< 620	< 490	< 710	< 680	< 600	< 580	< 560	< 650	< 520	< 600	< 620	< 590	< 540	< 550
m+p-Xylenes	630,000	2,700,000	19	--	< 750	< 960	< 870	< 890	< 890	< 800	< 930	< 730	< 1100	< 1000	< 900	< 880	< 840	< 980	< 780	< 910	< 930	< 890	< 820	< 830
TICs	NLE	NLE	NLE	--	**1900**	**2000**	**1800**	**64800**	**2000**	ND	**2200**	ND	ND	ND	ND	ND	**2600**	**3900**	**3000**	**2900**	**3500**	**3200**	**3100**	**3000**
Semi-VOCs (µg/kg)																								
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4533.02	4533.04	4533.06	4533.08	4533.1	4533.12	4533.14	4533.16	4533.18	4533.2	4533.22	4533.24	4533.26	4533.28	4533.3	4533.32	4533.34	4533.36	4533.38	4533.4
Aniline	43,000	300,000	3.7	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzyl alcohol	610,000	6,200,000	37	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
4-Methylphenol	610,000	6,200,000	110	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Nitrobenzene	4,800	24,000	0.079	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	**530** J	< 1100
Naphthalene	3,600	18,000	0.47	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
4-Chloroaniline	2,400	8,600	0.13	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
2-Methylnaphthalene	23,000	220,000	14	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Acenaphthylene	NLE	NLE	NLE	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Acenaphthene	340,000	3,300,000	410	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Dibenzofuran	7,800	100,000	11	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Diethylphthalate	4,900,000	49,000,000	470	--	< 1000	< 1100	< 1100	**190** J	< 1100	< 1100	< 1100	< 1000	< 1100	**380** J	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Fluorene	230,000	2,200,000	400	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Azobenzene	5,100	23,000	0.8	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Hexachlorobenzene	300	1,100	0.53	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Phenanthrene	NLE	NLE	NLE	--	< 1000	**170** J	< 1100	< 1200	< 1100	< 1100	**120** J	< 1000	**290** J	< 1100	**430** J	< 1100	< 1100	< 1200	< 1100	< 1100	**240** J	**210** J	< 1000	< 1100
Anthracene	1,700,000	17,000,000	4,200	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	**130** J	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Di-n-butylphthalate	610,000	6,200,000	170	--	**180** JB	**420** JB	**510** JB	**960** JB	**220** JB	**420** JB	**510** JB	**930** JB	**150** JB	**770** JB	**860** JB	**690** JB	**340** JB	**230** JB	**1100** B	**550** JB	**700** JB	**800** JB	**160** JB	**210**
Fluoranthene	230,000	2,200,000	7,000	--	**130** J	**360** J	< 1100	< 1200	< 1100	< 1100	**230** J	< 1000	**430** J	**190** J	**770** J	**180** J	**120** J	< 1200	< 1100	**110** J	**310** J	**360** J	**110** J	< 1100
Benzidine	0.5	7.5	0.00024	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Pyrene	170,000	1,700,000	950	--	**110** J	**310** J	< 1100	< 1200	< 1100	< 1100	**220** J	< 1000	**410** J	**170** J	**630** J	**160** J	< 1100	< 1200	< 1100	**110** J	**310** J	**280** J	< 1000	< 1100
Butylbenzylphthalate	260,000	910,000	200	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(a)anthracene	150	2,100	10	--	< 1000	**170** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**230** J	< 1100	**370** J	< 1100	< 1100	< 1200	< 1100	< 1100	**170** J	**160** J	< 1000	< 1100
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Chrysene	15,000	210,000	1,100	--	**130** J	**370** J	< 1100	< 1200	< 1100	< 1100	**270** J	< 1000	**460** J	**280** J	**730** J	**190** J	**110** J	< 1200	< 1100	**120** J	**400** J	**340** J	**100** J	< 1100
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	< 1000	**140** JB	**120** JB	**140** JB	< 1100	< 1100	**160** JB	**150** JB	< 1100	**160** JB	**170** JB	**120** JB	< 1100	< 1200	**110** JB	**140** JB	**170** J	**150** J	< 1000	< 1100
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(b)fluoranthene	150	2,100	35	--	< 1000	**200** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**200** J	< 1100	**430** J	< 1100	< 1100	< 1200	< 1100	< 1100	**170** J	**170** J	< 1000	< 1100
Benzo(k)fluoranthene	1,500	21,000	350	--	< 1000	**160** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**180** J	< 1100	**340** J	< 1100	< 1100	< 1200	< 1100	< 1100	**160** J	**160** J	< 1000	< 1100
Benzo(a)pyrene	15	210	4	--	< 1000	**160** J	< 1100	< 1200	< 1100	< 1100	**130** J	< 1000	**210** J	< 1100	**390** J	< 1100	< 1100	< 1200	< 1100	< 1100	**150** J	**160** J	< 1000	< 1100
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	< 1000	**140** J	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	**110** J	< 1100	**230** J	< 1100	< 1100	< 1200	< 1100	< 1100	**120** J	**120** J	< 1000	< 1100
Dibenz(a,h)anthracene	15	210	11	--	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	< 1100	< 1100	< 1100	< 1200	< 1100	< 1100	< 1000	< 1000	< 1000	< 1100
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	< 1000	**150** J	< 1100	< 1200	< 1100	< 1100	< 1100	< 1000	< 1100	< 1100	**220** J	< 1100	< 1100	< 1200	< 1100	< 1100	**130** J	**130** J	< 1000	< 1100
TICs	NLE	NLE	NLE	--	**10690**	**23970**	**11960**	**53650**	**11670**	**11760**	**29060**	**13830**	**37500**	**11900**	**46200**	**12110**	**5180**	**7870**	**22980**	**11210**	**175970**	**14210**	**20900**	**265500**
Pesticides/PCBs (mg/kg)																								
gamma-BHC	0.52	2.1	0.00021	--	< 0.0085	< 0.0090	< 0.0087	< 0.0102	< 0.0086	< 0.0086	< 0.0088	< 0.0084	< 0.0082	< 0.0092	< 0.0085	< 0.0086	< 0.0086	< 0.0087	< 0.0080	< 0.0084	< 0.0086	< 0.0089	< 0.0077	< 0.0087
Heptachlor	0.11	0.38	0.00014	--	< 0.0064	< 0.0068	< 0.0065	< 0.0076	< 0.0064	< 0.0065	< 0.0066	< 0.0063	< 0.0062	< 0.0069	< 0.0063	< 0.0064	< 0.0065	< 0.0065	< 0.0060	< 0.0063	< 0.0065	< 0.0066	< 0.0058	< 0.0066
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0128	< 0.0135	< 0.0131	< 0.0152	< 0.0129	< 0.0129	< 0.0132	< 0.0126	< 0.0123	< 0.0137	< 0.0127	< 0.0129	< 0.0129	< 0.0130	< 0.0120	< 0.0126	< 0.0130	< 0.0133	< 0.0116	< 0.0131
Endosulfan I	370	3700	0.11	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
4,4'-DDE	1.4	5.1	0.05	--	< 0.0085	**0.023**	**0.02**	**0.027**	**0.024**	**0.024**	**0.104**	**0.03**	**0.137**	**0.016**	**0.048**	**0.013**	**0.012**	< 0.0087	**0.036**	**0.059**	**0.104**	**0.014**	**0.012**	**0.023**
Dieldrin	0.03	0.11	0.000061	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Endrin	1.8	18	0.0068	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	< 0.0106	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Endosulfan II	370	3700	0.11	--	< 0.0085	< 0.0090	< 0.0087	< 0.0102	< 0.0086	< 0.0086	< 0.0088	< 0.0084	< 0.0082	< 0.0092	< 0.0085	< 0.0086	< 0.0086	< 0.0087	< 0.0080	< 0.0084	< 0.0086	< 0.0089	< 0.0077	< 0.0087
4,4'-DDD	2.0	7.2	0.01	--	< 0.0128	**0.031**	**0.02**	< 0.0152	**0.016**	**0.024**	**0.222**	**0.041**	**0.17**	**0.032**	**0.081**	< 0.0129	**0.017**	**0.013**	**0.028**	**0.064**	**0.138**	< 0.0133	< 0.0116	< 0.0131
4,4'-DDT	1.7	7	0.07	--	< 0.0235	< 0.0248	**0.032**	< 0.0279	**0.032**	**0.035**	**0.264**	**0.117**	**0.206**	**0.07**	**0.177**	**0.033**	**0.05**	< 0.0238	**0.048**	**0.124**	**0.166**	**0.054**	**0.022**	**0.093**
gamma-Chlordane	1.6	6.5	0.013	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	**0.039**	< 0.0107	< 0.0107	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
alpha-Chlordane	1.6	6.5	0.013	--	< 0.0107	< 0.0113	< 0.0109	< 0.0127	< 0.0107	< 0.0108	< 0.0110	< 0.0105	< 0.0103	< 0.0115	**0.031**	< 0.0107	< 0.0108	< 0.0108	< 0.0100	< 0.0105	< 0.0108	< 0.0111	< 0.0097	< 0.0109
Aroclor 1016	0.39	3.7	0.01	--	< 0.2394	< 0.2524	< 0.2436	< 0.0711	< 0.2405	< 0.2411	< 0.2463	< 0.2357	< 0.2299	< 0.2566	< 0.2367	< 0.2406	< 0.2412	< 0.2426	< 0.2232	< 0.2358	< 0.2418	< 0.2478	< 0.2169	< 0.2450
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4403	< 0.4642	< 0.4481	< 0.1308	< 0.4424	< 0.4434	< 0.4530	< 0.4336	< 0.4228	< 0.4720	< 0.4353	< 0.4426	< 0.4437	< 0.4463	< 0.4106	< 0.4336	< 0.4447	< 0.4559	< 0.3989	< 0.4506
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3420	< 0.3605	< 0.3481	< 0.1016	< 0.3436	< 0.3444	< 0.3519	< 0.3368	< 0.3284	< 0.3666	< 0.3381	< 0.3438	< 0.3446	< 0.3466	< 0.3189	< 0.3368	< 0.3454	< 0.3541	< 0.3098	< 0.3499
Aroclor 1260	0.22	0.74	0.024	--	< 0.0769	< 0.0811	< 0.0783	< 0.0229	< 0.0773	< 0.0775	< 0.0792	< 0.0758	< 0.0739	< 0.0825	< 0.0761	< 0.0773	< 0.0775	< 0.0780	< 0.0718	< 0.0758	< 0.0777	< 0.0797	< 0.0697	< 0.0787

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-225	B-226	B-227	B-228	B-229	B-229 Dup	B-230	B-231	B-232	B-233	B-234	B-235	B-236	B-237	B-238	B-239	B-240	B-241	B-242	B-243
Sample Date					06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99	06/03/99
Metals (mg/kg)																								
Aluminum	7,700	99,000	2,300	15,200	**5090**	**10300**	**4370**	**5910**	**7070**	**4950**	**9220**	**7580**	**5910**	**11900**	**10900**	**3130**	**7560**	**20800**	**4700**	**9300**	**9010**	**19500**	**8190**	**15800**
Antimony	3.1	41	0.03	ND	**0.655**	**0.848**	< 0.470	**1.3**	**0.959**	**11.3**	**1.03**	**0.512**	**1.16**	**1.09**	**1.1**	**0.736**	**0.616**	**1.46**	< 0.418	**1.69**	**0.938**	**2.32**	**0.755**	**0.639**
Arsenic	0.61	2.4	0.0013	22.9	**9.84**	**13.4**	**5.84**	**9.57**	**7.27**	**6.31**	**9.7**	**9.81**	**8.21**	**8.9**	**13.5**	**7.97**	**11.2**	**15.6**	**7.03**	**7.62**	**8.59**	**12**	**7.4**	**15.4**
Barium	1,500	19,000	12	32.3	**45.4**	**50.4**	**26**	**31.9**	**26.6**	**20.6**	**48.1**	**37.1**	**33.4**	**80.6**	**46.5**	**11**	**103**	**104**	**38.3**	**38.5**	**39.7**	**60.5**	**35.6**	**44.5**
Beryllium	16	200	1.3	2	**0.539**	**1.04**	**0.531**	**0.849**	**0.937**	**0.446**	**0.843**	**0.956**	**0.635**	**1.43**	**1.05**	**0.4**	**0.874**	**2.49**	**0.752**	**0.79**	**0.848**	**2.18**	**0.864**	**1.28**
Cadmium	7	80	0.05	ND	**1.37**	**1.55**	**0.643**	**2.2**	**0.789**	**0.654**	**1.31**	**1.15**	**1.38**	**1.73**	**1.62**	**1.15**	**1.74**	**3.04**	**0.837**	**0.828**	**1.11**	**2.79**	**0.746**	**1.21**
Calcium	NLE	NLE	NLE	921	**371**	**370**	**754**	**448**	**660**	**668**	**1120**	**545**	**250**	**1110**	**716**	**153**	**952**	**1450**	**437**	**1650**	**335**	**422**	**215**	**745**
Chromium	12,000	150,000	2,800,000	269	**80.9**	**127**	**49.3**	**61**	**96.4**	**2480**	**99.5**	**85.5**	**78.3**	**152**	**129**	**68.4**	**108**	**328**	**63.1**	**64.8**	**105**	**276**	**89.3**	**67.4**
Cobalt	2.3	30	0.02	2.5	**0.902**	**1.55**	**0.886**	**3.72**	**0.859**	**8.39**	**2.5**	**1.43**	**1.06**	**2.07**	**2.12**	**0.669**	**2.05**	**2.31**	**0.823**	**2.69**	**1.46**	**1.46**	**1.28**	**3.8**
Copper	310	4,100	2.2	8	**10.5**	**30.4**	**3.16**	**5.01**	**2.02**	**2.43**	**31.9**	**3.78**	**32.5**	**13.9**	**24.5**	**9.02**	**12.9**	**99.6**	**3.33**	**10.6**	**23.5**	**14.9**	**4.73**	**17.5**
Iron	5500	72,000	27	55,800	**28000**	**35500**	**14800**	**14700**	**23200**	**19100**	**30800**	**26700**	**22200**	**38700**	**36300**	**25700**	**29600**	**68000**	**16900**	**21600**	**29100**	**64000**	**21900**	**32000**
Lead	400	800	NLE	19.5	**25.1**	**82.3**	**4.38**	**13.8**	**18.3**	**11.1**	**78.6**	**17.2**	**45.9**	**18.2**	**87.8**	**17.7**	**19.3**	**19.2**	**10.9**	**53.9**	**39**	**25.6**	**11.8**	**29**
Magnesium	NLE	NLE	NLE	7,230	**1650**	**3370**	**1130**	**1700**	**2910**	**3420**	**3110**	**2510**	**2010**	**5050**	**3470**	**762**	**2640**	**10200**	**1650**	**2350**	**3130**	**8800**	**2360**	**3180**
Manganese	180	2,300	2.1	90.7	**11.2**	**25.9**	**9.64**	**18.4**	**15**	**62.4**	**94.2**	**21.7**	**18.7**	**25.9**	**31.5**	**7.11**	**14**	**22.7**	**12.4**	**64.3**	**23.8**	**22.7**	**18.6**	**103**
Mercury	1	4.3	0.0033	ND	**0.071**	**0.197**	**0.05**	**1.027**	**0.09**	**0.047**	**0.246**	**0.044**	**0.117**	**0.073**	**0.215**	**0.05**	**0.072**	**0.051**	**0.047**	**0.145**	**0.115**	**0.091**	**0.135**	**0.141**
Nickel	150	2,000	2	8.4	**4.04**	**6.88**	**4.31**	**9.4**	**4.34**	**12400**	**13.5**	**8.3**	**5.89**	**9.41**	**9.79**	**3.05**	**6.61**	**11.3**	**4.34**	**7.24**	**6.23**	**8.48**	**6.29**	**9.85**
Potassium	NLE	NLE	NLE	15,400	**4730**	**8230**	**2910**	**3910**	**7040**	**5140**	**7350**	**6020**	**4720**	**13000**	**8240**	**2230**	**7730**	**25500**	**4200**	**4840**	**7400**	**22500**	**5810**	**6990**
Selenium	39	510	0.04	1.9	**2.84**	**2.31**	**1.34**	**1.08**	**1.12**	< 0.654	**1.63**	**1.52**	**1.21**	**2.31**	**1.96**	**2.38**	**4.76**	**3.87**	**1.33**	**1.01**	**1.12**	**2.64**	**1.33**	**1.19**
Silver	39	510	0.06	1.1	**0.662**	**2.28**	< 0.705	< 0.787	< 0.599	**1.07**	< 0.713	< 0.630	**0.978**	< 0.774	**2.18**	< 0.600	< 0.767	**0.839**	< 0.627	< 0.628	< 0.677	< 0.667	< 0.612	< 0.755
Sodium	NLE	NLE	NLE	51.6	**108**	**326**	**108**	**81.9**	**113**	**218**	**324**	**133**	**266**	**153**	**342**	**49.8**	**67.5**	**112**	**84.9**	**72.4**	**264**	**233**	**112**	**132**
Thallium	0.078	1	0.0011	ND	< 0.591	< 0.771	< 0.705	< 0.787	< 0.599	< 0.654	< 0.713	< 0.630	< 0.648	< 0.774	< 0.732	< 0.600	< 0.767	< 0.712	< 0.627	< 0.628	< 0.677	< 0.667	< 0.612	< 0.755
Vanadium	39	510	6.3	94.1	**39.4**	**58.2**	**28.5**	**34**	**45.5**	**39.5**	**49.7**	**44.7**	**34**	**46.3**	**76.7**	**72.3**	**30.4**	**98.2**	**30.2**	**40.9**	**51.7**	**109**	**50.5**	**49.2**
Zinc	2,300	31,000	29	81.4	**49.2**	**66.3**	**41.4**	**201**	**40.3**	**31.9**	**114**	**53.8**	**36.2**	**97.6**	**62.1**	**54.8**	**93.4**	**128**	**36.1**	**80.5**	**36.6**	**96.5**	**33.9**	**68.7**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-244		B-245		B-246		B-247		B-248		B-249		B-250	
Sample Date					06/03/99		06/03/99		06/03/99		06/03/99		06/03/99		06/03/99		06/03/99	
Volatile Organic Compounds (µg/kg)																		
Lab Sample ID (VOCs only collected 24 in bgs)					4533.43		4533.45		4533.47		4533.49		4533.51		4533.53		4533.55	
Methyl *tert*- Butyl ether	43,000	220,000	2.8	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
Acetone	6,100,000	63,000,000	240	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
Carbon Disulfide	82,000	370,000	21	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Methylene Chloride	36,000	310,000	2.2	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
2-Butanone	2,800,000	20,000,000	100	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
Benzene	1,100	5,400	0.2	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
2-Chloroethyl vinyl ether	NLE	NLE	NLE	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
Toluene	500,000	4,500,000	59	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Tetrachloroethene	8,600	41,000	1.6	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Chlorobenzene	29,000	140,000	4.9	--	< 360		< 250		< 280		< 280		< 270		< 360		< 350	
Ethylbenzene	5,400	27,000	1.5	--	< 720		< 500		< 550		< 570		< 540		< 710		< 700	
m+p-Xylenes	630,000	2,700,000	19	--	< 1100		< 750		< 830		< 850		< 800		< 1100		< 1000	
TICs	NLE	NLE	NLE	--	**4200**		**3100**		**2500**		**2500**		**2500**		**4400**		**4000**	
Semi-VOCs (µg/kg)																		
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)					4533.42		4533.44		4533.46		4533.48		4533.5		4533.52		4533.54	
Aniline	43,000	300,000	3.7	--	< 1100		< 1000		< 990		< 980		< 1100		**330**	J	< 1100	
1,4-Dichlorobenzene	2,400	12,000	0.4	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzyl alcohol	610,000	6,200,000	37	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
4-Methylphenol	610,000	6,200,000	110	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Nitrobenzene	4,800	24,000	0.079	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
2,4-Dimethylphenol	120,000	1,200,000	32	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzoic Acid	24,000,000	250,000,000	1,400	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Naphthalene	3,600	18,000	0.47	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
4-Chloroaniline	2,400	8,600	0.13	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
2-Methylnaphthalene	23,000	220,000	14	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Acenaphthylene	NLE	NLE	NLE	--	**180**	J	< 1000		< 990		< 980		< 1100		< 1100		**250**	J
Acenaphthene	340,000	3,300,000	410	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**440**	J
Dibenzofuran	7,800	100,000	11	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**130**	J
Diethylphthalate	4,900,000	49,000,000	470	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Fluorene	230,000	2,200,000	400	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		**440**	J
Azobenzene	5,100	23,000	0.8	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Hexachlorobenzene	300	1,100	0.53	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Phenanthrene	NLE	NLE	NLE	--	**350**	J	< 1000		**140**	J	< 980		**250**	J	**370**	J	**5100**	
Anthracene	1,700,000	17,000,000	4,200	--	**270**	J	< 1000		< 990		< 980		< 1100		< 1100		**2200**	
Di-n-butylphthalate	610,000	6,200,000	170	--	**190**	JB	**330**	JB	**440**	JB	**380**	JB	**1000**	JB	**690**	JB	**310**	JB
Fluoranthene	230,000	2,200,000	7,000	--	**810**	J	**230**	J	**290**	J	< 980		**740**	J	**700**	J	**16000**	D
Benzidine	0.5	7.5	0.00024	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Pyrene	170,000	1,700,000	950	--	**680**	J	**200**	J	**260**	J	< 980		**590**	J	**690**	J	**14000**	D
Butylbenzylphthalate	260,000	910,000	200	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzo(a)anthracene	150	2,100	10	--	**690**	J	**120**	J	**150**	J	< 980		**370**	J	**340**	J	**7900**	D
3,3'-Dichlorobenzidine	1,100	3,800	0.71	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Chrysene	15,000	210,000	1,100	--	**1700**		**250**	J	**370**	J	< 980		**600**	J	**500**	J	**13000**	D
bis(2-Ethylhexyl)phthalate	35,000	120,000	1,100	--	**170**	J	< 1000		**400**	J	**150**	J	**120**	J	**120**	J	**120**	J
Di-n-octylphthalate	61,000	620,000	4,400	--	< 1100		< 1000		< 990		< 980		< 1100		< 1100		< 1100	
Benzo(b)fluoranthene	150	2,100	35	--	**900**	J	**150**	J	**310**	J	< 980		**320**	J	**410**	J	**7200**	D
Benzo(k)fluoranthene	1,500	21,000	350	--	**650**	J	**120**	J	**280**	J	< 980		**280**	J	**330**	J	**5000**	
Benzo(a)pyrene	15	210	4	--	**590**	J	**150**	J	**220**	J	< 980		**360**	J	**360**	J	**7300**	D
Indeno(1,2,3-cd)pyrene	150	2,100	200	--	**390**	J	**120**	J	**140**	J	< 980		**230**	J	**150**	J	**3100**	
Dibenz(a,h)anthracene	15	210	11	--	**150**	J	< 1000		< 990		< 980		< 1100		< 1100		**1400**	
Benzo(g,h,i)perylene	NLE	NLE	NLE	--	**330**	J	**140**	J	**170**	J	< 980		**230**	J	**130**	J	**2600**	
TICs	NLE	NLE	NLE	--	**33920**		**10720**		**19500**		**11590**		**23690**		**24030**		**23910**	
Pesticides/PCBs (mg/kg)																		
gamma-BHC	0.52	2.1	0.00021	--	< 0.0084		< 0.0084		< 0.0080		< 0.0084		< 0.0087		< 0.0090		< 0.0086	
Heptachlor	0.11	0.38	0.00014	--	< 0.0063		< 0.0063		< 0.0060		< 0.0063		< 0.0065		< 0.0067		< 0.0064	
Heptachlor Epoxide	0.053	0.19	0.000068	--	< 0.0127		< 0.0125		< 0.0120		< 0.0126		< 0.0131		< 0.0135		< 0.0129	
Endosulfan I	370	3700	0.11	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		< 0.0112		< 0.0107	
4,4'-DDE	1.4	5.1	0.05	--	**0.211**		**0.019**		**0.122**		**0.039**		**0.051**		**0.021**		**0.128**	
Dieldrin	0.03	0.11	0.000061	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		**0.019**		< 0.0107	
Endrin	1.8	18	0.0068	--	< 0.0106		< 0.0104		< 0.0100		< 0.0105		< 0.0109		< 0.0112		< 0.0107	
Endosulfan II	370	3700	0.11	--	< 0.0084		< 0.0084		< 0.0080		< 0.0084		< 0.0087		< 0.0090		< 0.0086	
4,4'-DDD	2.0	7.2	0.01	--	**0.089**		**0.017**		**0.06**		**0.025**		**0.06**		**0.031**		**0.084**	
4,4'-DDT	1.7	7	0.07	--	**0.06**		< 0.0230		**0.277**		**0.041**		**0.192**		**0.074**		**0.189**	
gamma-Chlordane	1.6	6.5	0.013	--	**0.017**		**0.017**		**0.037**		< 0.0105		< 0.0109		**0.019**		< 0.0107	
alpha-Chlordane	1.6	6.5	0.013	--	**0.016**		**0.017**		**0.033**		< 0.0105		< 0.0109		**0.016**		< 0.0107	
Aroclor 1016	0.39	3.7	0.01	--	< 0.2365		< 0.2338		< 0.2236		< 0.2352		< 0.2445		< 0.2517		< 0.2405	
Aroclor 1221	0.14	0.54	0.000069	--	< 0.4350		< 0.4300		< 0.4113		< 0.4326		< 0.4496		< 0.4630		< 0.4424	
Aroclor 1242	0.22	0.74	0.0053	--	< 0.3378		< 0.3340		< 0.3195		< 0.3360		< 0.3492		< 0.3596		< 0.3436	
Aroclor 1260	0.22	0.74	0.024	--	< 0.0760		< 0.0752		< 0.0719		< 0.0756		< 0.0786		< 0.0809		< 0.0773	

TABLE 4.2
SOIL SAMPLING SUMMARY RESULTS - COMPARISON TO USEPA CRITERIA
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Field Sample Location / Sample Date	USEPA RSL Residential (HQ=0.1)[1]	USEPA RSL Industrial (HQ=0.1)	USEPA RSL Groundwater Protection (Risk-based)	Weston 1995 Background (Main Post)	B-244 06/03/99	B-245 06/03/99	B-246 06/03/99	B-247 06/03/99	B-248 06/03/99	B-249 06/03/99	B-250 06/03/99
Metals (mg/kg)											
Aluminum	7,700	99,000	2,300	15,200	**9810**	**7900**	**17600**	**8830**	**10800**	**9290**	**11600**
Antimony	3.1	41	0.03	ND	**1.53**	**12**	**1.58**	**0.804**	**1.84**	**1.65**	**2.2**
Arsenic	0.61	2.4	0.0013	22.9	**8.59**	**6.25**	**10**	**9.7**	**10.5**	**9.13**	**14**
Barium	1,500	19,000	12	32.3	**49.8**	**32.8**	**81.9**	**57**	**84.7**	**103**	**67.9**
Beryllium	16	200	1.3	2	**0.878**	**0.41**	**1.36**	**1.19**	**1.44**	**0.966**	**1.21**
Cadmium	7	80	0.05	ND	**1.76**	**7.1**	**3.06**	**1.16**	**3.79**	**1.61**	**1.95**
Calcium	NLE	NLE	NLE	921	**3950**	**4840**	**2440**	**913**	**2610**	**1630**	**11100**
Chromium	12,000	150,000	2,800,000	269	**89.8**	**1560**	**83**	**136**	**94**	**72.2**	**103**
Cobalt	2.3	30	0.02	2.5	**5.53**	**5.55**	**5.45**	**1.26**	**7.53**	**2.69**	**4.51**
Copper	310	4,100	2.2	8	**32.2**	**131**	**36.2**	**133**	**332**	**17.6**	**18.8**
Iron	5500	72,000	27	55,800	**29500**	**21500**	**29800**	**31100**	**27200**	**25100**	**34700**
Lead	400	800	NLE	19.5	**174**	**47.6**	**225**	**19**	**274**	**477**	**234**
Magnesium	NLE	NLE	NLE	7,230	**5360**	**2920**	**3260**	**4110**	**4150**	**2980**	**10900**
Manganese	180	2,300	2.1	90.7	**121**	**88.2**	**157**	**21.8**	**133**	**49.6**	**123**
Mercury	1	4.3	0.0033	ND	**0.821**	**7.682**	**0.271**	**0.083**	**1.317**	**0.25**	**0.587**
Nickel	150	2,000	2	8.4	**13.9**	**7330**	**25.7**	**6.28**	**17.9**	**10.3**	**36.8**
Potassium	NLE	NLE	NLE	15,400	**6050**	**4150**	**6860**	**10300**	**7440**	**6280**	**8390**
Selenium	39	510	0.04	1.9	**1.67**	< 0.638	**1.09**	**1.5**	**0.97**	**1.08**	**0.741**
Silver	39	510	0.06	1.1	< 0.724	< 0.638	< 0.709	< 0.647	< 0.729	< 0.704	< 0.650
Sodium	NLE	NLE	NLE	51.6	**181**	**117**	**278**	**77.6**	**130**	**64.6**	**96.4**
Thallium	0.078	1	0.0011	ND	< 0.724	< 0.638	< 0.709	< 0.647	< 0.729	< 0.704	< 0.650
Vanadium	39	510	6.3	94.1	**53.5**	**58**	**59.4**	**58.7**	**49.2**	**43.8**	**101**
Zinc	2,300	31,000	29	81.4	**167**	**146**	**256**	**96.5**	**461**	**321**	**197**

Notes:
(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.
USEPA RSL for Chromium III is used for Chromium
RSLs for total DDD and total DDT are used for 4,4'-DDD and 4,4'-DDT, respectively
RSLs for total Endosulfan are uesd for Endosulfan II
RSLs for nickel soluble salts, thallium soluble salts, and manganese (non-diet) are used for nickel, thallium, and manganese, respectively
No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
B = Analyte detected in both sample and associated laboratory blank.
D = Result from dilution of sample.
DUP = field duplicate sample.
E = Estimated value.
J = Analyte detected between MDL and practical quantitation limit (PQL).
NA = not analyzed.
ND = not detected.
NLE = No limit established.
< = analyte not detected above method detection limit (MDL).
VOCs = volatile organic compounds.
in. = inches.
bgs = below ground surface.
Detections are bolded
Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.
Shaded cells = concentration exceeds USEPA Residential and/or Industrial RSL.
Shaded cells = concentration exceeds all three USEPA comparison criteria.
Shaded cells = concentration exceeds Weston (1995) background concentration.

TABLE 4.3
RESULTS OF SUPPLEMENTAL SOIL SAMPLING AROUND M8MW24 - NJDEP COMPARISON
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

		Chemical	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs
		Units	mg/kg	mg/kg	mg/kg	mg/kg
		NJDEP RDCSRS [1]	0.2	0.2	0.2	0.2
		NJDEP NRDCSRS [1]	1	1	1	1
		NJDEP IGW SL [2]	0.2	0.2	0.2	0.2
Field Sample Location ID	Sample Depth (ft bgs)	Sample Date	Result	Result	Result	Result
B-1	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-1	1-1.5	10-Aug-1999	ND	ND	ND	ND
B-2	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-2	1-1.5	10-Aug-1999	ND	ND	0.102	0.102
B-3	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-3	1-1.5	10-Aug-1999	ND	ND	0.213	0.213
B-4	0-0.5	11-Aug-1999	ND	ND	0.087	0.087
B-4	1-1.5	11-Aug-1999	ND	ND	3.028	3.028
B-5	0-0.5	11-Aug-1999	ND	ND	ND	ND
B-5	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-6	0-0.5	11-Aug-1999	ND	ND	0.66	0.66
B-6	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-7	0-0.5	11-Aug-1999	ND	ND	ND	ND
B-7	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-8	0-0.5	13-Aug-1999	ND	ND	ND	ND
B-8	1-1.5	13-Aug-1999	ND	ND	ND	ND
B-9	0-0.5	13-Aug-1999	ND	ND	ND	ND
B-9	1-1.5	13-Aug-1999	ND	ND	ND	ND
B-10	0-0.5	17-Aug-1999	ND	ND	ND	ND
B-10	1-1.5	17-Aug-1999	ND	ND	ND	ND
B-11	0-0.5	17-Aug-1999	ND	ND	ND	ND
B-11	1-1.5	17-Aug-1999	ND	ND	0.138	0.138
B-12	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-12	1-1.5	13-Sep-1999	ND	ND	0.176	0.176
B-13	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-13	1-1.5	13-Sep-1999	ND	ND	ND	ND
B-14	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-14	1-1.5	13-Sep-1999	ND	ND	0.221	0.221
B-15	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-15	1-1.5	13-Sep-1999	ND	ND	0.367	0.367
B-17	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-17	1-1.5	13-Sep-1999	ND	ND	ND	ND
B-18	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-18	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-19	0-0.5	1-Oct-1999	ND	ND	0.083	0.083
B-19	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-20	0-0.5	1-Oct-1999	ND	ND	0.554	0.554
B-20	1-1.5	1-Oct-1999	ND	ND	0.221	0.221
B-21	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-21	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-22	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-22	1-1.5	1-Oct-1999	ND	ND	ND	ND

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) NJDEP Impact to Ground Water (IGW) Screening Level (SL) (NJDEP guidance document; Nov 2013).

Shaded cells = concentration exceeds NJDEP Impact to Groundwater Criterion.

Shaded cells = concentration exceeds one or both NJDEP Direct Contact Criteria.

Shaded cells = concentration exceeds all NJDEP criteria.

The NJDEP criteria used for Aroclor 1242, Aroclor 1254, and Aroclor 1260 is the NJDEP criterion for total PCBs.

ND = not detected.

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram

TABLE 4.4
RESULTS OF SUPPLEMENTAL SOIL SAMPLING AROUND M8MW24 - USEPA COMPARISION
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

		Chemical	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs
		Units	mg/kg	mg/kg	mg/kg	mg/kg
		USEPA RSL Residential	0.22	0.11	0.22	0.22
		USEPA RSL Industrial	0.74	0.74	0.74	0.74
		USEPA RSL Groundwater Protection (Risk-based)	0.0053	0.0082	0.024	0.026
Field Sample Location ID	Sample Depth (ft bgs)	Sample Date	Result	Result	Result	Result
B-1	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-1	1-1.5	10-Aug-1999	ND	ND	ND	ND
B-2	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-2	1-1.5	10-Aug-1999	ND	ND	0.102	0.102
B-3	0-0.5	10-Aug-1999	ND	ND	ND	ND
B-3	1-1.5	10-Aug-1999	ND	ND	0.213	0.213
B-4	0-0.5	11-Aug-1999	ND	ND	0.087	0.087
B-4	1-1.5	11-Aug-1999	ND	ND	3.028	3.028
B-5	0-0.5	11-Aug-1999	ND	ND	ND	ND
B-5	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-6	0-0.5	11-Aug-1999	ND	ND	0.66	0.66
B-6	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-7	0-0.5	11-Aug-1999	ND	ND	ND	ND
B-7	1-1.5	11-Aug-1999	ND	ND	ND	ND
B-8	0-0.5	13-Aug-1999	ND	ND	ND	ND
B-8	1-1.5	13-Aug-1999	ND	ND	ND	ND
B-9	0-0.5	13-Aug-1999	ND	ND	ND	ND
B-9	1-1.5	13-Aug-1999	ND	ND	ND	ND
B-10	0-0.5	17-Aug-1999	ND	ND	ND	ND
B-10	1-1.5	17-Aug-1999	ND	ND	ND	ND
B-11	0-0.5	17-Aug-1999	ND	ND	ND	ND
B-11	1-1.5	17-Aug-1999	ND	ND	0.138	0.138
B-12	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-12	1-1.5	13-Sep-1999	ND	ND	0.176	0.176
B-13	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-13	1-1.5	13-Sep-1999	ND	ND	ND	ND
B-14	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-14	1-1.5	13-Sep-1999	ND	ND	0.221	0.221
B-15	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-15	1-1.5	13-Sep-1999	ND	ND	0.367	0.367
B-17	0-0.5	13-Sep-1999	ND	ND	ND	ND
B-17	1-1.5	13-Sep-1999	ND	ND	ND	ND
B-18	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-18	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-19	0-0.5	1-Oct-1999	ND	ND	0.083	0.083
B-19	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-20	0-0.5	1-Oct-1999	ND	ND	0.554	0.554
B-20	1-1.5	1-Oct-1999	ND	ND	0.221	0.221
B-21	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-21	1-1.5	1-Oct-1999	ND	ND	ND	ND
B-22	0-0.5	1-Oct-1999	ND	ND	ND	ND
B-22	1-1.5	1-Oct-1999	ND	ND	ND	ND

Notes:

(1) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(2) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

Shaded cells = concentration exceeds USEPA Groundwater Protection RSL.

Shaded cells = concentration exceeds USEPA Residential RSL.

Shaded cells = concentration exceeds all three USEPA comparison criteria.

ND = not detected.

NLE = No limit established.

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram

TABLE 4.5
SOIL SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Detected Concentration		Location of Maximum Concentration	Number of Samples	Number of Detections	Number of Exceedances							Evaluated as COPC in Risk Assessment?	Rationale
						Residential Direct Contact		Non-Residential Direct Contact		Impact to Groundwater		Background		
						NJDEP RDCSRS (1)	USEPA RSL Residential (HQ=0.1) (2)	NJDEP NRDCSRS (1)	USEPA Industrial RSL (2)	NJDEP Impact to Ground Water (3)	USEPA Groundwater Protection RSL (2)	Maximum Background (Weston, 1995) (4)		
Volatile Organic Compounds (µg/kg)														
Methyl *tert*- Butyl ether	66	J	B-164	307	1	0	0	0	0	0	1	n/a	No	Less than Residential RSL
Acetone	1500		B-47	307	3	0	0	NLE	0	0	3	n/a	No	Less than Residential RSL
Carbon Disulfide	600		B-17Q	307	2	0	0	0	0	0	2	n/a	No	Less than Residential RSL
Methylene Chloride	7600		B-186	307	41	0	0	0	0	41	41	n/a	No	Less than Residential RSL
2-Butanone	890		B-5	307	3	0	0	0	0	0	3	n/a	No	Less than Residential RSL
Benzene	2500		B-132	307	1	1	1	0	0	1	1	n/a	**Yes**	Exceeds Residential RSL at 1 location
2-Chloroethyl vinyl ether	4800		B-220	307	1	NLE	NLE	NLE	NLE	NLE	NLE	n/a	No	No RSLs
Toluene	1500		B-132	307	1	0	0	0	0	0	1	n/a	No	Less than Residential RSL
Tetrachloroethene	1600		B-111	307	1	0	0	0	0	1	1	n/a	No	Less than Residential RSL
Chlorobenzene	1400		B-81	307	3	0	0	0	0	3	3	n/a	No	Less than Residential RSL
Ethylbenzene	1300		B-52	307	2	0	0	0	0	0	2	n/a	No	Less than Residential RSL
m+p-Xylenes	1600		B-52	307	1	0	0	0	0	0	1	n/a	No	Less than Residential RSL
TICs	542400		B-100	307	107	NLE	NLE	NLE	NLE	NLE	NLE	n/a	No	No RSLs
Semi-Volatile Organic Compounds (µg/kg)														
Lab Sample ID (All analysis except VOCs - collected 0 to 12 in bgs)														
Aniline	330	J	B-249	307	1	NLE	0	NLE	0	NLE	1	n/a	No	Less than Residential RSL
1,4-Dichlorobenzene	7500		B-164	307	15	1	3	0	0	3	15	n/a	**Yes**	Exceeds Residential RSL at 3 locations
Benzyl alcohol	1600		B-14N	307	1	NLE	0	NLE	0	NLE	1	n/a	No	Less than Residential RSL
4-Methylphenol	13000	JD	B-144	307	4	0	0	0	0	NLE	4	n/a	No	Less than Residential RSL
Nitrobenzene	310	J	B-14N	307	1	0	0	0	0	1	1	n/a	No	Less than Residential RSL
2,4-Dimethylphenol	8900	JD	B-144	307	1	0	0	0	0	1	1	n/a	No	Less than Residential RSL
Benzoic Acid	950	J	B-107	307	4	NLE	0	NLE	0	NLE	0	n/a	No	Less than Residential RSL
Naphthalene	950000	D	B-144	307	24	6	6	4	4	3	24	n/a	**Yes**	Exceeds Residential RSL at 6 locations
4-Chloroaniline	730	J	B-157	307	2	NLE	0	NLE	0	NLE	2	n/a	No	Less than Residential RSL
2-Methylnaphthalene	380000	D	B-144	307	11	1	3	0	2	4	11	n/a	**Yes**	Exceeds Residential RSL at 3 locations
Acenaphthylene	7900	JD	B-92	307	40	NLE	NLE	0	NLE	NLE	NLE	n/a	No	No RSLs
Acenaphthene	1700000	D	B-144	307	23	0	2	0	0	3	15	n/a	**Yes**	Exceeds Residential RSL at 2 locations
Dibenzofuran	910000	D	B-144	307	18	NLE	4	NLE	3	NLE	18	n/a	**Yes**	Exceeds Residential RSL at 4 locations
Diethylphthalate	3000	B	B-13	307	32	0	0	0	0	0	7	n/a	No	Less than Residential RSL
Fluorene	1500000	D	B-144	307	26	0	2	0	0	2	15	n/a	**Yes**	Exceeds Residential RSL at 2 locations
Azobenzene	140	J	B-173	307	1	NLE	0	NLE	0	NLE	1	n/a	No	Less than Residential RSL
Hexachlorobenzene	2000		B-204	307	1	1	1	1	1	1	1	n/a	**Yes**	Exceeds Residential RSL at 1 location
Phenanthrene	8000000	D	B-144	307	179	NLE	NLE	0	NLE	NLE	NLE	n/a	No	No RSLs
Anthracene	4000000	D	B-144	307	71	0	2	0	0	1	7	n/a	**Yes**	Exceeds Residential RSL at 2 locations
Di-n-butylphthalate	26000	BD	B-34	307	277	0	0	0	0	0	246	n/a	No	No RSLs
Fluoranthene	7200000	D	B-144	307	226	2	3	0	2	2	16	n/a	**Yes**	Exceeds Residential RSL at 3 locations
Benzidine	8600		B-28	307	5	5	5	5	5	5	5	n/a	**Yes**	Exceeds Residential RSL at 5 locations
Pyrene	7400000	D	B-144	307	233	2	4	0	2	3	70	n/a	**Yes**	Exceeds Residential RSL at 4 locations
Butylbenzylphthalate	1200		B-41	307	7	0	0	0	0	0	2	n/a	No	Less than Residential RSL
Benzo(a)anthracene	2500000	JD	B-144	307	192	54	172	19	19	40	192	n/a	**Yes**	Exceeds Residential RSL at 172 locations
3,3'-Dichlorobenzidine	380	J	B-164	307	1	0	0	0	0	1	1	n/a	No	Less than Residential RSL
Chrysene	3800000	JD	B-144	307	231	4	8	3	3	4	51	n/a	**Yes**	Exceeds Residential RSL at 8 locations
bis(2-Ethylhexyl)phthalate	28000	D	B-62	307	183	0	0	0	0	0	11	n/a	No	Less than Residential RSL
Di-n-octylphthalate	1600	JD	B-11	307	2	0	0	0	0	0	0	n/a	No	Less than Residential RSL
Benzo(b)fluoranthene	5400000	D	B-144	307	189	53	168	20	18	20	189	n/a	**Yes**	Exceeds Residential RSL at 168 locations
Benzo(k)fluoranthene	3100000	D	B-144	307	187	8	25	4	4	4	83	n/a	**Yes**	Exceeds Residential RSL at 25 locations
Benzo(a)pyrene	4500000	D	B-144	307	186	139	186	139	133	139	186	n/a	**Yes**	Exceeds Residential RSL at 186 locations

TABLE 4.5
SOIL SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Detected Concentration		Location of Maximum Concentration	Number of Samples	Number of Detections	Number of Exceedances							Evaluated as COPC in Risk Assessment?	Rationale
						Residential Direct Contact		Non-Residential Direct Contact		Impact to Groundwater		Background		
						NJDEP RDCSRS (1)	USEPA RSL Residential (HQ=0.1) (2)	NJDEP NRDCSRS (1)	USEPA Industrial RSL (2)	NJDEP Impact to Ground Water (3)	USEPA Groundwater Protection RSL (2)	Maximum Background (Weston, 1995) (4)		
Indeno(1,2,3-cd)pyrene	1200000	D	B-144	307	116	25	90	11	10	7	70	n/a	**Yes**	Exceeds Residential RSL at 90 locations
Dibenz(a,h)anthracene	850000	D	B-144	307	27	23	27	23	22	12	27	n/a	**Yes**	Exceeds Residential RSL at 27 locations
Benzo(g,h,i)perylene	940000	D	B-144	307	115	0	NLE	0	NLE	NLE	NLE	n/a	No	No RSLs
TICs	5810000		B-144	307	281	NLE	NLE	NLE	NLE	NLE	NLE	n/a	No	No RSLs
Pesticides/PCBs (mg/kg)														
gamma-BHC	0.013		B-117	307	1	0	0	0	0	1	1	n/a	No	Less than Residential RSL
Heptachlor	1.267		B-117	307	1	1	1	1	1	1	1	n/a	No	Isolated detection at a site where pesticides were applied, not related to a release.
Heptachlor Epoxide	0.482		B-117	307	3	1	1	1	1	3	3	n/a	No	Isolated exceedance of the Residential RSL at a site where pesticides were applied, not related to a release.
Endosulfan I	0.018		B-212	307	1	0	0	0	0	0	0	n/a	No	Less than Residential RSL
4,4'-DDE	2.108		B-200	307	272	1	1	0	0	0	152	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
Dieldrin	0.128		B-77	307	51	5	11	0	3	51	51	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
Endrin	0.29		B-117	307	1	0	0	0	0	0	1	n/a	No	Less than Residential RSL
Endosulfan II	0.057		B-7	307	3	0	0	0	0	0	0	n/a	No	Less than Residential RSL
4,4'-DDD	9.331		B-220	307	256	3	6	0	1	1	256	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
4,4'-DDT	3.771		B-200	307	223	1	2	0	0	0	122	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
gamma-Chlordane	7.144		B-117	307	154	5	1	1	1	23	136	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
alpha-Chlordane	7.929		B-117	307	130	3	1	1	1	16	114	n/a	No	Concentrations are widespread and consistent with applied pesticide usage.
Aroclor 1016	4.763		B-64	307	3	1	1	1	1	1	3	n/a	**Yes**	Exceeds Residential RSL at 1 location
Aroclor 1221	0.025		B-172	307	1	0	0	0	0	0	1	n/a	No	Less than RSL
Aroclor 1242	5654.281		B-164	349	7	6	6	6	6	6	7	n/a	**Yes**	Exceeds Residential RSL at 6 locations
Aroclor 1260	20.06		B-153	349	17	12	11	4	4	12	17	n/a	**Yes**	Exceeds Residential RSL at 11 locations
Metals (mg/kg)														
Aluminum	36900		B-49	307	307	0	245	NA	0	284	307	33	**Yes**	Exceeds Residential RSL and Maximum Background at 33 locations
Antimony	152		B-99	307	210	7	54	0	7	32	210	210	**Yes**	Exceeds Residential RSL and Maximum Background at 54 locations
Arsenic	9580		B-185	307	307	14	307	14	304	14	307	7	**Yes**	Exceeds Residential RSL and Maximum Background at 7 locations
Barium	984		B-141	307	307	0	0	0	0	0	301	240	No	Less than Residential RSL
Beryllium	44.6		B-185	307	306	3	3	0	0	227	62	11	**Yes**	Exceeds Residential RSL and Maximum Background at 3 locations
Cadmium	26.6		B-200	307	197	0	6	0	0	29	197	197	**Yes**	Exceeds Residential RSL and Maximum Background at 6 locations
Calcium	57700		B-141	307	307	NLE	NLE	NLE	NLE	NLE	NLE	237	No	Essential Nutrient
Chromium	2480		B-229 Dup	307	307	NLE	0	NLE	0	NLE	0	7	No	Less than Residential RSL
Cobalt	130		B-86	307	307	0	169	0	2	2	307	148	**Yes**	Exceeds Residential RSL and Maximum Background at 148 locations
Copper	1160		B-17	307	303	0	6	0	0	0	300	270	**Yes**	Exceeds Residential RSL and Maximum Background at 6 locations

TABLE 4.5
SOIL SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Detected Concentration		Location of Maximum Concentration	Number of Samples	Number of Detections	Number of Exceedances							Evaluated as COPC in Risk Assessment?	Rationale
						Residential Direct Contact		Non-Residential Direct Contact		Impact to Groundwater		Background		
						NJDEP RDCSRS (1)	USEPA RSL Residential (HQ=0.1) (2)	NJDEP NRDCSRS (1)	USEPA Industrial RSL (2)	NJDEP Impact to Ground Water (3)	USEPA Groundwater Protection RSL (2)	Maximum Background (Weston, 1995) (4)		
Iron	121000		B-198	307	307	NLE	305	NLE	6	NLE	307	13	No	essential Nutrient
Lead	5050		B-220	307	307	24	24	11	11	106	NLE	250	**Yes**	Exceeds Residential RSL and Maximum Background at 24 locations
Magnesium	17100		B-141	307	307	NLE	NLE	NLE	NLE	NLE	NLE	11	No	essential Nutrient
Manganese	1910		B-141	307	307	0	19	0	0	125	307	74	**Yes**	Exceeds Residential RSL and Maximum Background at 19 locations
Mercury	216		B-198	307	301	1	30	1	10	224	301	301	**Yes**	Exceeds Residential RSL and Maximum Background at 30 locations
Nickel	12400		B-229 Dup	307	307	2	2	0	2	5	307	159	**Yes**	Exceeds Residential RSL and Maximum Background at 2 locations
Potassium	26400		B-83	307	307	NLE	NLE	NLE	NLE	NLE	NLE	13	No	essential Nutrient
Selenium	119		B-86	307	203	0	2	0	0	2	203	25	**Yes**	Exceeds Residential RSL and Maximum Background at 2 locations
Silver	124		B-40NN	307	88	0	1	0	0	76	88	74	**Yes**	Exceeds Residential RSL and Maximum Background at 1 location
Sodium	16700		B-141	307	307	NLE	NLE	NLE	NLE	NLE	NLE	306	No	essential Nutrient
Thallium	119		B-86	307	2	2	2	2	2	2	2	2	**Yes**	Exceeds Residential RSL and Maximum Background at 2 locations
Vanadium	299		B-41	307	307	38	243	0	0	NLE	307	18	**Yes**	Exceeds Residential RSL and Maximum Background at 18 locations
Zinc	9550		B-91	307	307	0	2	0	0	7	297	179	**Yes**	Exceeds Residential RSL and Maximum Background at 2 locations

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C 7:26D; amended May 7, 2012). Available at: http://www.state.nj.us/dep/srp/regs/rs/.

(2) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Soil (TR=1E-06, HQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(3) NJDEP Impact to Ground Water (IGW) (NJDEP guidance document; Nov 2013).

(4) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

Analytes with no screening criteria (i.e., no limit established (NLE)) are carried through to the risk assessment as COPCs.

B and BJ qualified data were treated as nondetected chemicals and are not considered COPCs.

Essential nutrients (calcium, iron, magnesium, potassium, and sodium) are not considered COPCs.

µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.

Dash (--) = only bckground concentrations for metals are being used as comparison criteria.

B = Analyte detected in both sample and blank.

COPC = contaminant of potential concern.

D = Results from dilution of sample.

DUP = Field duplicate sample.

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW11		M8MW12																	
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**		LF	44	44 Dup	45	46	46 Dup	47	47 Dup	48	49	50	51	52	LF1	LF2	LF3	LF4	LF5	LF6
Date Collected				3/9/2011	8/11/2011	3/13/2008	3/13/2008	6/5/2008	9/4/2008	9/4/2008	11/21/2008	11/21/2008	2/9/2009	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/29/2010	9/29/2010	12/23/2010	3/9/2011	5/26/2011
Volatile Organic Compounds (µg/L)																							
Tert-butyl alcohol	100	NLE	--	**56.38**	NA	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5
Acetone	6000	1200	--	**18.68**	<10	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Carbon disulfide	700	72	--	**0.43** J	<2	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
2-Butanone	300	490	--	**2.1**	<10	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Benzene	1	0.39	--	**0.52**	**1.3**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Chlorobenzene	50	7.2	--	**4.23**	**10.9**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Bromodichloromethane	1	0.12	--	<0.5	<5	ND	NA	ND	ND	ND	ND	ND	NA	ND	**2.06**	ND	ND	ND	**3.72**	**0.81**	<0.5	<0.5	<0.5
Chloroform	70	0.19	--	<0.5	<1	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	**9.47**	ND	<0.5	<0.5	<0.5
Dibromochloromethane	1	0.15	--	<0.5	<1	ND	NA	ND	ND	ND	ND	ND	NA	ND	**0.28** J	ND	ND	ND	**0.76**	ND	<0.5	<0.5	<0.5
cis -1,2-Dichloroethene	70	2.8	--	<0.5	<1	ND	NA	ND	**2.79**	**2.63**	**5**	**4.88**	NA	**0.85** J	ND	**0.38** J	ND	ND	ND	ND	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	600	NLE	--	**0.26** J	**0.53** J	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	75	0.42	--	**2.79**	**7.4**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	600	28	--	**0.44** J	**0.88** J	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Ethylbenzene	700	1.3	--	<0.5	**0.43** J	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Isopropylbenzene	700	39	--	<0.5	**1.3** J	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Methylene chloride	3	8.4	--	<0.5	<2	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Methyl tert butyl ether	70	12	--	<0.5	<1	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Tetrachloroethene	1	3.5	--	<0.5	<1	ND	NA	**0.71** J	**2.34**	**2.67**	**9.83**	**9.75**	NA	**4.3**	**0.49** J	**1.55**	**0.58**	**1.31**	**1.92**	**3.19**	**2.19**	**1.62**	**1.79**
Toluene	600	86	--	**0.23** J	**1.7**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
Trichloroethene	1	0.26	--	<0.5	<1	ND	NA	ND	**0.52** J	**0.59** J	**5.12**	**5.06**	NA	**2.13**	ND	**0.57**	ND	ND	ND	ND	<0.5	<0.5	<0.5
Total Xylenes	1000	19	--	ND	**1**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1
Vinyl Chloride	1	0.015	--	<0.5	<1	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5
TICs *	500	NLE	--	ND	**55.7**	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (µg/L)																							
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.044**	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW11			M8MW12																		
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**		LF		44	44 Dup	45	46	46 Dup	47	47 Dup	48	49	50	51	52	LF1		LF2		LF3		LF4	LF5	LF6
Date Collected				3/9/2011	8/11/2011		3/13/2008	3/13/2008	6/5/2008	9/4/2008	9/4/2008	11/21/2008	11/21/2008	2/9/2009	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010		6/29/2010		9/29/2010		12/23/2010	3/9/2011	5/26/2011
Metals (µg/L)																										
Aluminum	200	1600	121000	**735**	**5540**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1480**		**215**		**179**		<200	**1490**	<200
Antimony	6	0.6	20.70	<6	<12	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<6	<6	<6
Arsenic	3	0.05	89.30	**11.5**	**21.6**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.59**	ER	**1**	ER	**2.11**	ER	<3	<3	<3
Barium	6000	290	699.00	**299**	**727**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**15.3**		**12.5**		**2.93**	ER	<200	<200	<200
Beryllium	1	1.6	2.10	<1	<2	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.049**	ER	ND		ND		<1	<1	<1
Cadmium	4	0.69	9.50	<3	<6	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<3	<3	<3
Calcium	NLE	NLE	45400.00	**384000**	**377000**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8170**		**8270**		**3930**		**10200**	**5070**	**25500**
Chromium	70	1600	191.00	**19**	**48.8**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**11.6**		**2.14**	ER	ND		<10	**11.8**	<10
Cobalt	NLE	0.47	18.30	<50	<100	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<50	<50	<50
Copper	1300	62	65.60	**11.7**	<20	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		**4.64**	ER	**1.32**	ER	<10	<10	<10
Iron	300	1100	431000	**33900**	**163000**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4640**		**1350**		**900**		**372**	**4950**	**7750**
Lead [6]	5	15	22.70	**8.9**	**49.8**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<3	<3	<3
Magnesium	NLE	NLE	62700	**53800**	**55900**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1950**		**1650**		**1130**		<5000	<5000	**5220**
Manganese	50	32	331	**1620**	**948**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**9.33**		**3.73**		**6**		<15	<15	**54.7**
Mercury	2	0.06	0.26	<0.2	<0.2		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND			<0.2	<0.2
Nickel	100	30	187	<10	**26.8**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.14**	ER	**1.1**	ER	**1.9**	ER	<10	<10	<10
Potassium	NLE	NLE	137000	**56900**	**70600**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4590**		**3800**		**2000**		<10000	<10000	<10000
Selenium	40	7.8	29.60	<10	<20	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10.5**		NR		ND		<10	<10	<10
Silver	40	7.1	ND	<10	<20	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		**0.919**		ND		<10	<10	<10
Sodium	50000	NLE	21500	**212000**	**269000**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**58700**		**68100**		**160000**		**226000**	**50800**	**269000**
Thallium	2	0.02	5.50	<2	<4	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<2	<2	<2
Vanadium	NLE	6.3	108	<50	<100	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8.56**		**1.45**		**1.66**		<50	<50	<50
Zinc	2000	470	233	<20	**111**	/a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10.6**		**3.39**		**2.17**		<20	<20	<20

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW12		M8MW13																		M8MW14
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF7		44	45	45 Dup	46	47	48	49	50	51	LF1	LF2	LF2 Dup	LF3	LF3 Dup	LF4	LF5	LF6	LF7	LF7 Dup	44
Date Collected				8/11/2011		3/13/2008	6/5/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/25/2010	6/25/2010	9/28/2010	9/28/2010	12/23/2010	3/7/2011	5/20/2011	8/10/2011	8/10/2011	3/13/2008
Volatile Organic Compounds (µg/L)																								
Tert-butyl alcohol	100	NLE	--	NA		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA	NA	**5.68**
Acetone	6000	1200	--	<10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	<10	ND
Carbon disulfide	700	72	--	<2		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	<2	ND
2-Butanone	300	490	--	<10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	<10	ND
Benzene	1	0.39	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Chlorobenzene	50	7.2	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	**9.58**
Bromodichloromethane	1	0.12	--	**0.55**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Chloroform	70	0.19	--	**2.3**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Dibromochloromethane	1	0.15	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
cis -1,2-Dichloroethene	70	2.8	--	**0.33**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
1,3-Dichlorobenzene	600	NLE	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
1,4-Dichlorobenzene	75	0.42	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	**2.34**
1,2-Dichlorobenzene	600	28	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Ethylbenzene	700	1.3	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Isopropylbenzene	700	39	--	<2		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	<2	ND
Methylene chloride	3	8.4	--	<2		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	<2	ND
Methyl tert butyl ether	70	12	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Tetrachloroethene	1	3.5	--	**3**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Toluene	600	86	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Trichloroethene	1	0.26	--	**0.34**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
Total Xylenes	1000	19	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	ND
Vinyl Chloride	1	0.015	--	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND
TICs *	500	NLE	--	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**9**
Pesticides/PCBs (µg/L)																								
beta-BHC	0.04	0.022	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW12	M8MW13																		M8MW14
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF7	44	45	45 Dup	46	47	48	49	50	51	LF1	LF2	LF2 Dup	LF3	LF3 Dup	LF4	LF5	LF6	LF7	LF7 Dup	44
Date Collected				8/11/2011	3/13/2008	6/5/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/25/2010	6/25/2010	9/28/2010	9/28/2010	12/23/2010	3/7/2011	5/20/2011	8/10/2011	8/10/2011	3/13/2008
Metals (µg/L)																								
Aluminum	200	1600	121000	**315**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**57.7**	ND	**24**	**255**	**209**	<200	<200	**964**	**544**	**488**	NA
Antimony	6	0.6	20.70	<6	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10.2**	**11**	**11.9**	**15.6**	**15.2**	<6	<6	<6	<6	<6	NA
Arsenic	3	0.05	89.30	**5.7**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.73** ER	ND	ND	**1.9** ER	ND	<3	<3	<3	<3	<3	NA
Barium	6000	290	699.00	<200	NA	NA	NA	NA	NA	NA	NA	NA	NA	**52.3**	**78.2**	**84.3**	**58.5**	**56.8**	<200	<200	<200	<200	<200	NA
Beryllium	1	1.6	2.10	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.094** ER	**0.101** ER	ND	ND	<1	<1	<1	<1	<1	NA
Cadmium	4	0.69	9.50	<3	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.991** ER	**1.24** ER	**1.36** ER	**0.761** ER	**0.596** ER	<3	<3	<3	<3	<3	NA
Calcium	NLE	NLE	45400.00	<5000	NA	NA	NA	NA	NA	NA	NA	NA	NA	**138000**	**193000**	**204000**	**89000**	**85000**	**230000**	**131000**	**206000**	**169000**	**165000**	NA
Chromium	70	1600	191.00	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	<10	<10	<10	<10	<10	NA
Cobalt	NLE	0.47	18.30	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.21**	ND	ND	ND	ND	<50	<50	<50	<50	<50	NA
Copper	1300	62	65.60	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	**6.21**	**6.71**	**6.9**	**17.6**	**16.8**	<10	**12.8**	**21.3**	**17.6**	**17.7**	NA
Iron	300	1100	431000	**3270**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2980**	**2670**	**3270**	**585**	**430**	**272**	**370**	**9400**	**6440**	**6530**	NA
Lead [6]	5	15	22.70	<3	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	**3.52** ER	**2.67** ER	<3	<3	**16.8**	**8.7**	**9.8**	NA
Magnesium	NLE	NLE	62700	<5000	NA	NA	NA	NA	NA	NA	NA	NA	NA	**28200**	**29500**	**3200**	**21400**	**20500**	**83500**	**28800**	**42400**	**27200**	**26800**	NA
Manganese	50	32	331	<15	NA	NA	NA	NA	NA	NA	NA	NA	NA	**182**	**239**	**253**	**48.4**	**47.4**	**39**	<15	**146**	**184**	**181**	NA
Mercury	2	0.06	0.26	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	**0.29** ER	**0.23** ER		<0.2	**0.23**	<0.2	**0.21**	NA
Nickel	100	30	187	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	**6.94**	**6.02**	**6.28**	**6.92**	**6.19**	<10	<10	**13.6**	**13.8**	**13.9**	NA
Potassium	NLE	NLE	137000	<10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	**12500**	**14000**	**15100**	**18400**	**17400**	**34600**	**12600**	**20700**	**17000**	**16900**	NA
Selenium	40	7.8	29.60	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	**85.4**	NR	NR	**1.5**	ND	<10	<10	<10	<10	<10	NA
Silver	40	7.1	ND	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	**6.13**	ND	ND	ND	ND	<10	<10	<10	<10	<10	NA
Sodium	50000	NLE	21500	**128000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**127000**	**109000**	**116000**	**211000**	**202000**	**711000**	**153000**	**291000**	**126000**	**129000**	NA
Thallium	2	0.02	5.50	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	<2	<2	<2	<2	<2	NA
Vanadium	NLE	6.3	108	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.91**	ND	ND	**1.08**	**0.949**	<50	<50	<50	<50	<50	NA
Zinc	2000	470	233	<20	NA	NA	NA	NA	NA	NA	NA	NA	NA	**574**	**325**	**352**	**259**	**246**	**432**	**424**	**628**	**400**	**399**	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008 TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW14																**M8MW15**		
Round No.	**NJDEP GWQS (1)**	**USEPA Tapwater RSL (2)**	**Weston 1995 Background (Main Post) (3)**	44	45	46	47	48	49	50	50 Dup	LF1	LF1 Dup	LF2	LF3	LF4	LF5	LF6	LF7	44	44 Dup	45
Date Collected				6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	12/10/2009	3/18/2010	3/18/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/25/2011	8/11/2011	3/14/2008	3/14/2008	6/11/2008
Volatile Organic Compounds (µg/L)																						
Tert-butyl alcohol	100	NLE	--	**10.79**	**13.87**	ND	ND	**7.04** J	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA	ND	NA	**12.36**
Acetone	6000	1200	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	NA	ND
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	NA	ND
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	NA	ND
Benzene	1	0.39	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	**0.31** J	NA	**0.61** J
Chlorobenzene	50	7.2	--	**9.68**	**6.3**	**3.84**	**5.89**	**8.04**	**6.16**	**6.49**	**6.73**	**5.87**	**5.8**	**1.67**	**1.64**	<0.5	**2.07**	**6.34**	**6.2**	**13.2**	NA	**23.73**
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
1,3-Dichlorobenzene	600	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	**1.5** J	NA	**2.33**
1,4-Dichlorobenzene	75	0.42	--	**2.64**	**1.77** J	**1.14** J	**1.51** J	**2.2**	**1.76**	**2**	**2.11**	**1.55**	**1.53**	**0.55**	**0.51**	<0.5	**0.65**	**1.87**	**2.2**	**2.95**	NA	**4.59**
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	**1.02** J	NA	**1.48** J
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	NA	ND
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	**1.5** J	ND	NA	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<5	ND	NA	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	ND	NA	**0.19** J
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	NA	ND
TICs *	500	NLE	--	**7**	**21**	ND	**3**	**6**	**4**	**4**	**4**	**3**	**3**	ND	ND	ND	ND	**7**	ND	**23**	NA	**25**
Pesticides/PCBs (µg/L)																						
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane (5)	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane (5)	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde (4)	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone (4)	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW14																M8MW15		
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	44	45	46	47	48	49	50	50 Dup	LF1	LF1 Dup	LF2	LF3	LF4	LF5	LF6	LF7	44	44 Dup	45
Date Collected				6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	12/10/2009	3/18/2010	3/18/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/25/2011	8/11/2011	3/14/2008	3/14/2008	6/11/2008
Metals (µg/L)																						
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	NA	NA	NA	**103**	**76.7**	**53.8**	**96.6**	<200	<200	<200	**486**	NA	NA	NA
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	NA	NA	NA	**5.6**	**10.8**	**12.7**	**21**	<6	<6	<6	<6	NA	NA	NA
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	NA	NA	NA	**0.85**	ND	ND	**2.2** ER	<3	<3	<3	**5.2**	NA	NA	NA
Barium	6000	290	699.00	NA	NA	NA	NA	NA	NA	NA	NA	**547**	**575**	**167**	**196**	<200	**460**	**494**	**427**	NA	NA	NA
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.105** ER	ND	<1	<1	<1	<1	NA	NA	NA
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	NA	NA	NA	**0.609**	ND	**1.59** ER	**1.09** ER	<3	<3	<3	**3.1**	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	NA	NA	NA	**191000**	**200000**	**93300**	**129000**	**111000**	**160000**	**186000**	**160000**	NA	NA	NA
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	<10	<10	<10	<10	NA	NA	NA
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.55**	ND	<50	<50	<50	<50	NA	NA	NA
Copper	1300	62	65.60	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**1.26** ER	**3.66** ER	<10	<10	<10	**26.8**	NA	NA	NA
Iron	300	1100	431000	NA	NA	NA	NA	NA	NA	NA	NA	**35400**	**37600**	**20900**	**24700**	**39100**	**43000**	**48800**	**49200**	NA	NA	NA
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**3.98** ER	**3.68** ER	<3	<3	**3.7**	<3	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	NA	NA	NA	**38200**	**41300**	**14700**	**18200**	**15100**	**33200**	**57300**	**61600**	NA	NA	NA
Manganese	50	32	331	NA	NA	NA	NA	NA	NA	NA	NA	**607**	**640**	**641**	**1030**	**1610**	**740**	**546**	**434**	NA	NA	NA
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	**0.26** ER		<0.2	<0.2	<0.2	NA	NA	NA
Nickel	100	30	187	NA	NA	NA	NA	NA	NA	NA	NA	**1.74** ER	**2.1** ER	**2.58** ER	**3.37** ER	<10	<10	<10	**10.4**	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	NA	NA	NA	**31800**	**32900**	**15400**	**18000**	**14300**	**29500**	**42100**	**39500**	NA	NA	NA
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	NA	NA	NA	**67.1**	**63.9**	NR	ND	<10	<10	<10	<10	NA	NA	NA
Silver	40	7.1	ND	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**1.8**	**1.53**	<10	<10	<10	<10	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	NA	NA	NA	**73900**	**75700**	**43100**	**47400**	**56400**	**71300**	**211000**	**255000**	NA	NA	NA
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	<2	<2	<2	<2	NA	NA	NA
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	NA	NA	NA	**6.22**	**6.85**	ND	ND	<50	<50	<50	<50	NA	NA	NA
Zinc	2000	470	233	NA	NA	NA	NA	NA	NA	NA	NA	**61**	**40.8**	**14.1**	**132**	**26.1**	**28.4**	**182**	**820**	NA	NA	NA

Can not confirm the values for this sample.

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW15																M8MW16		
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	45 Dup	46	46 Dup	47	48	49	50	51	LF1	LF2	LF3	LF4	LF5	LF6	LF7	40	41	42
Date Collected				6/11/2008	9/5/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/18/2010	6/28/2010	9/28/2010	12/23/2010	3/8/2011	5/25/2011	8/11/2011	3/14/2008	6/11/2008	9/5/2008
Volatile Organic Compounds (µg/L)																					
Tert-butyl alcohol	100	NLE	--	**13.59**	**13.53**	**15.41**	ND	ND	**9.57** J	ND	ND	ND	ND	ND	<5	<5	<5	NA	ND	ND	ND
Acetone	6000	1200	--	**1.32** J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND
Benzene	1	0.39	--	**0.61** J	**0.19** J	**0.19** J	ND	ND	**0.87** J	**0.62**	**0.87**	**0.32** J	**0.19** J	ND	**0.3** J	**0.82**	**1.19**	<1	**0.7** J	**1.13** J	**0.68** J
Chlorobenzene	50	7.2	--	**23.54**	**26.76**	**26.33**	**12.04**	**9.02**	**30.46**	**35.16**	**32.09**	**7.45**	**28.76**	**25.6**	**17.47**	**17.21**	**35.91**	**37.1**	**9.83**	**20.32**	**24.78**
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
1,3-Dichlorobenzene	600	NLE	--	**2.16**	**2.69**	**2.63**	**1.02** J	**1.05** J	**1.98** J	**2.67**	**2.22**	**0.66**	**2.47**	**2.18**	**1.38**	**1.38**	**2.66**	**3.1**	ND	**0.58** J	**0.99** J
1,4-Dichlorobenzene	75	0.42	--	**4.6**	**5.44**	**5.29**	**2.1**	**2.02**	**4.43**	**5.93**	**4.76**	**1.35**	**5.3**	**4.53**	**2.78**	**3.04**	**6.05**	**6.6**	**0.82** J	**2.18**	**3.42**
1,2-Dichlorobenzene	600	28	--	**1.46** J	**1.94** J	**1.86** J	**0.68** J	**0.77** J	**1.12** J	**1.67**	**1.42**	**0.47** J	**1.64**	**1.31**	**0.92**	**0.93**	**1.81**	**2**	ND	ND	**0.51** J
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	**1** J	ND	ND	ND
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	**0.83** J	ND	ND	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.32** J	**0.47** J	<0.5	<0.5	<0.5	<1	ND	ND	ND
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
Total Xylenes	1000	19	--	**0.19** J	**0.57** J	**0.56** J	ND	ND	**0.21**	**0.66** J	**0.67** J	ND	ND	**0.63** J	<1	<1	<1	**0.32** J	ND	ND	ND
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND
TICs *	500	NLE	--	**25**	**74**	**76**	**13**	**9**	**43**	**51**	**62**	**9**	**45**	**30**	ND	ND	**53**	**31**	ND	**3**	**16**
Pesticides/PCBs (µg/L)																					
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW15															M8MW16		
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	45 Dup	46	46 Dup	47	48	49	50	51	LF1	LF2		LF3		LF4	LF5	LF6	LF7	40	41	42
Date Collected				6/11/2008	9/5/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/18/2010	6/28/2010		9/28/2010		12/23/2010	3/8/2011	5/25/2011	8/11/2011	3/14/2008	6/11/2008	9/5/2008
Metals (µg/L)																							
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	NA	NA	NA	**96.4**	**48.9**		**55.9**		<200	<200	<200	<200	NA	NA	NA
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	NA	NA	NA	**5.54**	**14.8**		**22.4**		<6	<6	<6	<6	NA	NA	NA
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	NA	NA	NA	**8.79**	**1.47**	ER	**2.52**	ER	<3	<3	<3	<3	NA	NA	NA
Barium	6000	290	699.00	NA	NA	NA	NA	NA	NA	NA	NA	**144**	**227**		**221**		<200	<200	**270**	**257**	NA	NA	NA
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.094**	ER	ND		<1	<1	<1	<1	NA	NA	NA
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	**1.5**	ER	**0.542**	ER	<3	<3	<3	<3	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	NA	NA	NA	**357000**	**290000**		**273000**		**257000**	**289000**	**264000**	**270000**	NA	NA	NA
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND		ND		<10	**11.4**	<10	<10	NA	NA	NA
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	NA	NA	NA	**18.6**	**1.96**		**1.65**		<50	<50	<50	<50	NA	NA	NA
Copper	1300	62	65.60	NA	NA	NA	NA	NA	NA	NA	NA	ND	**3.83**	ER	**2.87**	ER	<10	<10	<10	<10	NA	NA	NA
Iron	300	1100	431000	NA	NA	NA	NA	NA	NA	NA	NA	**40300**	**15000**		**19400**		**27000**	**20000**	**16400**	**15400**	NA	NA	NA
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	NA	NA	NA	ND	**3**	ER	**3.6**	ER	<3	<3	<3	<3	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	NA	NA	NA	**54800**	**70000**		**74200**		**57600**	**55400**	**60400**	**59700**	NA	NA	NA
Manganese	50	32	331	NA	NA	NA	NA	NA	NA	NA	NA	**3390**	**675**		**744**		**1650**	**1100**	**563**	**672**	NA	NA	NA
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND		**0.26**	ER		<0.2	<0.2	<0.2	NA	NA	NA
Nickel	100	30	187	NA	NA	NA	NA	NA	NA	NA	NA	**30.1**	**12.5**		**6.24**		<10	<10	<10	<10	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	NA	NA	NA	**17300**	**40400**		**38300**		**30300**	**26800**	**37800**	**39600**	NA	NA	NA
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	NA	NA	NA	**67.8**	NR		ND		<10	<10	<10	**11.7**	NA	NA	NA
Silver	40	7.1	ND	NA	NA	NA	NA	NA	NA	NA	NA	**3.44**	ND		ND		<10	<10	<10	<10	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	NA	NA	NA	**104000**	**199000**		**210000**		**182000**	**124000**	**155000**	**169000**	NA	NA	NA
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND		ND		<2	<2	<2	<2	NA	NA	NA
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	NA	NA	NA	**9.45**	ND		ND		<50	<50	<50	<50	NA	NA	NA
Zinc	2000	470	233	NA	NA	NA	NA	NA	NA	NA	NA	**6.71**	**2.35**		ND		<20	<20	<20	**26.6**	NA	NA	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW16												M8MW17							
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	43	44	45	46	47	LF1	LF2	LF3	LF4	LF5	LF6	LF7	40	41	42	43	44	45	45 Dup	46
Date Collected				11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/28/2010	9/29/2010	12/23/2010	3/8/2011	5/25/2011	8/11/2011	3/14/2008	6/11/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	6/27/2009	9/21/2009
Volatile Organic Compounds (µg/L)																							
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	6000	1200	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	0.39	--	**0.54** J	**1.27** J	**1.32** J	**0.47** J	ND	**1.41**	**0.68**	**0.28** J	**0.31** J	<0.5	**0.63**	**0.57** J	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	50	7.2	--	**18.26**	**25.26**	**25.42**	**20.03**	**0.39** J	**20.86**	**14**	**30.96**	**28.6**	**22.07**	**12.82**	**28.4**	ND	**0.3** J	**2.62**	ND	ND	**0.4** J	**0.3** J	**0.17** J
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	ND	ND	ND	**0.2** J	**0.17** J	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600	NLE	--	**0.57** J	**0.43** J	**0.54** J	**0.53**	ND	**0.55**	**0.41** J	**1.19**	**0.91**	**0.58**	**0.27** J	**0.67** J	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	0.42	--	**2.15**	**1.74** J	**2.46**	**2.33**	ND	**3.47**	**1.83**	**4.66**	**4.05**	**3.17**	**3.41**	**3.1**	ND	ND	**0.67** J	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	**0.44** J	ND	**0.76**	**0.56**	**0.45** J	**0.21** J	**0.39** J	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	**0.97** J	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND
TICs *	500	NLE	--	ND	ND	**4**	**3**	ND	**8**	ND	**3**	ND	ND	ND	ND	ND	**12**	**42**	**4**	ND	ND	ND	ND
Pesticides/PCBs (µg/L)																							
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW16												M8MW17							
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	43	44	45	46	47	LF1	LF2	LF3	LF4	LF5	LF6	LF7	40	41	42	43	44	45	45 Dup	46
Date Collected				11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/28/2010	9/29/2010	12/23/2010	3/8/2011	5/25/2011	8/11/2011	3/14/2008	6/11/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	6/27/2009	9/21/2009
Metals (µg/L)																							
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	**71.4**	ND	ND	<200	**1050**	**3410**	**693**	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	**9.81**	ND	**7.08**	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	ND	ND	**0.66**	ER <3	<3	<3	<3	NA	NA	NA	NA	NA	NA	NA	NA
Barium	6000	290	699.00	NA	NA	NA	NA	NA	**87.1**	ND	**309**	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	ND	ND	ND	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	**5.98**	**0.516** ER	**0.816**	ER <3	<3	**8.5**	**11.4**	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	**165000**	ND	**284000**	**193000**	**144000**	**136000**	**198000**	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	ND	ND	**1.2**	ER <10	**13.6**	**13.7**	<10	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	**0.608**	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1300	62	65.60	NA	NA	NA	NA	NA	ND	ND	**5.08**	<10	<10	**24.5**	**21.8**	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	1100	431000	NA	NA	NA	NA	NA	**19000**	ND	**9290**	**12900**	**17200**	**23000**	**9770**	NA	NA	NA	NA	NA	NA	NA	NA
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	ND	ND	ND	<3	<3	**9.7**	<3	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	**41000**	ND	**3000000**	**78300**	**52600**	**30900**	**89200**	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	32	331	NA	NA	NA	NA	NA	**477**	ND	**570**	**561**	**496**	**668**	**535**	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	ND	ND	ND		<0.2	**0.44**	**0.46**	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	30	187	NA	NA	NA	NA	NA	**15.9**	ND	**2.35**	ER <10	**12.3**	**29.9**	**24.1**	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	**18900**	**38.6**	**93600**	**35900**	**23200**	**15900**	**35300**	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	**71.9**	NR	**1.95**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Silver	40	7.1	ND	NA	NA	NA	NA	NA	**1.87**	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	**92800**	ND	**2140000**	**405000**	**165000**	**56100**	**518000**	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	ND	ND	ND	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	**3.46**	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	470	233	NA	NA	NA	NA	NA	**274**	**2.09**	**9.27**	**80**	**125**	**272**	**183**	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW17												M8MW18									
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	46 Dup	47	47 Dup	LF1	LF2	LF3	LF4	LF5	LF6	LF6 Dup	LF7	39	40	41	42	43	44	45	46	LF1	LF2
Date Collected				9/21/2009	12/8/2009	12/8/2009	3/17/2010	6/25/2010	9/28/2010	12/23/2010	3/8/2011	5/20/2011	5/20/2011	8/10/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/28/2010
Volatile Organic Compounds (µg/L)																								
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	ND	ND	ND	<5	<5	<5	<5	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	6000	1200	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	0.39	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	50	7.2	--	ND	ND	ND	**0.8**	ND	ND	**0.5**	**0.7**	<0.5	<0.5	**0.41** J	**11.39**	**6.95**	**13.34**	**8.59**	**13.26**	**7.85**	**11.99**	**0.37** J	**10.23**	**8.92**
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600	NLE	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	0.42	--	ND	ND	ND	**0.41** J	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	**2.42**	**1.87** J	**4.73**	**2.02**	**3.39**	**1.07** J	**3.15**	ND	**2.71**	**2.61**
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	**0.27** J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TICs *	500	NLE	--	ND	ND	ND	**14**	**14**	ND	ND	ND	ND	ND	ND	**9.5**	ND	**24**	**4**	**4**	**13**	**7**	ND	**3**	ND
Pesticides/PCBs (µg/L)																								
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW17											M8MW18									
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	46 Dup	47	47 Dup	LF1	LF2	LF3	LF4	LF5	LF6	LF6 Dup	LF7	39	40	41	42	43	44	45	46	LF1	LF2
Date Collected				9/21/2009	12/8/2009	12/8/2009	3/17/2010	6/25/2010	9/28/2010	12/23/2010	3/8/2011	5/20/2011	5/20/2011	8/10/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/28/2010
Metals (µg/L)																								
Aluminum	200	1600	121000	NA	NA	NA	**64.6**	ND	ND	**3990**	<200	<200	**300**	<200	NA	NA	NA	NA	NA	NA	NA	NA	**23.6**	ND
Antimony	6	0.6	20.70	NA	NA	NA	**5.88** ER	**12.5**	**25.2**	<6	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	**10.8**	**11.3**
Arsenic	3	0.05	89.30	NA	NA	NA	ND	ND	**2.73** ER	**11.6**	<3	**3.1**	**9.6**	**5**	NA	NA	NA	NA	NA	NA	NA	NA	**0.88** ER	ND
Barium	6000	290	699.00	NA	NA	NA	**135**	**138**	**287**	<200	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA	**277**	**278**
Beryllium	1	1.6	2.10	NA	NA	NA	ND	**0.072** ER	ND	<1	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.105** ER
Cadmium	4	0.69	9.50	NA	NA	NA	ND	**0.521** ER	ND	<3	<3	<3	<3	<3	NA	NA	NA	NA	NA	NA	NA	NA	**0.728** ER	**1.77** ER
Calcium	NLE	NLE	45400.00	NA	NA	NA	**299000**	**295000**	**399000**	**280000**	**264000**	**308000**	**301000**	**296000**	NA	NA	NA	NA	NA	NA	NA	NA	**152000**	**149000**
Chromium	70	1600	191.00	NA	NA	NA	ND	ND	ND	**33.4**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Cobalt	NLE	0.47	18.30	NA	NA	NA	ND	ND	ND	<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Copper	1300	62	65.60	NA	NA	NA	ND	**1**	**2.01**	**41.7**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Iron	300	1100	431000	NA	NA	NA	**6640**	**1560**	**3550**	**52100**	**7220**	**11300**	**21200**	**11600**	NA	NA	NA	NA	NA	NA	NA	NA	**15200**	**23500**
Lead [6]	5	15	22.70	NA	NA	NA	ND	ND	ND	**33.1**	<3	<3	**4.4**	<3	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Magnesium	NLE	NLE	62700	NA	NA	NA	**30700**	**32000**	**130000**	**39600**	**31000**	**29300**	**29000**	**33300**	NA	NA	NA	NA	NA	NA	NA	NA	**39700**	**46300**
Manganese	50	32	331	NA	NA	NA	**521**	**378**	**554**	**947**	**594**	**489**	**502**	**520**	NA	NA	NA	NA	NA	NA	NA	NA	**840**	**604**
Mercury	2	0.06	0.26	NA	NA	NA	ND	ND	**0.22** ER		<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Nickel	100	30	187	NA	NA	NA	**0.909** ER	ND	ND	**16.5**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**1.88** ER	**2.3** ER
Potassium	NLE	NLE	137000	NA	NA	NA	**10700**	**11600**	**32800**	**13200**	**10500**	**10800**	**10800**	**13700**	NA	NA	NA	NA	NA	NA	NA	NA	**25300**	**27100**
Selenium	40	7.8	29.60	NA	NA	NA	**91.3**	NR	ND	<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**66.5**	NR
Silver	40	7.1	ND	NA	NA	NA	**12.4**	ND	ND	<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**3.64**	**0.505**
Sodium	50000	NLE	21500	NA	NA	NA	**43600**	**49200**	**931000** E	**254000**	**98600**	**40600**	**41300**	**79500**	NA	NA	NA	NA	NA	NA	NA	NA	**118000**	**182000**
Thallium	2	0.02	5.50	NA	NA	NA	ND	ND	ND	<2	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
Vanadium	NLE	6.3	108	NA	NA	NA	**3.23**	ND	ND	<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	**3.82**	ND
Zinc	2000	470	233	NA	NA	NA	**11.8**	ND	ND	**155**	<20	<20	**24.9**	<20	NA	NA	NA	NA	NA	NA	NA	NA	**89.4**	ND

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW18							M8MW19														
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF3	LF4	LF5	LF6	LF6 Dup	LF7		39	40	41	42	43	44	45	46	LF1	LF2	LF2 Dup	LF3	LF4	LF5	LF6	LF7
Date Collected				9/29/2010	12/23/2010	3/8/2011	5/26/2011	5/26/2011	8/11/2011		3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/28/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/20/2011	8/10/2011
Volatile Organic Compounds (µg/L)																									
Tert-butyl alcohol	100	NLE	--	ND	<5	<5	<5	<5	NA		ND	**8.86**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA
Acetone	6000	1200	--	ND	<0.5	<0.5	<0.5	<0.5	<10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10
Carbon disulfide	700	72	--	ND	<0.5	<0.5	<0.5	<0.5	<2		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
2-Butanone	300	490	--	ND	<0.5	<0.5	<0.5	<0.5	<10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10
Benzene	1	0.39	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Chlorobenzene	50	7.2	--	**8.8**	**6.34**	**2.68**	**6.7**	**6.22**	**14.8**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Bromodichloromethane	1	0.12	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Chloroform	70	0.19	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Dibromochloromethane	1	0.15	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
cis -1,2-Dichloroethene	70	2.8	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
1,3-Dichlorobenzene	600	NLE	--	ND	<0.5	<0.5	<0.5	<0.5	**0.33**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
1,4-Dichlorobenzene	75	0.42	--	**2.34**	**1.84**	<0.5	**1.2**	**1.03**	**4.1**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.35**	J	<0.5	<0.5	<0.5	<1
1,2-Dichlorobenzene	600	28	--	ND	<0.5	<0.5	<0.5	<0.5	**0.38**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Ethylbenzene	700	1.3	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Isopropylbenzene	700	39	--	ND	<0.5	<0.5	<0.5	<0.5	<2		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
Methylene chloride	3	8.4	--	ND	<0.5	<0.5	<0.5	<0.5	**2.1**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
Methyl tert butyl ether	70	12	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Tetrachloroethene	1	3.5	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Toluene	600	86	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Trichloroethene	1	0.26	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Total Xylenes	1000	19	--	ND	<1	<1	<1	<1	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1
Vinyl Chloride	1	0.015	--	ND	<0.5	<0.5	<0.5	<0.5	<1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
TICs *	500	NLE	--	**3**	ND	ND	**3**	**7**	ND		**14**	**8**	**10**	**5**	ND	**9**	**11**	**11**	**14**	**5**	**5**	**4**	ND	ND	**9**	ND
Pesticides/PCBs (µg/L)																									
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW18							M8MW19																
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF3		LF4	LF5	LF6	LF6 Dup	LF7	39	40	41	42	43	44	45	46	LF1		LF2		LF2 Dup		LF3		LF4	LF5	LF6	LF7
Date Collected				9/29/2010		12/23/2010	3/8/2011	5/26/2011	5/26/2011	8/11/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010		6/28/2010		6/28/2010		9/28/2010		12/23/2010	3/7/2011	5/20/2011	8/10/2011
Metals (µg/L)																													
Aluminum	200	1600	121000	ND		**420**	<200	**470**	**275**	**235**	NA	NA	NA	NA	NA	NA	NA	NA	**44.4**		ND		ND		ND		<200	<200	<200	<200
Antimony	6	0.6	20.70	**8.76**		<6	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	**11.5**		**9.6**	ER	**10.2**		**30.3**		<6	<6	<6	<6
Arsenic	3	0.05	89.30	**2.61**	ER	<3	<3	<3	<3	<3	NA	NA	NA	NA	NA	NA	NA	NA	**1.71**	ER	ND		ND		**4.21**	ER	<3	<3	<3	<3
Barium	6000	290	699.00	**406**		<200	<200	**356**	**331**	**453**	NA	NA	NA	NA	NA	NA	NA	NA	**48.8**		**96.1**		**98.3**		**511**		<200	<200	<200	**273**
Beryllium	1	1.6	2.10	ND		<1	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	ND		**0.117**	ER	**0.118**	ER	**0.057**	ER	<1	<1	<1	<1
Cadmium	4	0.69	9.50	**0.618**	ER	<3	<3	<3	<3	**5**	NA	NA	NA	NA	NA	NA	NA	NA	ND		**0.826**	ER	**0.932**	ER	**1.29**	ER	<3	<3	<3	**3.8**
Calcium	NLE	NLE	45400.00	**225000**		**92400**	**117000**	**147000**	**144000**	**154000**	NA	NA	NA	NA	NA	NA	NA	NA	**92500**		**166000**		**170000**		**607000**	E	**42800**	**135000**	**126000**	**306000**
Chromium	70	1600	191.00	ND		<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		**3.68**	ER	<10	**12.1**	<10	<10
Cobalt	NLE	0.47	18.30	ND		<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		ND		<50	<50	<50	<50
Copper	1300	62	65.60	**3.22**	ER	**11**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND		**2.55**	ER	**2.14**	ER	**2.69**	ER	<10	<10	<10	<10
Iron	300	1100	431000	**18700**		**1610**	**1480**	**25000**	**22900**	**24300**	NA	NA	NA	NA	NA	NA	NA	NA	**5850**		**12000**		**12100**		**30200**		**4440**	**9870**	**4070**	**13000**
Lead [6]	5	15	22.70	**3.07**	ER	<3	<3	**16.3**	**9.7**	**4.7**	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		**3.34**	ER	<3	<3	<3	<3
Magnesium	NLE	NLE	62700	**97200**		**100000**	**39200**	**42700**	**41600**	**48600**	NA	NA	NA	NA	NA	NA	NA	NA	**37200**		**65400**		**67100**		**295000**		**6720**	**43100**	**44000**	**150000**
Manganese	50	32	331	**1070**		**35.1**	**348**	**681**	**651**	**739**	NA	NA	NA	NA	NA	NA	NA	NA	**219**		**386**		**394**		**1230**		**1010**	**421**	**461**	**801**
Mercury	2	0.06	0.26	ND			<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		**0.25**	ER		<0.2	<0.2	<0.2
Nickel	100	30	187	**0.565**	ER	<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**1.31**	ER	ND		ND		ND		<10	<10	<10	<10
Potassium	NLE	NLE	137000	**38000**		**44900**	**17700**	**32500**	**31200**	**37700**	NA	NA	NA	NA	NA	NA	NA	NA	**12800**		**20600**		**21000**		**57500**		<10000	**16600**	**21100**	**42300**
Selenium	40	7.8	29.60	ND		<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**69.3**		NR		NR		**1.61**		<10	<10	<10	**12.4**
Silver	40	7.1	ND	ND		<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**3.16**		ND		ND		ND		<10	<10	<10	<10
Sodium	50000	NLE	21500	**463000**		**883000**	**147000**	**154000**	**150000**	**198000**	NA	NA	NA	NA	NA	NA	NA	NA	**337000**		**445000**		**435000**		**2010000**	E	**69700**	**357000**	**408000**	**1030000**
Thallium	2	0.02	5.50	ND		<2	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		ND		<2	<2	<2	<2
Vanadium	NLE	6.3	108	ND		<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	**3.39**		ND		ND		ND		<50	<50	<50	<50
Zinc	2000	470	233	ND		**216**	**254**	**123**	**79.8**	**274**	NA	NA	NA	NA	NA	NA	NA	NA	**8.02**		**1.25**		**2.57**		ND		<20	**117**	**33.7**	**198**

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW20																M8MW21					
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	39	40	41	42	43	44	45	46	LF1	LF2	LF3	LF4	LF5	LF6	LF7	LF7 Dup	39	40	41	42	43	44
Date Collected				3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/25/2011	8/11/2011	8/11/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009
Volatile Organic Compounds (µg/L)																									
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA	NA	ND	ND	ND	ND	ND	ND
Acetone	6000	1200	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	<10	ND	ND	ND	ND	ND	ND
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	<2	ND	ND	ND	ND	ND	ND
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	<10	ND	ND	ND	ND	ND	ND
Benzene	1	0.39	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Chlorobenzene	50	7.2	--	**1.57** J	**0.3** J	**2.12**	**1.39** J	**1.83** J	**1.35** J	**1.45**	**1.06**	**1.16**	**0.45** J	**0.42** J	**0.34** J	**0.26** J	**1.84**	**1.8**	**1.9**	ND	ND	ND	ND	ND	ND
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	0.42	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	**0.16** J	<1	<1	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	<2	ND	ND	ND	ND	ND	ND
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	**2**	<2	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	<1	ND	ND	ND	ND	ND	ND
TICs *	500	NLE	--	ND	ND	**4**	ND	ND	ND	ND	ND	**8**	ND	ND	ND	ND	**16**	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (µg/L)																									
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW20															M8MW21					
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	39	40	41	42	43	44	45	46	LF1	LF2	LF3	LF4	LF5	LF6	LF7	LF7 Dup	39	40	41	42	43	44
Date Collected				3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/25/2011	8/11/2011	8/11/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009
Metals (µg/L)																									
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	NA	NA	NA	**20.6**	ND	**37.4**	<200	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	NA	NA	NA	**7.8** ER	**14.2**	**34.1**	<6	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**1.46** ER	<3	<3	<3	**3.8**	<3	NA	NA	NA	NA	NA	NA
Barium	6000	290	699.00	NA	NA	NA	NA	NA	NA	NA	NA	**110**	**148**	**238**	<200	<200	**360**	**409**	**422**	NA	NA	NA	NA	NA	NA
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.073** ER	ND	<1	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<3	<3	<3	<3	<3	NA	NA	NA	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	NA	NA	NA	**136000**	**184000**	**344000**	**58400**	**137000**	**318000**	**330000**	**349000**	NA	NA	NA	NA	NA	NA
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	NA	NA	NA	ND	**7.25**	**4.89** ER	<10	**16.5**	<10	**10.6**	<10	NA	NA	NA	NA	NA	NA
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA
Copper	1300	62	65.60	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**1.96** ER	<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA
Iron	300	1100	431000	NA	NA	NA	NA	NA	NA	NA	NA	**478**	**720**	**3310**	**5550**	**1230**	**3390**	**6990**	**4190**	NA	NA	NA	NA	NA	NA
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<3	<3	<3	<3	<3	NA	NA	NA	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	NA	NA	NA	**43500**	**96000**	**293000**	**7700**	**92900**	**64600**	**110000**	**120000**	NA	NA	NA	NA	NA	NA
Manganese	50	32	331	NA	NA	NA	NA	NA	NA	NA	NA	**93.6**	**160**	**332**	**70.6**	**125**	**336**	**321**	**338**	NA	NA	NA	NA	NA	NA
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.24** ER		<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA
Nickel	100	30	187	NA	NA	NA	NA	NA	NA	NA	NA	**0.624** ER	ND	**0.506** ER	<10	<10	<10	**10.1**	<10	NA	NA	NA	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	NA	NA	NA	**17400**	**39600**	**90000**	**11300**	**36100**	**28500**	**43300**	**47200**	NA	NA	NA	NA	NA	NA
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	NA	NA	NA	**86.5**	NR	**3.01**	<10	<10	<10	**12.1**	**11.5**	NA	NA	NA	NA	NA	NA
Silver	40	7.1	ND	NA	NA	NA	NA	NA	NA	NA	NA	**6.84**	ND	ND	<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	NA	NA	NA	**140000**	**570000**	**1890000** E	**30200**	**533000**	**180000**	**527000**	**596000**	NA	NA	NA	NA	NA	NA
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<2		<2	<2	<2	NA	NA	NA	NA	NA	NA
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	NA	NA	NA	**3.83**	**7.54**	**1.07**	<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA
Zinc	2000	470	233	NA	NA	NA	NA	NA	NA	NA	NA	**16.6**	ND	ND	<20	<20	**39.5**	**71.6**	**33**	NA	NA	NA	NA	NA	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW21										M8MW22															
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	45	46	LF1	LF2	LF3	LF4	LF5	LF6	LF6 Dup	LF7	39	40	41	42	43	44	45	46	LF1	LF2	LF3					
Date Collected				9/21/2009	12/8/2009	3/17/2010	6/28/2010	9/28/2010	12/23/2010	3/7/2011	5/25/2011	5/25/2011	8/10/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010	6/28/2010	9/29/2010					
Volatile Organic Compounds (µg/L)																													
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	ND	ND	<5	<5	<5	<5	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Acetone	6000	1200	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
2-Butanone	300	490	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Benzene	1	0.39	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Chlorobenzene	50	7.2	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	**0.36**	J	**0.27**	J	**0.31**	J	ND	ND	**0.24**	J	ND	**0.21**	J	**0.19**	J	ND	**0.2**	J
1,3-Dichlorobenzene	600	NLE	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
1,4-Dichlorobenzene	75	0.42	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Tetrachloroethene	1	3.5	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Toluene	600	86	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
TICs *	500	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Pesticides/PCBs (µg/L)																													
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW21										M8MW22															
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	45	46	LF1		LF2		LF3		LF4	LF5	LF6	LF6 Dup	LF7	39	40	41	42	43	44	45	46	LF1		LF2		LF3	
Date Collected				9/21/2009	12/8/2009	3/17/2010		6/28/2010		9/28/2010		12/23/2010	3/7/2011	5/25/2011	5/25/2011	8/10/2011	3/13/2008	6/5/2008	9/4/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/17/2010		6/28/2010		9/29/2010	
Metals (µg/L)																													
Aluminum	200	1600	121000	NA	NA	**857**		ND		**137**		<200	**1020**	**24500**	**8720**	<200	NA	NA	NA	NA	NA	NA	NA	NA	ND		**50**		**13.7**	
Antimony	6	0.6	20.70	NA	NA	ND		**11**		**28.2**		<6	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		**6.42**	
Arsenic	3	0.05	89.30	NA	NA	ND		ND		**0.99**	ER	**6.4**	<3	**13**	**5.3**	<3	NA	NA	NA	NA	NA	NA	NA	NA	**8.49**		**10.63**		**9.23**	
Barium	6000	290	699.00	NA	NA	**10.1**		**36.2**		**72.4**		<200	<200	**257**	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA	ND		**1.31**	ER	**3.78**	ER
Beryllium	1	1.6	2.10	NA	NA	ND		**0.067**	ER	ND		<1	<1	**2.4**	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Cadmium	4	0.69	9.50	NA	NA	ND		**1.55**	ER	**1.81**	ER	<3	<3	**14.9**	**5.7**	<3	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Calcium	NLE	NLE	45400.00	NA	NA	**34500**		**133000**		**158000**		**23400**	**21900**	**122000**	**124000**	**187000**	NA	NA	NA	NA	NA	NA	NA	NA	**8120**		**6370**		**67200**	
Chromium	70	1600	191.00	NA	NA	**1.74**	ER	ND		ND		<10	<10	**118**	**43.1**	<10	NA	NA	NA	NA	NA	NA	NA	NA	**1.08**	ER	**3.99**	ER	ND	
Cobalt	NLE	0.47	18.30	NA	NA	ND		ND		ND		<50	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Copper	1300	62	65.60	NA	NA	**6.73**		**5.27**		**9.08**		<10	**14.6**	**81**	**30**	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		**4.09**	ER
Iron	300	1100	431000	NA	NA	**2290**		**1950**		**1880**		**15700**	**1900**	**73700**	**31400**	**7380**	NA	NA	NA	NA	NA	NA	NA	NA	**2210**		**1760**		**11700**	
Lead [6]	5	15	22.70	NA	NA	ND		ND		ND		<3	<3	**65**	**24.9**	<3	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Magnesium	NLE	NLE	62700	NA	NA	**19400**		**75800**		**166000**		<5000	**19900**	**114000**	**95500**	**141000**	NA	NA	NA	NA	NA	NA	NA	NA	**12000**		**9100**		**127000**	
Manganese	50	32	331	NA	NA	**39.6**		**132**		**207**		**57.1**	**17**	**274**	**202**	**306**	NA	NA	NA	NA	NA	NA	NA	NA	**14.5**		**15.5**		**326**	
Mercury	2	0.06	0.26	NA	NA	ND		ND		**0.27**	ER		<0.2	**0.71**	**0.26**	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Nickel	100	30	187	NA	NA	**4.66**	ER	**7.83**		**9.15**		<10	<10	**54.5**	**25.7**	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		**1.68**	ER
Potassium	NLE	NLE	137000	NA	NA	**13800**		**28400**		**56200**		<10000	**13500**	**47100**	**40000**	**54700**	NA	NA	NA	NA	NA	NA	NA	NA	**15900**		**13500**		**43700**	
Selenium	40	7.8	29.60	NA	NA	**46.2**		NR		ND		<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**19.3**		NR		**1.62**	
Silver	40	7.1	ND	NA	NA	**1.38**		ND		ND		<10	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		**0.876**	
Sodium	50000	NLE	21500	NA	NA	**172000**		**426000**		**1160000**	E	**47000**	**243000**	**739000**	**671000**	**1000000**	NA	NA	NA	NA	NA	NA	NA	NA	**125000**		**124000**		**715000**	
Thallium	2	0.02	5.50	NA	NA	ND		ND		ND		<2	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND	
Vanadium	NLE	6.3	108	NA	NA	**3.25**		**0.639**		ND		<50	<50	**60.6**	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	**4.23**		**7.11**		**0.704**	
Zinc	2000	470	233	NA	NA	**86.5**		**200**		**201**		<20	**91.2**	**1300**	**588**	**127**	NA	NA	NA	NA	NA	NA	NA	NA	**8.09**		**10.4**		**31.1**	

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW22					M8MW23														M8MW23		RM8MW24	
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF3 Dup	LF4	LF5	LF6	LF7	37	38	39	40	41	44	45	46	LF1	LF2	LF3	LF4	LF5	LF6	LF7		36	
Date Collected				9/29/2010	12/23/2010	3/7/2011	5/25/2011	8/10/2011	3/13/2008	6/5/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/29/2010	9/29/2010	12/23/2010	3/9/2011	5/25/2011	8/11/2011		3/14/2008	
Volatile Organic Compounds (µg/L)																										
Tert-butyl alcohol	100	NLE	--	ND	<5	<5	<5	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA		ND	
Acetone	6000	1200	--	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10		ND	
Carbon disulfide	700	72	--	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2		ND	
2-Butanone	300	490	--	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10		ND	
Benzene	1	0.39	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		**0.74**	J
Chlorobenzene	50	7.2	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		**5.08**	
Bromodichloromethane	1	0.12	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Chloroform	70	0.19	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Dibromochloromethane	1	0.15	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
cis -1,2-Dichloroethene	70	2.8	--	**0.22**	J **0.23**	J **0.18**	J **0.19**	J <1	**0.33**	J ND	**11.67**	**5.6**	**2.09**	ND	**6.48**	**1.11**	ND	**3.07**	**5.06**	**2.58**	**0.32**	J **1.19**	**6.1**		ND	
1,3-Dichlorobenzene	600	NLE	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		**0.3**	J
1,4-Dichlorobenzene	75	0.42	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		**1.03**	J
1,2-Dichlorobenzene	600	28	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Ethylbenzene	700	1.3	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Isopropylbenzene	700	39	--	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2		ND	
Methylene chloride	3	8.4	--	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2		ND	
Methyl tert butyl ether	70	12	--	ND	<0.5	<0.5	**0.18**	J <1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Tetrachloroethene	1	3.5	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Toluene	600	86	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	ND	ND	**0.3**	J ND	ND	ND	ND	<0.5	<0.5	<0.5	<1		ND	
Trichloroethene	1	0.26	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND	**2.06**	ND	ND	**0.19**	J ND	**1.02**	ND	<0.5	**0.17**	J **0.84**	**0.62**	J	ND	
Total Xylenes	1000	19	--	ND	<1	<1	<1	<1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1		ND	
Vinyl Chloride	1	0.015	--	ND	<0.5	<0.5	<0.5	<1	ND	ND	**2.73**	**0.79**	J ND	ND	**0.71**	ND	ND	ND	**1.59**	**0.67**	<0.5	<0.5	**0.6**	J	ND	
TICs *	500	NLE	--	ND	ND	ND	ND	**6.1**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		**8**	
Pesticides/PCBs (µg/L)																										
beta-BHC	0.04	0.022	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
4-4'-DDD	0.1	0.027	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
4-4'-DDE	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
4,4'-DDT	0.1	0.2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Dieldrin	0.03	0.0015	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Endosulfan I	40	7.8	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Endrin	2	0.17	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Endrin ketone [4]	100	NLE	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Heptachlor	0.05	0.0018	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Methoxychlor	40	2.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				M8MW22					M8MW23													M8MW23		RM8MW24
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	LF3 Dup	LF4	LF5	LF6	LF7	37	38	39	40	41	44	45	46	LF1	LF2	LF3	LF4	LF5	LF6	LF7	36
Date Collected				9/29/2010	12/23/2010	3/7/2011	5/25/2011	8/10/2011	3/13/2008	6/5/2008	9/5/2008	11/21/2008	2/23/2009	6/27/2009	9/21/2009	12/10/2009	3/19/2010	6/29/2010	9/29/2010	12/23/2010	3/9/2011	5/25/2011	8/11/2011	3/14/2008
Metals (µg/L)																								
Aluminum	200	1600	121000	ND	<200	<200	**785**	**355**	NA	NA	NA	NA	NA	NA	NA	NA	**258**	**210**	**48.8**	<200	**807**	**312**	<200	NA
Antimony	6	0.6	20.70	**7.38**	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	**10.1**	**9.13** ER	ND	<6	<6	<6	<6	NA
Arsenic	3	0.05	89.30	**7.79**	**6.9**	**5.2**	**38.1**	**34.2**	NA	NA	NA	NA	NA	NA	NA	NA	**0.67** ER	**3.9** ER	**0.77** ER	<3	<3	**5.1**	<3	NA
Barium	6000	290	699.00	**4.33** ER	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA	**7.51**	**33.5**	**37.9**	<200	<200	<200	<200	NA
Beryllium	1	1.6	2.10	ND	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<1	<1	<1	<1	NA
Cadmium	4	0.69	9.50	ND	<3	<3	<3	<3	NA	NA	NA	NA	NA	NA	NA	NA	**1.22** ER	ND	ND	<3	<3	<3	<3	NA
Calcium	NLE	NLE	45400.00	**64400**	**151000**	**56300**	**14000**	**13000**	NA	NA	NA	NA	NA	NA	NA	NA	**62700**	**41200**	**32000**	**42800**	**18500**	**32800**	**33400**	NA
Chromium	70	1600	191.00	ND	<10	<10	**11.4**	**11.7**	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<10	<10	<10	<10	NA
Cobalt	NLE	0.47	18.30	ND	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.584**	ND	<50	<50	<50	<50	NA
Copper	1300	62	65.60	**3.3** ER	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**12**	**6.11**	**1.61** ER	<10	<10	<10	<10	NA
Iron	300	1100	431000	**12800**	**50100**	**11500**	**56500**	**40300**	NA	NA	NA	NA	NA	NA	NA	NA	**359**	**3740**	**5490**	**4440**	**2590**	**2550**	**2800**	NA
Lead [6]	5	15	22.70	ND	<3	<3	**14.3**	**4.5**	NA	NA	NA	NA	NA	NA	NA	NA	ND	**3.06** ER	ND	<3	**6**	**3.3**	<3	NA
Magnesium	NLE	NLE	62700	**121000**	**240000**	**88300**	**16600**	**15700**	NA	NA	NA	NA	NA	NA	NA	NA	**7280**	**7360**	**6610**	**6720**	<5000	**6250**	**6230**	NA
Manganese	50	32	331	**324**	**663**	**234**	**92.1**	**88.6**	NA	NA	NA	NA	NA	NA	NA	NA	**20**	**636**	**829**	**1010**	**158**	**439**	**530**	NA
Mercury	2	0.06	0.26	ND		<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND		<0.2	<0.2	<0.2	NA
Nickel	100	30	187	**2.13** ER	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**5.26**	**10.6**	**3.82** ER	<10	<10	**16.6**	**10.4**	NA
Potassium	NLE	NLE	137000	**42600**	**69200**	**37800**	**19300**	**19300**	NA	NA	NA	NA	NA	NA	NA	NA	**5750**	**3450**	**3760**	<10000	<10000	<10000	<10000	NA
Selenium	40	7.8	29.60	**2.16**	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**47.7**	NR	ND	<10	<10	<10	<10	NA
Silver	40	7.1	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	**3.51**	**0.627**	ND	<10	<10	<10	<10	NA
Sodium	50000	NLE	21500	**694000** E	**493000**	**236000**	**146000**	**153000**	NA	NA	NA	NA	NA	NA	NA	NA	**7880**	**64600**	**54600**	**69700**	**20300**	**87400**	**79400**	NA
Thallium	2	0.02	5.50	ND	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	<2	<2	<2	<2	NA
Vanadium	NLE	6.3	108	**0.674**	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	**1.97**	ND	ND	<50	<50	<50	<50	NA
Zinc	2000	470	233	**47**	**128**	**51.5**	**147**	**124**	NA	NA	NA	NA	NA	NA	NA	NA	**275**	**461**	**9.8**	<20	**472**	**1730**	**345**	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
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USEPA Tapwater RSL for Chromium is based on Chromium (III).
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Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				RM8MW24																	697MW01			
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	37	38	39	40	41	42	43	44	LF1	LF2	LF2 Dup	LF3	LF4	LF5	LF6	LF7	44	45	46	47
Date Collected				6/5/2008	9/5/2008	11/21/2008	2/9/2009	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/19/2010	6/29/2010	6/29/2010	9/29/2010	12/23/2010	3/8/2011	5/26/2011	8/11/2011	3/14/2008	6/5/2008	9/5/2008	11/21/2008
Volatile Organic Compounds (µg/L)																							
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA	ND	ND	ND	ND
Acetone	6000	1200	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND
Carbon disulfide	700	72	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND
2-Butanone	300	490	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<10	ND	ND	ND	ND
Benzene	1	0.39	--	ND	**0.24** J	ND	NA	ND	**0.26** J	**0.22** J	ND	**1.21**	**0.21** J	**0.24** J	**0.53**	<0.5	**0.32** J	**0.21** J	<1	ND	ND	ND	ND
Chlorobenzene	50	7.2	--	**2.35**	**3.68**	**2.3**	NA	**3.31**	**4.03**	**3.98**	**2.68**	**9.88**	**3.27**	**3.51**	**4.76**	**1.43**	**2.25**	**3.47**	**1**	**0.42** J	ND	ND	ND
Bromodichloromethane	1	0.12	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Chloroform	70	0.19	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Dibromochloromethane	1	0.15	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
cis -1,2-Dichloroethene	70	2.8	--	ND	**0.31** J	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	**0.39** J	ND
1,3-Dichlorobenzene	600	NLE	--	ND	**0.33** J	ND	NA	ND	ND	ND	ND	**0.64**	ND	**0.26** J	**0.38** J	<0.5	**0.17** J	**0.25** J	<1	ND	ND	ND	ND
1,4-Dichlorobenzene	75	0.42	--	**0.53** J	**1.04** J	**0.53** J	NA	**0.58** J	**0.8** J	**0.83**	**0.7**	**2.37**	**0.84**	**0.92**	**1.22**	<0.5	**0.55**	**0.79**	**0.43** J	ND	ND	ND	ND
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Ethylbenzene	700	1.3	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Isopropylbenzene	700	39	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND
Methylene chloride	3	8.4	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2	ND	ND	ND	ND
Methyl tert butyl ether	70	12	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Tetrachloroethene	1	3.5	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	**0.86** J	**1.01** J	**1.15** J	**1.44** J
Toluene	600	86	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Trichloroethene	1	0.26	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
Total Xylenes	1000	19	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	ND	ND	ND	ND
Vinyl Chloride	1	0.015	--	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1	ND	ND	ND	ND
TICs *	500	NLE	--	ND	**17**	**4**	NA	**4**	**5**	**6**	ND	**7**	**5**	**5**	**11**	ND	ND	**4**	ND	ND	ND	ND	ND
Pesticides/PCBs (µg/L)																							
beta-BHC	0.04	0.022	--	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	NA	NA	NA	ND	**0.043**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	NA	NA	NA	ND	**0.156**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	NA	NA	NA	ND	**0.049**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	NA	NA	NA	ND	**0.021**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	NA	NA	NA	ND	**0.026**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	NA	NA	NA	ND	**0.056**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	NA	NA	NA	ND	**0.055**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	NA	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	NA	NA	NA	ND	**0.15**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				RM8MW24															697MW01			
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	37	38	39	40	41	42	43	44	LF1	LF2	LF2 Dup	LF3	LF4	LF5	LF6	LF7	44	45	46	47
Date Collected				6/5/2008	9/5/2008	11/21/2008	2/9/2009	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/19/2010	6/29/2010	6/29/2010	9/29/2010	12/23/2010	3/8/2011	5/26/2011	8/11/2011	3/14/2008	6/5/2008	9/5/2008	11/21/2008
Metals (µg/L)																							
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	NA	NA	NA	**34**	**69.6**	**58**	ND	<200	<200	<200	<200	NA	NA	NA	NA
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	NA	NA	NA	**14.4**	**9.82** ER	**9.04** ER	**5.35**	<6	<6	<6	<6	NA	NA	NA	NA
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	NA	NA	NA	**0.64** ER	**0.7** ER	**0.9** ER	**0.84** ER	<3	<3	<3	<3	NA	NA	NA	NA
Barium	6000	290	699.00	NA	NA	NA	NA	NA	NA	NA	NA	**393**	**182**	**179**	**343**	<200	<200	<200	<200	NA	NA	NA	NA
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.05** ER	ND	<1	<1	<1	<1	NA	NA	NA	NA
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.73** ER	**0.651** ER	<3	<3	<3	<3	NA	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	NA	NA	NA	**141000**	**66400**	**65300**	**111000**	**58400**	**74700**	**58900**	**40200**	NA	NA	NA	NA
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA
Copper	1300	62	65.60	NA	NA	NA	NA	NA	NA	NA	NA	ND	**5.7**	**6.23**	**2.59** ER	<10	<10	<10	<10	NA	NA	NA	NA
Iron	300	1100	431000	NA	NA	NA	NA	NA	NA	NA	NA	**23000**	**10100**	**9940**	**23000**	**5550**	**10300**	**8290**	**4840**	NA	NA	NA	NA
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	NA	NA	NA	ND	**3.31** ER	**3.89** ER	**2.92** ER	<3	<3	**3.9**	<3	NA	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	NA	NA	NA	**27300**	**11700**	**11600**	**24600**	**7700**	**11100**	**10000**	**6350**	NA	NA	NA	NA
Manganese	50	32	331	NA	NA	NA	NA	NA	NA	NA	NA	**177**	**78**	**77**	**168**	**70.6**	**88.5**	**69.3**	**48.5**	NA	NA	NA	NA
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	**0.08** ER	ND		<0.2	<0.2	<0.2	NA	NA	NA	NA
Nickel	100	30	187	NA	NA	NA	NA	NA	NA	NA	NA	**1.63** ER	**0.846** ER	**0.853** ER	**1.1** ER	<10	<10	<10	<10	NA	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	NA	NA	NA	**25200**	**12400**	**12100**	**19400**	**11300**	**12500**	**12200**	<10000	NA	NA	NA	NA
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	NA	NA	NA	**65.1**	NR	NR	ND	<10	<10	<10	<10	NA	NA	NA	NA
Silver	40	7.1	ND	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.871**	**0.764**	**1.55**	<10	<10	<10	<10	NA	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	NA	NA	NA	**110000**	**44600**	**44300**	**115000**	**30200**	**42600**	**44100**	**30300**	NA	NA	NA	NA
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	<2	<2	<2	<2	NA	NA	NA	NA
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	NA	NA	NA	**3.62**	ND	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA
Zinc	2000	470	233	NA	NA	NA	NA	NA	NA	NA	NA	**3.86**	**3.4**	**3.66**	ND	<20	<20	<20	<20	NA	NA	NA	NA

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				697MW01											
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	48	48 Dup	49	50	51	LF1	LF2	LF3	LF4	LF5	LF6	LF7
Date Collected				2/23/2009	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/19/2010	6/29/2010	9/29/2010	12/23/2010	3/9/2011	5/26/2011	8/11/2011
Volatile Organic Compounds (µg/L)															
Tert-butyl alcohol	100	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	<5	NA
Acetone	6000	1200	--	ND	ND	ND	ND	ND	ND	ND	ND	**19.54**	<0.5	<0.5	<10
Carbon disulfide	700	72	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
2-Butanone	300	490	--	ND	ND	ND	ND	ND	ND	ND	ND	**97.04** J	<0.5	<0.5	<10
Benzene	1	0.39	--	ND	ND	ND	ND	ND	**0.96**	**0.45** J	**0.21** J	**0.96**	**0.35** J	<0.5	<1
Chlorobenzene	50	7.2	--	ND	ND	**0.22** J	ND	**0.26** J	**5.63**	**2.52**	**1.08**	**3.14**	**1.11**	<0.5	<1
Bromodichloromethane	1	0.12	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Chloroform	70	0.19	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Dibromochloromethane	1	0.15	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
cis -1,2-Dichloroethene	70	2.8	--	ND	ND	ND	ND	ND	**0.6**	**0.4** J	**0.19** J	**0.49**	**0.42** J	<0.5	<1
1,3-Dichlorobenzene	600	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
1,4-Dichlorobenzene	75	0.42	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
1,2-Dichlorobenzene	600	28	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Ethylbenzene	700	1.3	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Isopropylbenzene	700	39	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
Methylene chloride	3	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<2
Methyl tert butyl ether	70	12	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Tetrachloroethene	1	3.5	--	**1.16** J	**1.19** J	**0.98** J	**1.85** J	**1.71**	ND	ND	ND	<0.5	**0.31** J	**0.96**	**1.1**
Toluene	600	86	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
Trichloroethene	1	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	**0.57**	**0.7** J
Total Xylenes	1000	19	--	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1
Vinyl Chloride	1	0.015	--	ND	ND	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<1
TICs *	500	NLE	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (µg/L)															
beta-BHC	0.04	0.022	--	ND	**0.024**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-chlordane [5]	0.5	0.19	--	**0.628**	**0.54**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-chlordane [5]	0.5	0.19	--	**0.461**	**0.512**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDD	0.1	0.027	--	**1.28**	**1.37**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	0.1	0.2	--	ND	**0.048**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.1	0.2	--	ND	**0.301**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.03	0.0015	--	ND	**0.055**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	40	7.8	--	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	2	0.17	--	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde [4]	5	NLE	--	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone [4]	100	NLE	--	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	--	ND	**0.071**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	40	2.7	--	ND	**0.035**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.6
GROUNDWATER SAMPLING SUMMARY RESULTS - MARCH 2008
TO AUGUST 2011
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

				697MW01												
Round No.	**NJDEP GWQS [1]**	**USEPA Tapwater RSL [2]**	**Weston 1995 Background (Main Post) [3]**	48	48 Dup	49	50	51	LF1	LF2	LF3	LF4	LF5	LF6	LF7
Date Collected				2/23/2009	2/23/2009	6/27/2009	9/21/2009	12/8/2009	3/19/2010	6/29/2010	9/29/2010	12/23/2010	3/9/2011	5/26/2011	8/11/2011
Metals (µg/L)															
Aluminum	200	1600	121000	NA	NA	NA	NA	NA	**39.1**	ND	**9.01**	<200	<200	<200	<200
Antimony	6	0.6	20.70	NA	NA	NA	NA	NA	**10.4**	**7.69** ER	ND	<6	<6	<6	<6
Arsenic	3	0.05	89.30	NA	NA	NA	NA	NA	**5.35**	**4.2** ER	**2.9** ER	**6.4**	<3	<3	<3
Barium	6000	290	699.00	NA	NA	NA	NA	NA	**54.6**	**38.5**	**36.3**	<200	<200	<200	<200
Beryllium	1	1.6	2.10	NA	NA	NA	NA	NA	ND	ND	ND	<1	<1	<1	<1
Cadmium	4	0.69	9.50	NA	NA	NA	NA	NA	ND	**0.809** ER	ND	<3	<3	<3	<3
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	**125000**	**51900**	**26900**	**23400**	**15000**	**13100**	**18400**
Chromium	70	1600	191.00	NA	NA	NA	NA	NA	ND	ND	ND	<10	<10	<10	<10
Cobalt	NLE	0.47	18.30	NA	NA	NA	NA	NA	ND	**0.785**	**0.832**	<50	<50	<50	<50
Copper	1300	62	65.60	NA	NA	NA	NA	NA	ND	**6.26**	ND	<10	<10	<10	<10
Iron	300	1100	431000	NA	NA	NA	NA	NA	**14100**	**10100**	**3940**	**15700**	**7880**	**1080**	**568**
Lead [6]	5	15	22.70	NA	NA	NA	NA	NA	ND	ND	ND	<3	<3	<3	<3
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	**14400**	**8890**	**6200**	<5000	<5000	<5000	<5000
Manganese	50	32	331	NA	NA	NA	NA	NA	**107**	**59.5**	**37.7**	**57.1**	**35.8**	<15	<15
Mercury	2	0.06	0.26	NA	NA	NA	NA	NA	ND	ND	ND	<0.2	<0.2	<0.2	<0.2
Nickel	100	30	187	NA	NA	NA	NA	NA	**3.45** ER	**4.09** ER	**7.19**	<10	<10	<10	<10
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	**5980**	**3570**	**3410**	<10000	<10000	<10000	<10000
Selenium	40	7.8	29.60	NA	NA	NA	NA	NA	**65.7**	NR	**1.38**	<10	<10	<10	<10
Silver	40	7.1	ND	NA	NA	NA	NA	NA	**1.44**	**1.14**	ND	<10	<10	<10	<10
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	**30300**	**50100**	**47400**	**47000**	**42100**	**57100**	**72800**
Thallium	2	0.02	5.50	NA	NA	NA	NA	NA	ND	ND	ND	<2	<2	<2	<2
Vanadium	NLE	6.3	108	NA	NA	NA	NA	NA	**2.35**	ND	ND	<50	<50	<50	<50
Zinc	2000	470	233	NA	NA	NA	NA	NA	**4.12**	**1.45**	**2.12**	<20	<20	<20	<20

Notes:
(1) New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm Revised November 2013

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December

(4) No limit established for NJDEP GWQS, Interim generic groundwater quality criteria used.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs
LF = Low flow sampling method used to collect sample.
< = the analyte was not detected above the indicated reporting limit.
J - Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL).
NA - Not analyzed
ND - Not detected
NLE - No limit established
ER - Estimated Result
/a = Elevated sample detection limit due to difficult sample matrix.
USEPA Tapwater RSL for Chromium is based on Chromium (III).
Shaded cells = concentration exceeds USEPA Tapwater RSLs
Shaded cells = concentration exceeds NJDEP GWQS.
Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater
Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	697MW01	M8MW12		M8MW13	
Sample ID				FTMM-8-GW-697MW01-16.45_2014-Q4	FTMM-8-GW-M8MW12	FTMM-8-GW-M8MW12-13.55_2014-Q4	FTMM-8-GW-M8MW13	FTMM-8-GW-M8MW13DUP
Sample Date				10/1/2014	8/16/2013	10/2/2014	8/15/2013	8/15/2013
Filtered				Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)								
1,2-Dichlorobenzene	600	28	-	< 1	< 1	< 1	< 1	NA
1,3-Dichlorobenzene	600	NLE	-	< 1	< 1	< 1	< 1	NA
1,4-Dichlorobenzene	75	0.42	-	< 1	< 1	< 1	< 1	NA
Acetone	6,000	1,200	-	< 5	< 5	< 5	**2.7 J**	NA
Benzene	1	0.39	-	**0.28 J**	< 1	< 1	< 1	NA
Bromodichloromethane	1	0.12	-	**0.7 J**	**0.98 J**	< 1	< 1	NA
Chlorobenzene	50	7.2	-	**1.6 J**	< 1	< 1	< 1	NA
Chlorodibromomethane	1	0.15	-	< 1	< 1	< 1	< 1	NA
Chloroform	70	0.19	-	**2.7 J**	**7.1**	**4.7 J**	< 1	NA
Cis-1,2-Dichloroethene	70	2.8	-	**0.42 J**	< 1	< 1	< 1	NA
Ethyl benzene	700	1.3	-	< 1	< 1	< 1	< 1	NA
Isopropylbenzene	700	39	-	< 1	< 1	< 1	< 1	NA
Meta/Para Xylene	1,000	19	-	< 2	< 2	< 2	< 2	NA
Methyl chloride	100	19	-	< 1	< 1	< 1	< 1	NA
Methyl ethyl ketone (2-butanone)	300	490	-	< 1	< 1	< 1	< 1	NA
Methyl Tertbutyl Ether	70	12	-	< 1	< 1	< 1	< 1	NA
Methylene chloride	3	8.4	-	< 1	< 1	< 1	< 1	NA
Naphthalene	300	0.14	-	< 1	< 1	< 1	< 1	NA
Ortho Xylene	1,000	19	-	< 1	< 1	< 1	< 1	NA
tert-Butylbenzene	100	51	-	< 1	< 1	< 1	< 1	NA
Tetrachloroethene	1	3.5	-	**1.6 J**	**1.3 J**	**1.3 J**	< 1	NA
Toluene	600	86	-	< 1	< 1	< 1	< 1	NA
Trichloroethene	1	0.26	-	< 1	< 1	< 1	< 1	NA
Vinyl chloride	1	0.015	-	< 1	< 1	< 1	< 1	NA
Total TIC, Volatile	500	NLE	-	NA	ND	NA	ND	NA

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	697MW01	M8MW12		M8MW13	
Sample ID				FTMM-8-GW-697MW01-16.45_2014-Q4	FTMM-8-GW-M8MW12	FTMM-8-GW-M8MW12-13.55_2014-Q4	FTMM-8-GW-M8MW13	FTMM-8-GW-M8MW13DUP
Sample Date				10/1/2014	8/16/2013	10/2/2014	8/15/2013	8/15/2013
Filtered				Total	Total	Total	Total	Total
Pesticides (µg/l)								
4,4'-DDD	0.1	0.027	-	**0.83**	< 0.04	NA	< 0.039	NA
4,4'-DDE	0.1	0.2	-	< 0.025	< 0.026	NA	< 0.025	NA
4,4'-DDT	0.1	0.2	-	**0.042 J**	< 0.026	NA	< 0.025	NA
Alpha-chlordane (5)	0.5	0.19	-	**0.24**	< 0.026	NA	< 0.025	NA
Beta-BHC	0.04	0.022	-	< 0.028	< 0.026	NA	< 0.025	NA
Dieldrin	0.03	0.0015	-	< 0.025	< 0.026	NA	< 0.025	NA
Endosulfan I	40	7.8	-	< 0.025	< 0.026	NA	< 0.025	NA
Endrin	2	0.17	-	< 0.025	< 0.026	NA	< 0.025	NA
Endrin aldehyde (4)	100	NLE	-	< 0.025	< 0.026	NA	< 0.025	NA
Endrin ketone (4)	100	NLE	-	< 0.035	< 0.026	NA	< 0.025	NA
Gamma-chlordane (5)	0.5	0.19	-	**0.23**	NA	NA	NA	NA
Heptachlor	0.05	0.0018	-	< 0.025	< 0.026	NA	< 0.025	NA
Methoxychlor	40	2.7	-	< 0.025	< 0.026	NA	< 0.025	NA
Inorganics (µg/l)								
Lead (6)	5	15	22.7	< 2.5	< 2	NA	< 2	< 2

Notes:

[1] New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

[2] The 2014-05 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Region 9 Regional Screening Levels (HQ=0.1) - November 2013 (Last revised) Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

[3] Interim generic groundwater quality criteria.

[4] Interim specific groundwater quality criteria.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

Dash (-) = only background concentrations for metals are being used as comparison criteria.

NLE - No limit established.

J = estimated (detect or non-detect) value.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds USEPA Tapwater RSLs

Shaded cells = concentration exceeds NJDEP GWQS.

Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater

Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW13	M8MW14		M8MW15	
Sample ID				FTMM-8-GW-M8MW13MS	FTMM-8-GW-M8MW114	FTMM-8-GW-M8MW14	FTMM-8-GW-M8MW15	FTMM-8-GW-M8MW15-11.30_2014-Q4
Sample Date				8/15/2013	8/16/2013	8/16/2013	8/19/2013	10/1/2014
Filtered				Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)								
1,2-Dichlorobenzene	600	28	-	NA	< 2	< 1	< 10	**1.1 J**
1,3-Dichlorobenzene	600	NLE	-	NA	< 2	< 1	< 10	**1.3 J**
1,4-Dichlorobenzene	75	0.42	-	NA	**1.2 J**	**1.4 J**	**2.5 J**	**3.4 J**
Acetone	6,000	1,200	-	NA	**3.1 J**	**2.9 J**	**14 J**	**13**
Benzene	1	0.39	-	NA	< 2	< 1	< 10	< 1
Bromodichloromethane	1	0.12	-	NA	< 2	< 1	< 10	< 1
Chlorobenzene	50	7.2	-	NA	**3.3 J**	**3.7 J**	**12 J**	**14**
Chlorodibromomethane	1	0.15	-	NA	< 2	< 1	< 10	< 1
Chloroform	70	0.19	-	NA	< 2	< 1	< 10	< 1
Cis-1,2-Dichloroethene	70	2.8	-	NA	< 2	< 1	< 10	< 1
Ethyl benzene	700	1.3	-	NA	< 2	< 1	< 10	< 1
Isopropylbenzene	700	39	-	NA	< 2	< 1	< 10	< 1
Meta/Para Xylene	1,000	19	-	NA	< 4	< 2	< 20	< 2
Methyl chloride	100	19	-	NA	< 2	< 1	< 10	**0.32 J**
Methyl ethyl ketone (2-butanone)	300	490	-	NA	< 2	< 1	< 10	**0.92 J**
Methyl Tertbutyl Ether	70	12	-	NA	< 2	< 1	< 10	< 1
Methylene chloride	3	8.4	-	NA	< 2	< 1	< 10	< 1
Naphthalene	300	0.14	-	NA	< 2	< 1	< 10	**0.24 J**
Ortho Xylene	1,000	19	-	NA	< 2	< 1	< 10	< 1
tert-Butylbenzene	100	51	-	NA	< 2	< 1	< 10	< 1
Tetrachloroethene	1	3.5	-	NA	< 2	< 1	< 10	< 1
Toluene	600	86	-	NA	< 2	**0.22 J**	< 10	< 1
Trichloroethene	1	0.26	-	NA	< 2	< 1	< 10	< 1
Vinyl chloride	1	0.015	-	NA	< 2	< 1	< 10	< 1
Total TIC, Volatile	500	NLE	-	NA	ND	ND	ND	**7.4 JN**

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW13	M8MW14		M8MW15	
Sample ID				FTMM-8-GW-M8MW13MS	FTMM-8-GW-M8MW114	FTMM-8-GW-M8MW14	FTMM-8-GW-M8MW15	FTMM-8-GW-M8MW15-11.30_2014-Q4
Sample Date				8/15/2013	8/16/2013	8/16/2013	8/19/2013	10/1/2014
Filtered				Total	Total	Total	Total	Total
Pesticides (µg/l)								
4,4'-DDD	0.1	0.027	-	NA	< 0.039	< 0.039	< 0.039	NA
4,4'-DDE	0.1	0.2	-	NA	< 0.025	< 0.025	< 0.025	NA
4,4'-DDT	0.1	0.2	-	NA	< 0.025	< 0.025	< 0.025	NA
Alpha-chlordane [5]	0.5	0.19	-	NA	< 0.025	< 0.025	< 0.025	NA
Beta-BHC	0.04	0.022	-	NA	< 0.025	< 0.025	< 0.025	NA
Dieldrin	0.03	0.0015	-	NA	< 0.025	< 0.025	< 0.025	NA
Endosulfan I	40	7.8	-	NA	< 0.025	< 0.025	< 0.025	NA
Endrin	2	0.17	-	NA	< 0.025	< 0.025	< 0.025	NA
Endrin aldehyde [4]	100	NLE	-	NA	< 0.025	< 0.025	< 0.025	NA
Endrin ketone [4]	100	NLE	-	NA	< 0.025	< 0.025	< 0.025	NA
Gamma-chlordane [5]	0.5	0.19	-	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	-	NA	< 0.025	< 0.025	< 0.025	NA
Methoxychlor	40	2.7	-	NA	< 0.025	< 0.025	< 0.025	NA
Inorganics (µg/l)								
Lead [6]	5	15	22.7	**490**	< 2	< 2	< 2	NA

Notes:

[1] New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

[2] The 2014-05 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Region 9 Regional Screening Levels (HQ=0.1) - November 2013 (Last revised) Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

[3] Interim generic groundwater quality criteria.

[4] Interim specific groundwater quality criteria.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

Dash (-) = only background concentrations for metals are being used as comparison criteria.

NLE - No limit established.

J = estimated (detect or non-detect) value.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds USEPA Tapwater RSLs

Shaded cells = concentration exceeds NJDEP GWQS.

Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater

Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW16		M8MW17		
Sample ID				FTMM-8-GW-M8MW16	FTMM-8-GW-M8MW16-11.74_2014-Q4	FTMM-8-GW-M8MW17	FTMM-8-GW-M8MW17DUP	FTMM-8-GW-M8MW17-10.90_2014-Q4
Sample Date				8/20/2013	10/1/2014	8/16/2013	8/16/2013	10/2/2014
Filtered				Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)								
1,2-Dichlorobenzene	600	28	-	**0.56 J**	**0.52 J**	**0.34 J**	NA	NA
1,3-Dichlorobenzene	600	NLE	-	**0.92 J**	**0.85 J**	**0.37 J**	NA	NA
1,4-Dichlorobenzene	75	0.42	-	**3.4 J**	**3.1 J**	**1.3 J**	NA	NA
Acetone	6,000	1,200	-	**2.6 J**	**3.5 J**	**2.5 J**	NA	NA
Benzene	1	0.39	-	**0.77 J**	**0.38 J**	< 1	NA	NA
Bromodichloromethane	1	0.12	-	< 1	< 1	< 1	NA	NA
Chlorobenzene	50	7.2	-	**29**	**29**	**4.6 J**	NA	NA
Chlorodibromomethane	1	0.15	-	< 1	< 1	< 1	NA	NA
Chloroform	70	0.19	-	< 1	< 1	< 1	NA	NA
Cis-1,2-Dichloroethene	70	2.8	-	< 1	< 1	< 1	NA	NA
Ethyl benzene	700	1.3	-	< 1	< 1	< 1	NA	NA
Isopropylbenzene	700	39	-	**0.29 J**	< 1	< 1	NA	NA
Meta/Para Xylene	1,000	19	-	< 2	< 2	< 2	NA	NA
Methyl chloride	100	19	-	< 1	**0.21 J**	< 1	NA	NA
Methyl ethyl ketone (2-butanone)	300	490	-	< 1	< 1	< 1	NA	NA
Methyl Tertbutyl Ether	70	12	-	< 1	< 1	< 1	NA	NA
Methylene chloride	3	8.4	-	< 1	< 1	< 1	NA	NA
Naphthalene	300	0.14	-	< 1	< 1	**0.23 J**	NA	NA
Ortho Xylene	1,000	19	-	< 1	< 1	< 1	NA	NA
tert-Butylbenzene	100	51	-	**0.24 J**	< 1	< 1	NA	NA
Tetrachloroethene	1	3.5	-	< 1	< 1	< 1	NA	NA
Toluene	600	86	-	< 1	< 1	< 1	NA	NA
Trichloroethene	1	0.26	-	< 1	< 1	< 1	NA	NA
Vinyl chloride	1	0.015	-	< 1	< 1	< 1	NA	NA
Total TIC, Volatile	500	NLE	-	ND	NA	ND	NA	NA

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW16		M8MW17		
Sample ID				FTMM-8-GW-M8MW16	FTMM-8-GW-M8MW16-11.74_2014-Q4	FTMM-8-GW-M8MW17	FTMM-8-GW-M8MW17DUP	FTMM-8-GW-M8MW17-10.90_2014-Q4
Sample Date				8/20/2013	10/1/2014	8/16/2013	8/16/2013	10/2/2014
Filtered				Total	Total	Total	Total	Total
Pesticides (µg/l)								
4,4'-DDD	0.1	0.027	-	< 0.039	NA	< 0.039	NA	NA
4,4'-DDE	0.1	0.2	-	< 0.025	NA	< 0.025	NA	NA
4,4'-DDT	0.1	0.2	-	< 0.025	NA	< 0.025	NA	NA
Alpha-chlordane (5)	0.5	0.19	-	< 0.025	NA	< 0.025	NA	NA
Beta-BHC	0.04	0.022	-	< 0.025	NA	< 0.025	NA	NA
Dieldrin	0.03	0.0015	-	< 0.025	NA	< 0.025	NA	NA
Endosulfan I	40	7.8	-	< 0.025	NA	< 0.025	NA	NA
Endrin	2	0.17	-	< 0.025	NA	< 0.025	NA	NA
Endrin aldehyde (4)	100	NLE	-	< 0.025	NA	< 0.025	NA	NA
Endrin ketone (4)	100	NLE	-	< 0.025	NA	< 0.025	NA	NA
Gamma-chlordane (5)	0.5	0.19	-	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	-	< 0.025	NA	< 0.025	NA	NA
Methoxychlor	40	2.7	-	< 0.025	NA	< 0.025	NA	NA
Inorganics (µg/l)								
Lead (6)	5	15	22.7	< 2	NA	< 2	< 2	< 2.5

Notes:

[1] New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

[2] The 2014-05 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Region 9 Regional Screening Levels (HQ=0.1) - November 2013 (Last revised) Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

[3] Interim generic groundwater quality criteria.

[4] Interim specific groundwater quality criteria.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

Dash (-) = only background concentrations for metals are being used as comparison criteria.

NLE - No limit established.

J = estimated (detect or non-detect) value.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds USEPA Tapwater RSLs

Shaded cells = concentration exceeds NJDEP GWQS.

Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater

Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW18	M8MW19	M8MW20	M8MW21	
Sample ID				FTMM-8-GW-M8MW18	FTMM-8-GW-M8MW19	FTMM-8-GW-M8MW20	FTMM-8-GW-M8MW21	FTMM-8-GW-M8MW21-14.31_2014-Q4
Sample Date				8/19/2013	8/15/2013	8/15/2013	8/15/2013	10/2/2014
Filtered				Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)								
1,2-Dichlorobenzene	600	28	-	< 1	< 1	< 10	< 1	NA
1,3-Dichlorobenzene	600	NLE	-	< 1	< 1	< 10	< 1	NA
1,4-Dichlorobenzene	75	0.42	-	**1.2 J**	**0.33 J**	< 10	< 1	NA
Acetone	6,000	1,200	-	**4.8 J**	**3.9 J**	< 50	**2.1 J**	NA
Benzene	1	0.39	-	< 1	< 1	< 10	< 1	NA
Bromodichloromethane	1	0.12	-	< 1	< 1	< 10	< 1	NA
Chlorobenzene	50	7.2	-	**7.7**	< 1	< 10	< 1	NA
Chlorodibromomethane	1	0.15	-	< 1	< 1	< 10	< 1	NA
Chloroform	70	0.19	-	< 1	< 1	< 10	< 1	NA
Cis-1,2-Dichloroethene	70	2.8	-	< 1	< 1	< 10	< 1	NA
Ethyl benzene	700	1.3	-	< 1	< 1	< 10	< 1	NA
Isopropylbenzene	700	39	-	< 1	< 1	< 10	< 1	NA
Meta/Para Xylene	1,000	19	-	< 2	< 2	< 20	< 2	NA
Methyl chloride	100	19	-	< 1	< 1	< 10	< 1	NA
Methyl ethyl ketone (2-butanone)	300	490	-	< 1	< 1	< 10	< 1	NA
Methyl Tertbutyl Ether	70	12	-	< 1	< 1	< 10	< 1	NA
Methylene chloride	3	8.4	-	< 1	< 1	< 10	< 1	NA
Naphthalene	300	0.14	-	< 1	< 1	< 10	< 1	NA
Ortho Xylene	1,000	19	-	< 1	< 1	< 10	< 1	NA
tert-Butylbenzene	100	51	-	< 1	< 1	< 10	< 1	NA
Tetrachloroethene	1	3.5	-	< 1	< 1	< 10	< 1	NA
Toluene	600	86	-	< 1	< 1	< 10	< 1	NA
Trichloroethene	1	0.26	-	< 1	< 1	< 10	< 1	NA
Vinyl chloride	1	0.015	-	< 1	< 1	< 10	< 1	NA
Total TIC, Volatile	500	NLE	-	ND	ND	ND	ND	NA

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW18	M8MW19	M8MW20	M8MW21	
Sample ID				FTMM-8-GW-M8MW18	FTMM-8-GW-M8MW19	FTMM-8-GW-M8MW20	FTMM-8-GW-M8MW21	FTMM-8-GW-M8MW21-14.31_2014-Q4
Sample Date				8/19/2013	8/15/2013	8/15/2013	8/15/2013	10/2/2014
Filtered				Total	Total	Total	Total	Total
Pesticides (µg/l)								
4,4'-DDD	0.1	0.027	-	< 0.039	< 0.039	< 0.039	< 0.039	NA
4,4'-DDE	0.1	0.2	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
4,4'-DDT	0.1	0.2	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Alpha-chlordane [5]	0.5	0.19	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Beta-BHC	0.04	0.022	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Dieldrin	0.03	0.0015	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Endosulfan I	40	7.8	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Endrin	2	0.17	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Endrin aldehyde [4]	100	NLE	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Endrin ketone [4]	100	NLE	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Gamma-chlordane [5]	0.5	0.19	-	NA	NA	NA	NA	NA
Heptachlor	0.05	0.0018	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Methoxychlor	40	2.7	-	< 0.025	< 0.025	< 0.025	< 0.025	NA
Inorganics (µg/l)								
Lead [6]	5	15	22.7	< 2	< 2	< 2	< 2	< 2.5

Notes:

[1] New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

[2] The 2014-05 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Region 9 Regional Screening Levels (HQ=0.1) - November 2013 (Last revised) Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

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Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater

Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW22	M8MW23	M8MW24	RM8MW24
Sample ID				FTMM-8-GW-M8MW22	FTMM-8-GW-M8MW23	FTMM-8-GW-M8MW24-29.68_2014-Q4	FTMM-8-GW-RM8MW24
Sample Date				8/16/2013	8/19/2013	10/1/2014	8/19/2013
Filtered				Total	Total	Total	Total
Volatile Organic Compounds (µg/l)							
1,2-Dichlorobenzene	600	28	-	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	600	NLE	-	< 1	< 1	**0.22 J**	< 1
1,4-Dichlorobenzene	75	0.42	-	< 1	< 1	**0.62 J**	**0.56 J**
Acetone	6,000	1,200	-	**8.8**	< 5	< 5	**2.4 J**
Benzene	1	0.39	-	< 1	< 1	< 1	< 1
Bromodichloromethane	1	0.12	-	< 1	< 1	< 1	< 1
Chlorobenzene	50	7.2	-	< 1	< 1	**2.1 J**	**1.5 J**
Chlorodibromomethane	1	0.15	-	< 1	< 1	< 1	< 1
Chloroform	70	0.19	-	< 1	< 1	< 1	< 1
Cis-1,2-Dichloroethene	70	2.8	-	< 1	**5.2**	< 1	< 1
Ethyl benzene	700	1.3	-	< 1	< 1	< 1	< 1
Isopropylbenzene	700	39	-	< 1	< 1	< 1	< 1
Meta/Para Xylene	1,000	19	-	< 2	< 2	< 2	< 2
Methyl chloride	100	19	-	< 1	< 1	< 1	< 1
Methyl ethyl ketone (2-butanone)	300	490	-	< 1	< 1	< 1	< 1
Methyl Tertbutyl Ether	70	12	-	< 1	< 1	< 1	< 1
Methylene chloride	3	8.4	-	< 1	< 1	< 1	< 1
Naphthalene	300	0.14	-	< 1	< 1	< 1	< 1
Ortho Xylene	1,000	19	-	< 1	< 1	< 1	< 1
tert-Butylbenzene	100	51	-	< 1	< 1	< 1	< 1
Tetrachloroethene	1	3.5	-	< 1	< 1	< 1	< 1
Toluene	600	86	-	< 1	< 1	< 1	< 1
Trichloroethene	1	0.26	-	< 1	**0.62 J**	< 1	< 1
Vinyl chloride	1	0.015	-	< 1	**0.68 J**	< 1	< 1
Total TIC, Volatile	500	NLE	-	ND	ND	NA	ND

TABLE 4.7
GROUNDWATER SAMPLING SUMMARY RESULTS - AUGUST 2013 AND OCTOBER 2014
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2014-05 USEPA RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	M8MW22	M8MW23	M8MW24	RM8MW24
Sample ID				FTMM-8-GW-M8MW22	FTMM-8-GW-M8MW23	FTMM-8-GW-M8MW24-29.68_2014-Q4	FTMM-8-GW-RM8MW24
Sample Date				8/16/2013	8/19/2013	10/1/2014	8/19/2013
Filtered				Total	Total	Total	Total
Pesticides (µg/l)							
4,4'-DDD	0.1	0.027	-	< 0.039	< 0.039	NA	< 0.04
4,4'-DDE	0.1	0.2	-	< 0.025	< 0.025	NA	< 0.026
4,4'-DDT	0.1	0.2	-	< 0.025	< 0.025	NA	< 0.026
Alpha-chlordane [5]	0.5	0.19	-	< 0.025	< 0.025	NA	< 0.026
Beta-BHC	0.04	0.022	-	< 0.025	< 0.025	NA	< 0.026
Dieldrin	0.03	0.0015	-	< 0.025	< 0.025	NA	< 0.026
Endosulfan I	40	7.8	-	< 0.025	< 0.025	NA	< 0.026
Endrin	2	0.17	-	< 0.025	< 0.025	NA	< 0.026
Endrin aldehyde [4]	100	NLE	-	< 0.025	< 0.025	NA	< 0.026
Endrin ketone [4]	100	NLE	-	< 0.025	< 0.025	NA	< 0.026
Gamma-chlordane [5]	0.5	0.19	-	NA	NA	NA	NA
Heptachlor	0.05	0.0018	-	< 0.025	< 0.025	NA	< 0.026
Methoxychlor	40	2.7	-	< 0.025	< 0.025	NA	< 0.026
Inorganics (µg/l)							
Lead [6]	5	15	22.7	< 2	**2.4 J**	NA	< 2

Notes:

[1] New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010). Available at: http://www.nj.gov/dep/wms/bwqsa/gwqs.htm

[2] The 2014-05 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Region 9 Regional Screening Levels (HQ=0.1) - November 2013 (Last revised) Available at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

[3] Interim generic groundwater quality criteria.

[4] Interim specific groundwater quality criteria.

[5] No USEPA RSLs are available for isomers of chlordane. The chlordane (technical) RSL is used for gamma-chlordane and alpha-chlordane.

[6] No limit established, USEPA MCL used in place of USEPA Tapwater RSL.

Dash (-) = only background concentrations for metals are being used as comparison criteria.

NLE - No limit established.

J = estimated (detect or non-detect) value.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds USEPA Tapwater RSLs

Shaded cells = concentration exceeds NJDEP GWQS.

Shaded cells = concentration exceeds NJDEP GWQS and USEPA Tapwater

Shaded cells = concentration exceeds Weston 1995 background

TABLE 4.8
GROUNDWATER SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Concentration		Location of Maximum Concentration	Date of Maximum Detection	Number of Samples [1]	Number of Detections	Number of Exceedances			Evaluated as COPC in Risk Assessment	Rationale
							NJDEP GWQS [2]	USEPA Tapwater RSL [3]	Weston 1995 Background (Main Post) [4]		
Volatile Organic Compounds (µg/L)											
Tert-butyl alcohol	56.38		M8MW11	3/9/2011	110	1	0	NLE	n/a	No	No Tapwater RSL
Acetone	19.54		697MW01	12/23/2010	147	7	0	0	n/a	No	Less than Tapwater RSL
Carbon disulfide	0.43	J	M8MW11	3/9/2011	127	1	0	0	n/a	No	Less than Tapwater RSL
2-Butanone	97.04	J	697MW01	12/23/2010	147	4	0	0	n/a	No	Less than Tapwater RSL
Benzene	1.41		M8MW16	3/19/2010	147	29	4	15	n/a	**Yes**	Exceeds Tapwater RSL in 15 samples at MW11, MW15, MW16, MW24, and 697MW01
Chlorobenzene	37.1		M8MW15	8/11/2011	147	76	0	27	n/a	**Yes**	Exceeds Tapwater RSL in 27 samples at MW11, MW15, MW16, and MW18
Bromodichloromethane	3.72		M8MW12	6/29/2010	147	5	1	5	n/a	No	All Tapwater RSL exceedances were in upgradient well M8MW12, except most recent (2014) exceedance which was at the upgradient boundary of the site in 697MW01
Chloroform	9.47		M8MW12	6/29/2010	147	5	0	5	n/a	No	All Tapwater RSL exceedances were in upgradient well M8MW12, except a 2014 exceedance in 697MW01
Dibromochloromethane	0.76		M8MW12	6/29/2010	147	1	0	1	n/a	No	The one Tawater RSL exceedance was in upgradient well M8MW12
cis -1,2-Dichloroethene	6.1		M8MW23	8/11/2011	147	24	0	4	n/a	No	The 4 exceedances of the Tapwater RSL were in near upgradient well M8MW23
1,3-Dichlorobenzene	3.1		M8MW15	8/11/2011	147	29	0	NLE	n/a	No	No Tapwater RSL
1,4-Dichlorobenzene	7.4		M8MW11	8/11/2011	147	56	0	51	n/a	**Yes**	Exceeds Tapwater RSL in 51 samples at MW11, MW14, MW15, MW16, MW17, MW18, and MW24
1,2-Dichlorobenzene	2		M8MW15	8/11/2011	147	22	0	0	n/a	No	Less than Tapwater RSL
Ethylbenzene	0.43	J	M8MW11	8/11/2011	147	1	0	0	n/a	No	Less than Tapwater RSL
Isopropylbenzene	1.3	J	M8MW11	8/11/2011	147	4	0	0	n/a	No	Less than Tapwater RSL
Methyl Chloride	0.32	J	M8MW15	10/1/2014	18	1	0	0	n/a	No	Less than Tapwater RSL
Methylene chloride	2.1		M8MW18	8/11/2011	147	5	0	0	n/a	No	Less than Tapwater RSL
Methyl tert butyl ether	0.18	J	M8MW22	5/25/2011	147	1	0	0	n/a	No	Less than Tapwater RSL
Naphthalene	0.24	J	M8MW15	10/1/2014	18	2	0	2	n/a	**Yes**	Exceeds the Tapwater RSL at 2 locations (M8MW15 and M8MW17) in recent sampling events
Tetrachloroethene	3.19		M8MW12	9/29/2010	147	15	12	0	n/a	No	Less than Tapwater RSL
Toluene	1.7		M8MW11	8/11/2011	147	6	0	0	n/a	No	Less than Tapwater RSL
Trichloroethene	1.02		M8MW23	6/29/2010	147	9	1	7	n/a	No	The 7 Tapwater RSL exceedances occurred in upgradient wells M8MW12, M8MW23 and 697MW01
Total Xylenes	1		M8MW11	8/11/2011	147	4	0	0	n/a	No	Less than Tapwater RSL
Vinyl Chloride	1.59		M8MW23	9/29/2010	147	4	1	4	n/a	No	The 4 exceedances of the Tapwater RSL were in near upgradient well M8MW23
TICs	62	0	M8MW15	12/10/2009	147	36	0	NLE	n/a	No	No Tapwater RSL
tert-Butylbenzene	0.24	J	M8MW16	8/20/2013	20	2	0	0	n/a	No	Less than Tapwater RSL
Pesticides/PCBs (µg/L)											
Alpha-chlordane	0.24		697MW01	10/1/2014	15	1	0	0	n/a	No	Less than Tapwater RSL
Gamma-chlordane	0.23		697MW01	10/1/2014	15	1	0	0	n/a	No	Less than Tapwater RSL
4-4'-DDD	0.83		697MW01	10/1/2014	16	1	1	1	n/a	No	The only detection was during the 2014 sampling event at upgradient well 697MW01
4,4'-DDT	0.042	J	697MW01	10/1/2014	15	1	0	0	n/a	No	Less than Tapwater RSL

TABLE 4.8
GROUNDWATER SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Concentration	Location of Maximum Concentration	Date of Maximum Detection	Number of Samples [1]	Number of Detections	Number of Exceedances			Evaluated as COPC in Risk Assessment	Rationale
						NJDEP GWQS [2]	USEPA Tapwater RSL [3]	Weston 1995 Background (Main Post) [4]		
Metals (µg/L)										
Aluminum	24500	M8MW21	5/25/2011	111	56	31	5	0	No	Less than maximum background
Antimony	34.1	M8MW20	9/28/2010	111	39	35	39	6	No	Anomalous occurrence; exceeded background during 9/28/10 sampling event in multiple wells, followed by multiple sample events where not detected
Arsenic	38.1	M8MW22	5/25/2011	111	50	27	50	0	No	Less than maximum background
Barium	727	M8MW11	8/11/2011	111	61	0	18	1	No	Single detection above background is anomalous and not representative of the site.
Beryllium	2.4	M8MW21	5/25/2011	111	14	1	1	1	No	Anomalous occurrence; exceeded background in only 1 sample and well, followed by multiple sample events where not detected or less than maximum background
Cadmium	14.9	M8MW21	5/25/2011	111	33	6	26	2	No	Detections above background are anomalous and not representative of the site.
Calcium	607000 E	M8MW19	9/28/2010	111	109	NLE	NLE	83	No	Essential nutrient
Chromium	118	M8MW21	5/25/2011	111	23	1	0	0	No	Less than maximum background
Cobalt	18.6	M8MW15	3/18/2010	111	9	NLE	9	1	No	Anomalous occurrence; exceeded background in only 1 sample and well, followed by multiple sample events where not detected or less than maximum background
Copper	81	M8MW21	5/25/2011	111	44	0	1	1	No	Anomalous occurrence; exceeded background in only 1 sample and well, followed by multiple sample events where not detected or less than maximum background
Iron	163000 /a	M8MW11	8/11/2011	111	110	109	99	0	No	Essential nutrient
Lead	65	M8MW21	5/25/2011	128	32	13	6	4	No	Detections above background are anamolies and not representative of the site.
Magnesium	3000000	M8MW16	9/29/2010	111	101	0	0	28	No	Essential nutrient
Manganese	3390	M8MW15	3/18/2010	111	104	89	97	54	**Yes**	Exceeds Tapwater RSL and maximum background in multiple rounds of sampling at MW11, MW14, MW15, MW16, MW17, MW18, MW19, MW20, MW22, and MW23
Mercury	0.71	M8MW21	5/25/2011	98	15	0	15	5	No	Detections above background are anomalous and not representative of the site.
Nickel	54.5	M8MW21	5/25/2011	111	53	0	2	0	No	Less than maximum background
Potassium	93600	M8MW16	9/29/2010	111	96	0	0	0	No	Essential nutrient
Selenium	91.3	M8MW17	3/17/2010	111	26	13	19	13	No	Anomalous occurrence; exceeded background in the March 2010 sampling event at multiple wells, followed by multiple sample events where not detected or less than maximum background
Silver	12.4	M8MW17	3/17/2010	111	20	0	1	20	No	Anomalous occurrence; exceeded Tapwater RSL in only 1 sample and well, followed by multiple sample events where not detected or less than maximum background
Sodium	2140000	M8MW16	9/29/2010	111	110	90	0	108	No	Essential nutrient
Thallium	no detections	--	--	110	0	0	0	0	No	Not detected
Vanadium	60.6	M8MW21	5/25/2011	111	26	0	6	0	No	Less than maximum background
Zinc	1730	M8MW23	5/25/2011	111	78	0	7	22	No	Detections above background are anomalous and not representative of the site.

Notes:
(1) Data from the most recent 8 quarters of groundwater sampling are included here, plus data from August 2013.
(2) New Jersey Department of Environmental Protection Ground Water Quality Standards, Specific Ground Water Quality Criteria - Class IIA and Practical Quantitation Levels.

TABLE 4.8
GROUNDWATER SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Concentration	Location of Maximum Concentration	Date of Maximum Detection	Number of Samples (1)	Number of Detections	Number of Exceedances			Evaluated as COPC in Risk Assessment	Rationale
						NJDEP GWQS (2)	USEPA Tapwater RSL (3)	Weston 1995 Background (Main Post) (4)		

(3) U.S. Environmental Protection Agency, Regional Screening Levels (RSLs). Residential Tapwaters (TR=1E-06, THQ = 0.1). (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm). Revised November 2013.

(4) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.
(5) B and BJ qualified data were treated as nondetected chemicals and are not considered COPCs.
(6) Essential nutrients (calcium, iron, magnesium, potassium, and sodium) are not considered COPCs.
(7) Essential nutrients (calcium, iron, magnesium, potassium, and sodium) are not considered COPCs.
(8) New Jersey Interim Generic Ground Water Quality Criteria for synthetic organics; see http://www.nj.gov/dep/wms/bwqsa/Appendix_Table_2.htm
µg/L = micrograms/liter.
COPC = contaminant of potential concern.
Dash (--) = only background concentrations for metals are being used as comparison criteria.
BJ = Analyte detected, estimated concentration. Analyte also found in an associated blank at concentration above one half the LOQ.
ER = Estimated Result.
UJ - Analyte not detected, reported LOD may be inaccurate or imprecise.
n/a = not applicable.
NLE = No limit established.

TABLE 4.9
SURFACE WATER SAMPLING SUMMARY RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

			SS-05															
Round No.	**NJDEP SWQS Saline Water (SE) Criteria [1]**	**USEPA Water Quality Criteria [2]**	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
Date Collected			3/13/2007	6/26/2007	9/13/2007	12/19/2007	3/25/2008	6/26/2008	9/30/2008	12/29/2008	3/24/2009	6/29/2009	9/25/2009	12/7/2009	3/28/2010	6/22/2010	9/21/2010	
Analyte/Lab ID			70093.15	70234.04	70339.15	70541.15	80094.05	80213.15	80346.06	80478.06	90119.06	90268.06	90398.06	90472.06	10110.05	10277.06	10402.06	
Volatile Organic Compounds (µg/L)																		
Acetone [3]	NLE	1200	**1.31**	J	**7.15**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Bromodichloromethane	17	17	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chloroform	2100	470	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis -1,2-Dichloroethene [3]	NLE	2.8	**0.79**	J	ND	**0.67**	J	ND	**0.79**	J	**1.5**	J	**0.6**	J	**0.58**	J	ND	**1.02**	J	ND	**0.41**	J	**0.79**	**0.91**	**0.95**	
Methyl *tert* -butyl ether [3]	NLE	12	**0.44**	J	ND	**0.33**	J	ND	**0.66**	J	**0.34**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
tert -Butyl alcohol	NLE	NLE	ND		ND	**8.65**	J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Tetrachloroethene	1.6	3.3	**1.86**	J	ND	**0.29**		**0.84**	J	**1.4**	J	**1.15**	J	ND	**0.97**	J	**0.47**	J	**1.24**	J	ND	**0.61**		**2.19**	**1**	**0.42**	J
Trichloroethene	12	30	**0.58**	J	ND	ND		ND		**0.6**	J	**0.55**	J	ND	ND		ND		**0.5**	J	ND	ND		**0.64**	**0.37**	J	**0.24**	J
Tentatively identified compounds	NLE	NLE	ND		ND	ND		ND		ND		ND		ND	ND		ND		ND		**8**	ND		**0**	ND		ND	
Metals (µg/L)																		
Antimony	640	640	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Arsenic	0.061	0.14	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Barium [4]	NLE	1000	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Beryllium [3]	42	1.6	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Cadmium	16	0.69	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Chromium	750	1600	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Copper [4]	NLE	1300	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Lead [3]	NLE	15	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Mercury [3]	0.051	0.06	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Nickel	1700	4600	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Selenium	4200	4200	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Thallium	0.47	0.47	NA		NA	NA		NA		NA		NA		NA	NA		NA		NA		NA	NA		NA	NA		NA	
Wet Chemistry																		
Ammonia (mg/L)	NLE	NLE	ND		ND	ND		ND		ND		ND		ND	ND		ND		ND		NA	NA		NA	NA		NA	
Fecal Coliform (cfu/100mL)	NLE	NLE	NA		**4500**	**3200**		**50**		**20**		**100**		**300**	**120**		ND		NA		NA	NA		NA	NA		NA	
Nitrates (mg/L)	NLE	10000	ND		ND	ND		NA		**4.02**		**5.92**		ND	ND		ND		**0.689**		NA	NA		NA	NA		NA	
Oxygen (dissolved; mg/L)	NLE	NLE	**7.73**		**6.46**	**6.54**		**4.74**		**8.58**		**8.07**		**8.44**	**7.38**		**7.73**		**6.51**		**6.73**	**3.84**		**4.3**	**6.24**		**3.91**	
pH	NLE	5-9	**7.37**		**6.52**	**7.59**		**7.36**		**7.76**		**8.54**		**6.94**	**7.22**		**7.6**		**7.94**		**6.26**	**6.78**		**6.59**	**6.54**		**6.57**	
Phosphate (mg/L)	NLE	NLE	ND		ND	ND		NA		**0.09**		ND		ND	ND		**0.02**		ND		NA	NA		NA	NA		NA	
Salinity (%)	NLE	NLE	**0**		**0**	**0**		**0**		**0**		**0**		**0**	**0**		**0**		**0**		**0**	**0**		**0**	**0**		**0.06**	
Sulfate (mg/L)	NLE	NLE	**26.6**		**19**	**226**		NA		**22.9**		**64.4**		**43**	**29.4**		**93.2**		**23.7**		NA	NA		NA	NA		NA	
Temperature (°C)	NLE	NLE	**11.56**		**27.3**	**20.9**		**5.89**		**10**		**23.25**		**19.22**	**7.78**		**8.46**		**23.16**		**20.32**	**4.26**		**6.85**	**23.79**		**21.62**	
Total Coliform (cfu/100mL)	NLE	NLE	**500**		**37500**	**12400**		**700**		**100**		**5760**		**1450**	**500**		**160**		NA		NA	NA		NA	NA		NA	

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (N.J.A.C. 7:9B), Human Health standards for Saline Waters of estuaries (SE).
(2) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only). (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#hhtable)

(3) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. November 2013

(4) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected
B = Compound detected in the sample and its associated blank sample
ER = Estimated result
J = Estimated concentration exceeds the MDL and is less than the RL
NA = Not analyzed
ND = Not detected
NLE - No limit established
TNTC = Too numerous to count
Detections are Bolded.
Shaded cells = concentration exceeds USEPA National Recommended Water Quality C
Shaded cells = concentration exceeds NJDEP SWQS Saline Water (SE) criteria [2]
Shaded cells = concentration exceeds both NJDEP Saline and USEPA Criteria.

TABLE 4.9
SURFACE WATER SAMPLING SUMMARY RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Round No.	NJDEP SWQS Saline Water (SE) Criteria [1]	USEPA Water Quality Criteria [2]	SS-14																													
			42		42 Dup		43		43 Dup		44		44 Dup		45		45 Dup		46		46 Dup		47		47 Dup		48		48 Dup		49		49 Dup	
Date Collected			3/13/2007		3/13/2007		6/26/2007		6/26/2007		9/13/2007		9/13/2007		12/19/2007		12/19/2007		3/25/2008		3/25/2008		6/26/2008		6/26/2008		9/30/2008		9/30/2008		12/29/2008		12/29/2008	
Analyte/Lab ID			70093.04		70093.03		70230.04		70230.03		70339.04		70339.03		70541.04		70541.03		80094.1		80094.03		80213.04		80213.03		80346.11		80346.03		80478.11		80478.03	
Volatile Organic Compounds (µg/L)																																		
Acetone [3]	NLE	1200	ND		ND		ND		**6.54**		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromodichloromethane	17	17	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloroform	2100	470	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
cis -1,2-Dichloroethene [3]	NLE	2.8	**0.12**		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methyl *tert* -butyl ether [3]	NLE	12	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
tert -Butyl alcohol	NLE	NLE	ND		ND		ND		ND		**9.39**	J	**6.8**	J	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Tetrachloroethene	1.6	3.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	12	30	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Tentatively identified compounds	NLE	NLE	ND		ND		ND		ND		ND		ND		**3**		**7**		ND		ND		ND		ND		ND		ND		ND		ND	
Metals (µg/L)																																		
Antimony	640	640	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Arsenic	0.061	0.14	ND		ND		**3.94**	ER	**4.07**	ER	**56.3**		ND		ND		ND		ND		ND		**2.56**	ER	**3.62**	ER	ND		**3.47**	ER	**2.72**	ER	ND	
Barium [4]	NLE	1000	**45**		**45.3**		**35.3**		**35.6**		**29.5**		**34.6**		**36.3**		**36.3**		**36.4**		**37.6**		**36.2**		**36.6**		**31.6**		**31.8**		**37.7**		**38.7**	
Beryllium [3]	42	1.6	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**0.1**	ER	**0.178**	ER	**0.193**	ER	**0.214**	ER
Cadmium	16	0.69	**0.437**	ER	**0.578**	ER	**0.375**	ER	**0.366**	ER	**0.328**	ER	**0.206**	ER	**0.249**	ER	ND		**0.308**	ER	**0.321**	ER	ND		ND		**0.36**	ER	**0.451**	ER	**0.362**	ER	**0.372**	ER
Chromium	750	1600	**0.243**	ER	ND		ND		ND		**0.296**	ER	**0.425**	ER	**0.861**	ER	**0.796**	ER	ND		ND		ND		ND		**2.03**	ER	**2.13**	ER	ND		ND	
Copper [4]	NLE	1300	ND		ND		ND		ND		ND		**1.08**	ER	**1.56**	ER	**4.67**	ER	**1.19**	ER	**0.815**	ER	ND		ND		ND		ND		ND		ND	
Lead [3]	NLE	15	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**1.3**	ER
Mercury [3]	0.051	0.06	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Nickel	1700	4600	**4.66**	ER	**4.64**	ER	**3.06**	ER	**2.74**	ER	**2.77**	ER	**3.42**	ER	**4.02**	ER	**4.76**	ER	**4.74**	ER	**5.03**		**2.53**	ER	**2.46**	ER	**4.15**	ER	**4.1**	ER	**4.59**	ER	**4.69**	ER
Selenium	4200	4200	**8.02**	ER	**7.53**	ER	**7.4**	ER	**6.32**	ER	ND		ND		ND		**4.45**	ER	ND		ND		**4.57**	ER	**5.2**	ER	**7.6**	ER	**5.46**	ER	ND		ND	
Thallium	0.47	0.47	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**2.56**	ER	**3.07**	ER
Wet Chemistry																																		
Ammonia (mg/L)	NLE	NLE	ND		NA		ND		NA		ND		NA		ND		NA		ND		NA		ND		NA		ND		NA		ND		NA	
Fecal Coliform (cfu/100mL)	NLE	NLE	NA		NA		**400**		NA		**2800**		NA		**450**		NA		**20**		NA		**240**		NA		**600**		NA		**80**		NA	
Nitrates (mg/L)	NLE	10000	ND		NA		ND		NA		ND		NA		NA		NA		**5.56**		NA		**4.5**		NA		ND		NA		ND		NA	
Oxygen (dissolved; mg/L)	NLE	NLE	**8.68**		NA		**7.06**		NA		**7.81**		NA		**3.08**		NA		**9.04**		NA		**7.41**		NA		**8.1**		NA		**6.52**		NA	
pH	NLE	5-9	**6.63**		NA		**7.18**		NA		**7.89**		NA		**6.71**		NA		**7.92**		NA		**8.34**		NA		**6.96**		NA		**6.94**		NA	
Phosphate (mg/L)	NLE	NLE	ND		NA		ND		NA		ND		NA		NA		NA		**0.03**		NA		ND		NA		ND		NA		ND		NA	
Salinity (%)	NLE	NLE	**0**		NA		**0**		NA		**0**		NA		**0**		NA		**0**		NA		**0**		NA		**0**		NA		**0.02**		NA	
Sulfate (mg/L)	NLE	NLE	**24.9**		NA		**21.7**		NA		**15**		NA		NA		NA		**18.9**		NA		**15.1**		NA		**22.4**		NA		**21.6**		NA	
Temperature (°C)	NLE	NLE	**6.05**		NA		**19.9**		NA		**16.7**		NA		**4.22**		NA		**5.66**		NA		**20.93**		NA		**17.56**		NA		**6.56**		NA	
Total Coliform (cfu/100mL)	NLE	NLE	**800**		NA		**1550**		NA		**10600**		NA		**1250**		NA		**100**		NA		TNTC		NA		**2200**		NA		**600**		NA	

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (N.J.A.C. 7:9B), Human Health standards for Saline Waters of estuaries (SE).
(2) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only). (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#hhtable)

(3) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. November 2013

(4) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected
B = Compound detected in the sample and its associated blank sample
ER = Estimated result
J = Estimated concentration exceeds the MDL and is less than the RL
NA = Not analyzed
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TNTC = Too numerous to count
Detections are Bolded.
Shaded cells = concentration exceeds USEPA National Recommended Water Quality C
Shaded cells = concentration exceeds NJDEP SWQS Saline Water (SE) criteria [2]
Shaded cells = concentration exceeds both NJDEP Saline and USEPA Criteria.

TABLE 4.9
SURFACE WATER SAMPLING SUMMARY RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Round No.	NJDEP SWQS Saline Water (SE) Criteria (1)	USEPA Water Quality Criteria (2)	SS-14																									
			50		50 Dup		51		52	52 Dup		53		53 Dup		54		54 Dup		55		55 Dup		56		56 Dup	
Date Collected			3/24/2009		3/24/2009		6/26/2009		9/25/2009	9/25/2009		12/7/2009		12/7/2009		3/28/2010		3/28/2010		6/22/2010		6/22/2010		9/21/2010		9/21/2010	
Analyte/Lab ID			90119.11		90119.03		90268.11		90398.11	90398.03		90472.11		90472.03		10110.1		10110.03		10277.11		10277.03		10402.11		10402.03	
Volatile Organic Compounds (µg/L)																												
Acetone (3)	NLE	1200	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Bromodichloromethane	17	17	NA		NA		NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Chloroform	2100	470	ND		ND		**0.42**	J	ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
cis -1,2-Dichloroethene (3)	NLE	2.8	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Methyl *tert* -butyl ether (3)	NLE	12	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
tert -Butyl alcohol	NLE	NLE	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Tetrachloroethene	1.6	3.3	NA		NA		NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Trichloroethene	12	30	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Tentatively identified compounds	NLE	NLE	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Metals (µg/L)																												
Antimony	640	640	**23.1**		**28.6**		**3.68**		**5.92**	**7.99**		ND		**4.8**	ER	**8.48**	ER	**9.49**	ER	**7.76**	ER	**7.76**	ER	**10.7**	ER	**8.5**	ER		
Arsenic	0.061	0.14	**64.5**		**76.1**		**22.1**		**17.6**	**20.1**		**1.39**	ER	**1.68**	ER	ND		ND		**1.15**	ER	**0.85**	ER	**2.12**	ER	**1.91**	ER	
Barium (4)	NLE	1000	**40.2**		**40.1**		**40.7**		**38.4**	**39.2**		**29.9**		**30.8**		**53.1**		**39.7**		**33.8**		**35**		**38.6**		**36.4**		
Beryllium (3)	42	1.6	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Cadmium	16	0.69	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Chromium	750	1600	**0.497**	ER	ND		ND		ND	ND		**1.4**	ER	**1.46**	ER	ND		ND		ND		ND		ND		ND		
Copper (4)	NLE	1300	**1.17**	ER	**1.26**	ER	**6.65**		ND	ND		ND		ND		ND		ND		**3.2**	ER	**3.51**	ER	**1.65**	ER	**1.4**	ER	
Lead (3)	NLE	15	**5.78**		**5.55**		ND		ND	ND		ND		**3**	ER	ND		ND		ND		ND		ND		ND		
Mercury (3)	0.051	0.06	ND		ND		ND		ND	ND		**0.18**	ER	**0.16**	ER	ND		ND		ND		ND		**0.08**	ER	**0.1**	ER	
Nickel	1700	4600	**3.66**	ER	**3.73**	ER	**7.94**		**4.33**	**4.6**		**4.24**	ER	**3.93**	ER	**11.4**		**8.1**		**3.53**	ER	**3.52**	ER	**3.3**	ER	**2.3**	ER	
Selenium	4200	4200	**108**		**97.1**		**22.8**		**29.8**	**36.8**		ND		**12.6**	ER	NR		NR		NR		NR		NR		NR		
Thallium	0.47	0.47	ND		ND		ND		ND	ND		ND		ND		ND		ND		ND		ND		ND		ND		
Wet Chemistry																												
Ammonia (mg/L)	NLE	NLE	ND		NA		**1.44**		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Fecal Coliform (cfu/100mL)	NLE	NLE	ND		NA		NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Nitrates (mg/L)	NLE	10000	ND		NA		**0.525**		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Oxygen (dissolved; mg/L)	NLE	NLE	**2.87**		NA		**7.93**		**8.22**	NA		**4.88**		NA		**4.03**		**4.03**		**6.87**		**6.87**		**6.79**		**6.79**		
pH	NLE	5-9	**6.54**		NA		**7.07**		**7.36**	NA		**7.13**		NA		**6.98**		**6.98**		**6.88**		**6.88**		**6.14**		**6.14**		
Phosphate (mg/L)	NLE	NLE	ND		NA		ND		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Salinity (%)	NLE	NLE	**0**		NA		**0**		**0**	NA		**0**		NA		**0**		**0**		**0**		**0**		**0**		**0**		
Sulfate (mg/L)	NLE	NLE	**30**		NA		**21.7**		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		
Temperature (°C)	NLE	NLE	**3.57**		NA		**18.81**		**17.01**	NA		**4.85**		NA		**5.23**		**5.23**		**17.89**		**17.89**		**13.34**		**13.34**		
Total Coliform (cfu/100mL)	NLE	NLE	**20**		NA		NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		

Notes:

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(2) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only). (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#hhtable)

(3) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. November 2013

(4) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected
B = Compound detected in the sample and its associated blank sample
ER = Estimated result
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NA = Not analyzed
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TABLE 4.9
SURFACE WATER SAMPLING SUMMARY RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Round No.	NJDEP SWQS Saline Water (SE) Criteria (1)	USEPA Water Quality Criteria (2)	SS-15																													
			42		43		44		45		46		47		48		49		50		51		52		53		54		55		55			
Date Collected			3/13/2007		6/26/2007		9/13/2007		12/19/2007		3/25/2008		6/26/2008		9/30/2008		12/29/2008		3/24/2009		6/29/2009		9/25/2009		12/7/2009		3/28/2010		6/22/2010		9/21/2010		
Analyte/Lab ID			70093.06		70230.06		70339.06		70541.06		80094.11		80213.06		80346.12		80478.12		90119.12		90268.12		90398.12		90472.12		10110.11		10277.12		10402.12		
Volatile Organic Compounds (µg/L)																																
Acetone (3)	NLE	1200	**0.92**	J	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND			
Bromodichloromethane	17	17	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
Chloroform	2100	470	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
cis -1,2-Dichloroethene (3)	NLE	2.8	**0.81**	J	**2.14**		**2.81**		ND		**1.35**	J	**2.89**		**0.88**	J	**0.94**	J	**0.96**	J	**1.33**	J	**1.92**		**0.7**		**1.04**		**1.96**		**2.81**		
Methyl *tert* -butyl ether (3)	NLE	12	**0.47**	J	ND		**1**	J	ND		**0.88**	J	**0.63**	J	ND		ND		ND		ND		ND		**0.18**	J	**0.24**	J	ND		ND		
tert -Butyl alcohol	NLE	NLE	ND		ND		**20.81**		**14.52**		ND		ND		ND		ND		ND		ND		ND		**9.16**		ND		ND		ND		
Tetrachloroethene	1.6	3.3	**2.21**		ND		**1.54**	J	**0.93**	J	**2.42**		**2.28**		ND		**1.55**	J	**3.03**		**2.02**		**1.87**		**1.11**		**3.01**		**1.99**		**1.03**		
Trichloroethene	12	30	**0.65**	J	ND		ND		ND		**1.02**	J	**1.01**	J	ND		ND		**1.26**	J	**0.77**	J	**0.96**		**0.44**	J	**0.88**		**0.75**		**0.61**		
Tentatively identified compounds	NLE	NLE	ND		ND		ND		**7**		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		
Metals (µg/L)																																
Antimony	640	640	ND		ND		ND		ND		ND		ND		ND		ND		**17.8**	ER	**5.52**		**6.06**		ND		**6.44**	ER	**6.18**	ER	**10.8**	ER
Arsenic	0.061	0.14	ND		**3.12**	ER	ND		ND		ND		**3.37**	ER	**3.5**	ER	ND		**66.6**		**14.1**		**19.6**		ND		**1.45**	ER	ND		**1.13**	ER
Barium (4)	NLE	1000	**58.8**		**52.6**		**52.5**		**50.6**		**57.4**		**61.5**		**58.4**		**58.3**		**60.1**		**58.3**		**61.2**		**47.5**		**59.6**		**61.4**		**49.8**		
Beryllium (3)	42	1.6	**0.156**		ND		ND		**0.106**		ND		ND		**0.247**	ER	**0.336**	ER	ND		ND		ND		**0.0702**	ER	**0.082**	ER	ND		ND		
Cadmium	16	0.69	**0.857**	ER	**0.435**	ER	ND		**0.879**	ER	**0.298**	ER	ND		**1.08**	ER	**0.471**	ER	ND		ND		ND		**0.608**	ER	ND		ND		**0.512**	ER	
Chromium	750	1600	**0.692**	ER	**0.432**	ER	**0.906**	ER	**1.44**	ER	**0.433**	ER	**0.758**	ER	**3.66**	ER	**3.37**	ER	**0.838**	ER	**0.628**		ND		**3.85**	ER	**1.07**	ER	ND		ND		
Copper (4)	NLE	1300	ND		**1.84**	ER	**0.801**	ER	**2.5**	ER	**2**	ER	ND		ND		ND		**1.45**	ER	**2.49**		**4.6**		ND		ND		**2.49**	ER	**1.4**	ER	
Lead (3)	NLE	15	ND		ND		ND		ND		ND		**1.49**	ER	ND		**5.74**		**2.59**	ER	ND		ND		ND		ND		ND		ND		
Mercury (3)	0.051	0.06	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**0.18**	ER	ND		ND		ND		
Nickel	1700	4600	**9.76**		**6.09**		**6.44**		**14.4**		**13**		**6.15**		**10.6**		**11.9**		**11.2**		**12**		**9.18**		**8.05**		**16**		**8.07**		**8.88**		
Selenium	4200	4200	**7.29**	ER	**6.39**	ER	ND		ND		ND		**6.62**	ER	**8.61**	ER	ND		**104**		**24.3**		**24.5**		ND		NR		NR		NR		
Thallium	0.47	0.47	NA		NA		NA		NA		NA		NA		NA		NA		ND		NA		NA		ND		ND		ND		ND		
Wet Chemistry																																
Ammonia (mg/L)	NLE	NLE	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA		
Fecal Coliform (cfu/100mL)	NLE	NLE	NA		**100**		**2000**		**50**		ND		ND		**50**		**20**		ND		NA		NA		NA		NA		NA		NA		
Nitrates (mg/L)	NLE	10000	**1.05**		ND		ND		NA		**2.76**		**5.97**		ND		ND		ND		ND		NA		NA		NA		NA		NA		
Oxygen (dissolved; mg/L)	NLE	NLE	**8.41**		**6.94**		**6.54**		**3.01**		**9.47**		**8.28**		**7.55**		**6.99**		**7.85**		**8.08**		**8.61**		**4.65**		**4.45**		**7.86**		**4.67**		
pH	NLE	5-9	**6.87**		**6.86**		**7.81**		**6.63**		**7.87**		**8.22**		**6.97**		**7.09**		**7.11**		**7.42**		**7.05**		**7.21**		**6.96**		**7.34**		**5.92**		
Phosphate (mg/L)	NLE	NLE	ND		ND		ND		NA		**0.07**		ND		ND		ND		**0.03**		ND		NA		NA		NA		NA		NA		
Salinity (%)	NLE	NLE	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		
Sulfate (mg/L)	NLE	NLE	**30**		**20.9**		**22.8**		NA		**21.2**		**17.63**		**18.4**		**19.1**		**29**		**18.9**		NA		NA		NA		NA		NA		
Temperature (°C)	NLE	NLE	**8.21**		**22.3**		**18.7**		**4.82**		**8.62**		**23.47**		**17.6**		**8.33**		**6.59**		**23.58**		**18.31**		**4.79**		**7.5**		**22.74**		**16.01**		
Total Coliform (cfu/100mL)	NLE	NLE	**600**		**2450**		**11400**		**800**		**120**		**4080**		**2650**		**600**		**1460**		NA		NA		NA		NA		NA		NA		

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (N.J.A.C. 7:9B), Human Health standards for Saline Waters of estuaries (SE).
(2) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only). (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#hhtable)

(3) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. November 2013

(4) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected
B = Compound detected in the sample and its associated blank sample
ER = Estimated result
J = Estimated concentration exceeds the MDL and is less than the RL
NA = Not analyzed
ND = Not detected
NLE - No limit established
TNTC = Too numerous to count
Detections are Bolded.
Shaded cells = concentration exceeds USEPA National Recommended Water Quality C
Shaded cells = concentration exceeds NJDEP SWQS Saline Water (SE) criteria (2)
Shaded cells = concentration exceeds both NJDEP Saline and USEPA Criteria.

TABLE 4.9
SURFACE WATER SAMPLING SUMMARY RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Round No.	NJDEP SWQS Saline Water (SE) Criteria (1)	USEPA Water Quality Criteria (2)	SS-27																																					
			28		29		29 Dup		30		31		32		32 Dup		33		34		35		36		37		38	39		40		41		42								
Date Collected			3/13/2007		6/26/2007		6/26/2007		9/13/2007		12/19/2007		3/26/2008		3/26/2008		6/26/2008		9/30/2008		12/29/2008		3/24/2009		6/29/2009		9/25/2009	12/7/2009		3/28/2010		6/22/2010		9/21/2010								
Analyte/Lab ID			70093.17		70234.06		70234.03		70339.17		70541.17		80095.08		80095.03		80213.17		80346.17		80478.17		90119.17		90268.17		90398.17	90472.17		10110.17		10277.17		10402.17								
Volatile Organic Compounds (µg/L)																																									
Acetone (3)	NLE	1200	**0.99**	J	**6.71**		**6.54**		ND		ND		ND		NA		ND		ND		ND		ND		ND		ND	ND		ND		ND		ND								
Bromodichloromethane	17	17	ND		ND		ND		ND		ND		ND		NA		ND		ND		ND		ND		ND		ND	ND		ND		**0.27**	J	ND								
Chloroform	2100	470	ND		ND		ND		ND		ND		ND		NA		ND		ND		ND		ND		ND		ND	ND		ND		**0.61**		ND								
cis -1,2-Dichloroethene (3)	NLE	2.8	**0.36**	J	ND		ND		ND		ND		**0.61**	J	NA		**0.71**	J	**0.36**	J	ND		**0.29**	J	**0.41**	J	ND	**0.31**	J	**0.33**	J	**0.39**	J	**0.76**								
Methyl *tert* -butyl ether (3)	NLE	12	ND		ND		ND		**0.42**	J	ND		**0.42**	J	NA		ND		ND		ND		ND		ND		ND	ND		ND		ND		ND								
tert -Butyl alcohol	NLE	NLE	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA		NA		NA		NA								
Tetrachloroethene	1.6	3.3	**1.07**	J	ND		ND		ND		ND		**1.01**	J	NA		**0.69**	J	ND		**0.68**	J	**0.98**	J	**0.66**	J	ND	**0.47**	J	**0.98**		**0.5**		ND								
Trichloroethene	12	30	ND		ND		ND		ND		ND		**0.4**	J	NA		ND		ND		ND		**0.44**	J	ND		ND	ND		**0.29**	J	ND		ND								
Tentatively identified compounds	NLE	NLE	ND		ND		ND		ND		ND		ND		NA		ND		ND		**11**		ND		ND		**19**	ND		ND		**3**		ND								
Metals (µg/L)																																									
Antimony	640	640	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**26.6**		**8.53**		**19**	**7.2**	ER	**9.71**	ER	**17.4**	ER	**27.1**								
Arsenic	0.061	0.14	ND		**3.05**	ER	ND		ND		ND		ND		ND		ND		ND		ND		**56**		**19.2**		**33**	**1.79**	ER	**0.95**	ER	**2.67**	ER	**3.53**	ER							
Barium (4)	NLE	1000	**41.9**		**24.8**		**21.8**		**27.1**		**42.5**		**47.1**		**47.1**		ND		**34.1**		**45.3**		**44.8**		**50.6**		**31.2**	**32.6**		**50.5**		**63**		**51.6**								
Beryllium (3)	42	1.6	ND		**0.129**	ER	**0.116**	ER	ND		ND		ND		ND		ND		**0.164**	ER	**0.203**	ER	ND		ND		ND	ND		ND		**0.094**	ER	ND								
Cadmium	16	0.69	**0.493**	ER	**0.691**	ER	**0.569**	ER	**0.843**	ER	**0.441**	ER	**0.254**	ER	**0.258**	ER	ND		**0.645**	ER	**0.515**	ER	ND		ND		ND	ND		ND		ND		ND								
Chromium	750	1600	**0.283**	ER	**2.42**	ER	**0.92**	ER	**0.416**	ER	**1.04**	ER	**0.634**	ER	**0.252**	ER	ND		**2.99**	ER	**2.33**	ER	ND		ND		**7.1**	ND		ND		**1.22**	ER	**1.04**	ER							
Copper (4)	NLE	1300	**9.36**		**3.52**	ER	**2.41**	ER	**3.16**	ER	**6.08**		**2.16**	ER	**2.04**	ER	ND		**1.97**	ER	ND		**6.17**		**2.97**		**6**	**2.25**	ER	ND		**7.56**		**3.79**	ER							
Lead (3)	NLE	15	**2.72**	ER	**2.52**	ER	ND		ND		ND		ND		ND		ND		ND		**3.59**	ER	ND		ND		ND	**18.2**		ND		ND		**3.09**	ER							
Mercury (3)	0.051	0.06	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	**0.1**	ER	ND		ND		**0.17**	ER							
Nickel	1700	4600	**7.22**		**4.13**	ER	**3.75**	ER	**1.51**	ER	**9.93**		**8.87**		**9.06**		**3.26**	ER	**7.49**		**8.03**		**6.12**		**9.12**		**5**	**6.55**		**10.1**		**5.72**		**6.21**								
Selenium	4200	4200	**7.94**	ER	**6.82**	ER	**5.77**	ER	ND		ND		ND		ND		**7.44**	ER	**10**	ER	**4.76**	ER	**119**		**30.9**		ND	**13.6**	ER	NR		NR		NR								
Thallium	0.47	0.47	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		ND		ND		ND	ND		**1.75**	ER	ND		ND								
Wet Chemistry																																									
Ammonia (mg/L)	NLE	NLE	ND		ND		NA		ND		ND		ND		NA		ND		ND		ND		ND		**0.581**		NA	NA		NA		NA		NA								
Fecal Coliform (cfu/100mL)	NLE	NLE	NA		**20000**		NA		**1900**		**50**		ND		NA		**160**		**550**		**120**		ND		NA		NA	NA		NA		NA		NA								
Nitrates (mg/L)	NLE	10000	ND		ND		NA		ND		NA		**4.17**		NA		**17.6**		ND		ND		ND		ND		NA	NA		NA		NA		NA								
Oxygen (dissolved; mg/L)	NLE	NLE	**7.27**		**6.71**		NA		**5.01**		**4.33**		**9.15**		NA		**6.04**		**6.33**		**5.67**		**5.75**		**6.11**		**6.49**	**3.63**		**4.07**		**6.02**		**5.24**								
pH	NLE	5-9	**7.31**		**6.37**		NA		**7.35**		**7.17**		**8.28**		NA		**7.55**		**6.83**		**7.14**		**7.39**		**6.5**		**7.93**	**6.35**		**6.8**		**5.9**		**6.59**								
Phosphate (mg/L)	NLE	NLE	ND		ND		NA		ND		NA		**0.06**		NA		ND		ND		ND		**0.03**		ND		NA	NA		NA		NA		NA								
Salinity (%)	NLE	NLE	**0.02**		**0**		NA		**0**		**0**		**0**		NA		**0**		**0**		**0**		**0**		**0**		**0**	**0**		**0**		**0.06**		**0.08**								
Sulfate (mg/L)	NLE	NLE	**63.9**		**17.3**		NA		**497**		NA		**24.6**		NA		**170**		**164**		**72.2**		**239**		**140**		NA	NA		NA		NA		NA								
Temperature (°C)	NLE	NLE	**10.59**		**26.1**		NA		**21**		**5.17**		**7.52**		NA		**24.02**		**19.52**		**7.56**		**5.67**		**21.11**		**22.35**	**4.17**		**5.78**		**23.01**		**21.78**								
Total Coliform (cfu/100mL)	NLE	NLE	**500**		**25000**		NA		**8400**		**850**		**180**		NA		**5520**		**2450**		**540**		**580**		NA		NA	NA		NA		NA		NA								

Notes:

(1) New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (N.J.A.C. 7:9B), Human Health standards for Saline Waters of estuaries (SE).
(2) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only). (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#hhtable)

(3) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. November 2013

(4) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected
B = Compound detected in the sample and its associated blank sample
ER = Estimated result
J = Estimated concentration exceeds the MDL and is less than the RL
NA = Not analyzed
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TNTC = Too numerous to count
Detections are Bolded.
Shaded cells = concentration exceeds USEPA National Recommended Water Quality C
Shaded cells = concentration exceeds NJDEP SWQS Saline Water (SE) criteria (2)
Shaded cells = concentration exceeds both NJDEP Saline and USEPA Criteria.

TABLE 4.10
SURFACE WATER SAMPLING SUMMARY OF EXCEEDANCES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

						Number of Exceedances			
Analyte/Lab ID	**Maximum Concentration**	**Location of Maximum Concentration**	**Date of Maximum Concentration**	**Number of Samples [1]**	**Number of Detections**	**NJDEP SWQS Saline Water (SE) criteria [2]**	**USEPA Water Quality Criteria [3]**	**Evaluated as COPC in Risk Assessment?**	**Rationale**
Volatile Organic Compounds (µg/L)									
Bromodichloromethane	0.27 J	SS-27	6/22/2010	8	1	0	0	No	Less than NRWQC (Human Health, Organism Only)
Chloroform	0.61	SS-27	6/22/2010	31	2	0	0	No	Less than NRWQC (Human Health, Organism Only)
cis-1,2-Dichloroethene [4]	2.81	SS-15	9/21/2010	39	20	0	1	No	Barely above SL -- 2.81 was the max concentration
Methyl *tert*-butyl ether [4]	0.24 J	SS-15	3/28/2010	39	2	0	0	No	Less than Tapwater RSL
tert-Butyl alcohol	9.16	SS-15	12/7/2009	31	1	0	0	No	No USEPA Water Quality Criteria
Tetrachloroethene	3.03	SS-15	3/24/2009	24	21	6	0	No	Less than NRWQC (Human Health, Organism Only)
Trichloroethene	1.26 J	SS-15	3/24/2009	39	13	0	0	No	Less than NRWQC (Human Health, Organism Only)
Tentatively identified compounds	19	SS-27	9/25/2009	39	5	0	0	No	No USEPA Water Quality Criteria
Metals (µg/L)									
Antimony	28.6	SS-14	3/24/2009	45	25	0	0	No	Less than NRWQC (Human Health, Organism Only)
Arsenic	76.1	SS-14	3/24/2009	44	24	24	24	No	Detected upstream at similar concentrations.
Barium [5]	63	SS-27	6/22/2010	31	31	0	0	No	Less than NRWQC (Human Health, Water + Organism)
Beryllium [4]	0.336 ER	SS-15	12/29/2008	38	7	0	0	No	Less than Tapwater RSL
Cadmium	0.608 ER	SS-15	12/7/2009	37	6	0	0	No	Less than NRWQC (Human Health, Organism Only)
Chromium	7.1	SS-27	9/25/2009	41	12	0	0	No	Less than NRWQC (Human Health, Organism Only)
Copper [5]	7.56	SS-27	6/22/2010	42	18	0	0	No	Less than NRWQC (Human Health, Water + Organism)
Lead [4]	18.2	SS-27	12/7/2009	36	9	0	1	No	Single exceedance was anomalous, samples at SS-27 are typically low or non-detect
Mercury [4]	0.18 ER	SS-14	12/7/2009	38	7	7	7	No	Similar to upstream
Nickel	16	SS-15	3/28/2010	41	31	0	0	No	Less than NRWQC (Human Health, Organism Only)
Selenium	119	SS-27	3/24/2009	34	13	0	0	No	Less than NRWQC (Human Health, Organism Only)
Thallium	3.07 ER	SS-14	12/29/2008	29	2	2	2	No	Not detected in recent samples
Wet Chemistry									
Ammonia (mg/L)	1.44	SS-14	6/26/2009	12	2	0	0	No	No NRWQC
Fecal Coliform (cfu/100mL)	120	SS-05	12/29/2008	8	4	0	0	No	No NRWQC
Nitrates (mg/L)	0.689	SS-05	6/29/2009	12	2	0	0	No	Less than NRWQC (Human Health, Organism Only)
Oxygen (dissolved; mg/L)	8.61	SS-15	9/25/2009	35	35	0	0	No	No NRWQC
pH	7.94	SS-05	6/29/2009	35	35	0	0	No	Within NRWQC Range
Phosphate (mg/L)	0.03	SS-15	3/24/2009	12	3	0	0	No	No NRWQC
Salinity (%)	0.08	SS-27	9/21/2010	35	35	0	0	No	No NRWQC
Sulfate (mg/L)	239	SS-27	3/24/2009	12	12	0	0	No	No NRWQC
Temperature (°C)	23.79	SS-05	6/22/2010	35	35	0	0	No	No NRWQC
Total Coliform (cfu/100mL)	1460	SS-15	3/24/2009	8	8	0	0	No	No NRWQC

Notes:

(1) The samples from the most recent 8 quarters of surface water sampling are included here.

(2) New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (N.J.A.C. 7:9B), Human Health standards for Saline Waters of estuaries (SE).

(3) United States Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (Human Health Criteria, Organism Only).

(4) Tapwater RSL was used in place of NRWQC, available at http://www.epa.gov/region9/superfund/prg/. RSL values were current at the time the screening was conducted.

(5) U.S. Environmental Protection Agency (USEPA) National Recommended Water Quality Criteria (NRWQC) for protection of human health (water + organism) was used in place of the organism only value. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm.

ER = Estimated result.

J = Estimated concentration exceeds the MDL and is less than the RL.

mg/L = milligrams/liter; µg/L = micrograms/liter; cfu/100 mL = colony-forming units/100 milliliters

Dup = duplicate sample collected

NLE = No limit established

TABLE 4.11
SEDIMENT PCB RESULTS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Boring ID	Sample Depth (bgs)	Date Collected	Total PCBs (mg/kg)	Aroclor 1254 (mg/kg)
B1	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B2	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B3	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
	18"-24"	4/12/2000	ND	ND
B4	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B5	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B6	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B7	0-6"	4/12/2000	**1.455**	**1.455**
	6"-12"	4/12/2000	ND	ND
B8	0-6"	4/12/2000	**0.138**	**0.138**
	6"-12"	4/12/2000	ND	ND
B9	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND
B10	0-6"	4/12/2000	ND	ND
	6"-12"	4/12/2000	ND	ND

NJDEP RDCSRS	0.2	0.2
NJDEP NRDCSRS	1	1
USEPA RSL - Residential	0.24	0.11
USEPA RSL - NonResidential	1	0.74

Evaluated as COPC in Risk Assessment?	**No**

Notes:
PCBs = Polychlorinated Biphenyls
bgs = below ground surface
mg/kg = milligrams per kilogram
NJDEP = New Jersey Department of Environmental Protection
NRDCSRS = Non-Residential Direct Contact Soil Remediation Standard
RDCSRS = Residential Direct Contact Soil Remediation Standard
RSL = Regional Screening Level
USEPA = United States Environmental Protection Agency
COPC = Constituent of Potential Concern

TABLE 6.1
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A CURRENT/FUTURE OUTDOOR WORKER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]			USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Outdoor worker Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Outdoor worker Carcinogenic Risk Ratio (EPC/USEPA RSL)
					non-carcinogenic	carcinogenic					
Volatile Organic Compounds											
71-43-2	Benzene	2.5		Max	420	5.1	both	0.32%	0.057%	0.0060	4.9E-07
Semi-Volatile Organic Compounds											
106-46-7	1,4-Dichlorobenzene	7.5		Max	25000	11	both	0.016%	0.079%	0.00030	6.8E-07
91-20-3	Naphthalene	31		UCL	590	17	both	2.8%	0.21%	0.053	1.8E-06
91-57-6	2-Methylnaphthalene	380	D	Max	3000	--	no	6.8%	--	0.13	--
83-32-9	Acenaphthene	1700	D	Max	45000	--	no	2.0%	--	0.038	--
132-64-9	Dibenzofuran	29		UCL	1000	--	no	1.5%	--	0.029	--
86-73-7	Fluorene	1500	D	Max	30000	--	no	2.7%	--	0.050	--
118-74-1	Hexachlorobenzene	2		Max	930	0.96	both	0.12%	0.24%	0.0022	2.1E-06
120-12-7	Anthracene	4000	D	Max	230000	--	no	0.94%	--	0.017	--
206-44-0	Fluoranthene	218		UCL	30000	--	no	0.39%	--	0.0073	--
92-87-5	Benzidine	1.1		UCL	2500	0.01	both	0.024%	13%	0.00044	1.1E-04
129-00-0	Pyrene	202		UCL	23000	--	no	0.47%	--	0.0088	--
56-55-3	Benzo(a)anthracene	61		UCL	--	2.9	yes	--	2.5%	--	2.1E-05
218-01-9	Chrysene	88		UCL	--	290	yes	--	0.035%	--	3.0E-07
205-99-2	Benzo(b)fluoranthene	112		UCL	--	2.9	yes	--	4.5%	--	3.9E-05
207-08-9	Benzo(k)fluoranthene	73		UCL	--	29	yes	--	0.29%	--	2.5E-06
50-32-8	Benzo(a)pyrene	130		UCL	--	0.29	yes	--	52%	--	4.5E-04
193-39-5	Indeno(1,2,3-cd)pyrene	27		UCL	--	2.9	yes	--	1.1%	--	9.3E-06
53-70-3	Dibenz(a,h)anthracene	24		UCL	--	0.29	yes	--	9.8%	--	8.4E-05
PCBs											
12674-11-2	Aroclor 1016	4.8		Max	51	27	both	5.0%	0.020%	0.093	1.8E-07
53469-21-9	Aroclor 1242	73		UCL	--	0.97	yes	--	8.7%	--	7.5E-05
11096-82-5	Aroclor 1260	1		UCL	--	0.99	yes	--	0.071%	--	6.1E-07

TABLE 6.1
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A CURRENT/FUTURE OUTDOOR WORKER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]		USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Outdoor worker Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Outdoor worker Carcinogenic Risk Ratio (EPC/USEPA RSL)
				non-carcinogenic	carcinogenic					
Metals										
7429-90-5	Aluminum	36900	Max	1100000	--	no	1.8%	--	0.034	--
7440-36-0	Antimony	8	UCL	470	--	no	0.9%	--	0.017	--
7440-38-2	Arsenic	178	UCL	480	3	both	20%	6.9%	0.37	5.9E-05
7440-41-7	Beryllium	45	Max	2300	6900	both	1.0%	0.00075%	0.019	6.5E-09
7440-43-9	Cadmium	27	Max	980	9300	both	1.5%	0.00033%	0.027	2.9E-09
7440-48-4	Cobalt	130	UCL	350	1900	both	20%	0.0079%	0.37	6.8E-08
7440-50-8	Copper	1160	Max	47000	--	no	1.3%	--	0.025	--
7439-96-5	Manganese	1910	Max	26000	--	no	4.0%	--	0.073	--
7439-97-6	Mercury	4	UCL	40	--	no	6.0%	--	0.11	--
7440-02-0	Nickel	279	UCL	22000	64000	both	0.68%	0.00051%	0.013	4.4E-09
7782-49-2	Selenium	119	Max	5800	--	no	1.1%	--	0.021	--
7440-22-4	Silver	124.0	Max	5800	--	no	1.2%	--	0.021	--
7440-28-0	Thallium	2.0	UCL	12	--	no	8.9%	--	0.17	--
7440-62-2	Vanadium	299	Max	5800	--	no	2.8%	--	0.052	--
7440-66-6	Zinc	9550	Max	350000	--	no	1.5%	--	0.027	--
Lead										
7439-92-1	Lead [4]	272	UCL	800	--	no	--	--	0.3	--
								Cumulative Risk Ratio	**2**	**9E-04**

(1) Exposure point concentration (EPC) is the maximum detected concentration or 95% Upper Confidence Limit, as indicated, for all soil samples combined.

(2) USEPA Regional Screening Level (RSL) for Industrial soil, Target Risk (TR) = 1 x 10^{-6} and Target Hazard Quotient (THQ) = 1.0. Revised June 2015. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/docs/composite_sl_table_run_JUNE2015_rev.pdf

(3) "yes" indicates that the chemical exerts carcinogenic effects; "no" indicates that the chemical exerts non-carcinogenic effects; and "both" indicates that the chemical exerts both carcinogenic and non-carcinogenic effects

(4) Cumulative risk ratio does not include lead.

mg/kg = milligrams per kilogram

Max = Maximum detected concentration

D = Result from dilution of sample

-- = not applicable

TABLE 6.2
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A FUTURE UTILITY WORKER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]		USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Utility Worker Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Utility Worker Carcinogenic Risk Ratio (EPC/USEPA RSL)
				non-carcinogenic	carcinogenic					
Volatile Organic Compounds										
71-43-2	Benzene	2.5	Max	3680	1120	both	0.11%	0.021%	0.00068	2.2E-09
Semi-Volatile Organic Compounds										
106-46-7	1,4-Dichlorobenzene	7.5	Max	138000	3080	both	0.0087%	0.023%	0.000054	2.4E-09
91-20-3	Naphthalene	31	UCL	6140	4790	both	0.82%	0.063%	0.005	6.5E-09
91-57-6	2-Methylnaphthalene	380 D	Max	10100	--	no	6.0%	--	0.038	--
83-32-9	Acenaphthene	1700 D	Max	152000	--	no	1.8%	--	0.011	--
132-64-9	Dibenzofuran	29	UCL	2840	--	no	1.6%	--	0.010	--
86-73-7	Fluorene	1500 D	Max	101000	--	no	2.4%	--	0.015	--
118-74-1	Hexachlorobenzene	2	Max	2360	103	both	0.14%	0.19%	0.00085	1.9E-08
120-12-7	Anthracene	4000 D	Max	760000	--	no	0.84%	--	0.0053	--
206-44-0	Fluoranthene	218	UCL	101000	--	no	0.35%	--	0.0022	--
92-87-5	Benzidine	1.1	UCL	7860	0.80	both	0.023%	13%	0.00014	1.4E-06
129-00-0	Pyrene	202	UCL	76000	--	no	0.43%	--	0.0027	--
56-55-3	Benzo(a)anthracene	61	UCL	--	243	yes	--	2.4%	--	2.5E-07
218-01-9	Chrysene	88	UCL	--	24300	yes	--	0.035%	--	3.6E-09
205-99-2	Benzo(b)fluoranthene	112	UCL	--	243	yes	--	4.4%	--	4.6E-07
207-08-9	Benzo(k)fluoranthene	73	UCL	--	2430	yes	--	0.29%	--	3.0E-08
50-32-8	Benzo(a)pyrene	130	UCL	--	24	yes	--	51%	--	5.3E-06
193-39-5	Indeno(1,2,3-cd)pyrene	27	UCL	--	243	yes	--	1.1%	--	1.1E-07
53-70-3	Dibenz(a,h)anthracene	24	UCL	--	24	yes	--	9.7%	--	1.0E-06
PCBs										
12674-11-2	Aroclor 1016	4.8	Max	175	2450	both	4.4%	0.019%	0.027	1.9E-09
53469-21-9	Aroclor 1242	73	UCL	--	86	yes	--	8.1%	--	8.4E-07
11096-82-5	Aroclor 1260	1	UCL	--	87	yes	--	0.067%	--	7.0E-09

TABLE 6.2
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A FUTURE UTILITY WORKER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]		USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Utility Worker Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Utility Worker Carcinogenic Risk Ratio (EPC/USEPA RSL)
				non-carcinogenic	carcinogenic					
Metals										
7429-90-5	Aluminum	36900	Max	2930000	--	no	2.0%	--	0.013	--
7440-36-0	Antimony	8	UCL	1180	--	no	1.1%	--	0.0067	--
7440-38-2	Arsenic	178	UCL	1390	216	both	21%	7.9%	0.13	8.2E-07
7440-41-7	Beryllium	45	Max	5880	3440000	both	1.2%	0.00012%	0.0076	1.3E-11
7440-43-9	Cadmium	27	Max	2800	4590000	both	1.5%	0.000056%	0.010	5.8E-12
7440-48-4	Cobalt	130	UCL	884	918000	both	24%	0.0014%	0.15	1.4E-10
7440-50-8	Copper	1160	Max	118000	--	no	1.6%	--	0.010	--
7439-96-5	Manganese	1910	Max	69900	--	no	4.4%	--	0.027	--
7439-97-6	Mercury	4	UCL	455	--	no	1.6%	--	0.010	--
7440-02-0	Nickel	279	UCL	58700	31800000	both	0.76%	0.000084%	0.0047	8.8E-12
7782-49-2	Selenium	119	Max	14700	--	no	1.3%	--	0.0081	--
7440-22-4	Silver	124	Max	14700	--	no	1.4%	--	0.0084	--
7440-28-0	Thallium	2	UCL	30	--	no	11%	--	0.067	--
7440-62-2	Vanadium	299	Max	14800	--	no	3.2%	--	0.020	--
7440-66-6	Zinc	9550	Max	885000	--	no	1.7%	-	0.011	--
Lead										
7439-92-1	Lead [4]	272	UCL	1400	--	no	--	--	0.2	--
								Cumulative Risk Ratio	**0.6**	**1E-05**

(1) Exposure point concentration (EPC) is the maximum detected concentration or 95% Upper Confidence Limit, as indicated, for all soil samples combined.

(2) Calculated screening level for utility workers calculated using the USEPA RSL calculator for outdoor worker, substituting site-specific and receptor-specific exposure parameters for utility workers. The calculations and exposure parameters are provided in **Appendix B**.
(3) "yes" indicates that the chemical exerts carcinogenic effects; "no" indicates that the chemical exerts non-carcinogenic effects; and "both" indicates that the chemical exerts both carcinogenic and non-carcinogenic effects
(4) Utility Worker Soil Screening Level for Lead was generated using USEPA's Adult Lead Model (ALM). ALM inputs provided in **Appendix B**. Cumulative risk ratio does not include lead.
mg/kg = milligrams per kilogram
Max = Maximum detected concentration
D = Result from dilution of sample
-- = not applicable

TABLE 6.3
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A FUTURE RECREATIONAL USER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]		USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Recreational User Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Recreational User Carcinogenic Risk Ratio (EPC/USEPA RSL)
				non-carcinogenic	carcinogenic					
Volatile Organic Compounds										
71-43-2	Benzene	2.5	Max	8670	110	both	0.10%	0.0077%	0.00029	2.3E-08
Semi-Volatile Organic Compounds										
106-46-7	1,4-Dichlorobenzene	7.5	Max	320000	306	both	0.0082%	0.0083%	0.000023	2.5E-08
91-20-3	Naphthalene	31	UCL	14300	479	both	0.76%	0.022%	0.0022	6.5E-08
91-57-6	2-Methylnaphthalene	380 D	Max	19500	--	no	6.8%	--	0.019	--
83-32-9	Acenaphthene	1700 D	Max	293000	--	no	2.0%	--	0.0058	--
132-64-9	Dibenzofuran	29	UCL	6170	--	no	1.6%	--	0.0046	--
86-73-7	Fluorene	1500 D	Max	195000	--	no	2.7%	--	0.0077	--
118-74-1	Hexachlorobenzene	2.0	Max	5360	9.9	both	0.13%	0.069%	0.00037	2.0E-07
120-12-7	Anthracene	4000 D	Max	1470000	--	no	0.95%	--	0.0027	--
206-44-0	Fluoranthene	218	UCL	195000	--	no	0.39%	--	0.0011	--
92-87-5	Benzidine	1.1	UCL	15600	0.025	both	0.025%	15%	0.000071	4.4E-05
129-00-0	Pyrene	202	UCL	147000	--	no	0.48%	--	0.0014	--
56-55-3	Benzo(a)anthracene	61	UCL	--	7.6	yes	--	2.7%	--	8.1E-06
218-01-9	Chrysene	88	UCL	--	763	yes	--	0.039%	--	1.2E-07
205-99-2	Benzo(b)fluoranthene	112	UCL	--	7.6	yes	--	5.0%	--	1.5E-05
207-08-9	Benzo(k)fluoranthene	73	UCL	--	76.3	yes	--	0.32%	--	9.6E-07
50-32-8	Benzo(a)pyrene	130	UCL	--	0.76	yes	--	58%	--	1.7E-04
193-39-5	Indeno(1,2,3-cd)pyrene	27	UCL	--	7.6	yes	--	1.2%	--	3.5E-06
53-70-3	Dibenz(a,h)anthracene	24	UCL	--	0.76	yes	--	11%	--	3.2E-05
PCBs										
12674-11-2	Aroclor 1016	4.8	Max	335	196	both	5.0%	0.0082%	0.014	2.4E-08
53469-21-9	Aroclor 1242	73	UCL	--	6.9	yes	--	3.6%	--	1.1E-05
11096-82-5	Aroclor 1260	1	UCL	--	6.9	yes	--	0.030%	--	8.7E-08
Metals										
7429-90-5	Aluminum	36900	Max	6670000	--	no	1.9%	--	0.0055	--
7440-36-0	Antimony	8	UCL	2680	--	no	1.0%	--	0.0029	--
7440-38-2	Arsenic	178	UCL	2930	19	both	21%	3.2%	0.061	9.3E-06
7440-41-7	Beryllium	45	Max	13400	344000	both	1.2%	0.000044%	0.0033	1.3E-10
7440-43-9	Cadmium	27	Max	6000	459000	both	1.5%	0.000020%	0.0044	5.8E-11
7440-48-4	Cobalt	130	UCL	2010	91800	both	23%	0.00048%	0.065	1.4E-09
7440-50-8	Copper	1160	Max	268000	--	no	1.5%	--	0.0043	--
7439-96-5	Manganese	1910	Max	159000	--	no	4.2%	--	0.012	--
7439-97-6	Mercury	4	UCL	1090	--	no	1.4%	--	0.0041	--
7440-02-0	Nickel	279	UCL	133000	3180000	both	0.73%	0.000030%	0.0021	8.8E-11
7782-49-2	Selenium	119	Max	33500	--	no	1.2%	--	0.0036	--
7440-22-4	Silver	124	Max	33500	--	no	1.3%	--	0.0037	--
7440-28-0	Thallium	2	UCL	67	--	no	10%	--	0.030	--
7440-62-2	Vanadium	299	Max	33700	--	no	3.1%	--	0.0089	--
7440-66-6	Zinc	9550	Max	2010000	--	no	1.7%	--	0.0048	--

TABLE 6.3
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO SOIL BY A FUTURE RECREATIONAL USER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (mg/kg) [1]		USEPA Regional Screening Level Industrial Soil (HQ = 1.0) (mg/kg) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Recreational User Non-Carcinogenic Risk Ratio (EPC/USEPA RSL)	Recreational User Carcinogenic Risk Ratio (EPC/USEPA RSL)
				non-carcinogenic	carcinogenic					
Lead										
7439-92-1	Lead [4]	272	UCL	2700	--	no	--	--	0.1	--
								Cumulative Risk Ratio	**0.3**	**3E-04**

(1) Exposure point concentration (EPC) is the maximum detected concentration or 95% Upper Confidence Limit, as indicated, for all soil samples combined.

(2) Calculated screening level for recreational users using the USEPA RSL calculator for recreator, substituting site-specific and receptor-specific exposure parameters for recreational users. The calculations and exposure parameters are provided in **Appendix B**.
(3) "yes" indicates that the chemical exerts carcinogenic effects; "no" indicates that the chemical exerts non-carcinogenic effects; and "both" indicates that the chemical exerts both carcinogenic and non-carcinogenic effects
(4) Future Recreational User Soil Screening Level for Lead was generated using USEPA's Adult Lead Model (ALM). ALM inputs provided in **Appendix B**. Cumulative risk ratio does not include lead.
mg/kg = milligrams per kilogram
Max = Maximum detected concentration
D = Result from dilution of sample
J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)
-- = not applicable

TABLE 6.4
RISK RATIO CALCULATIONS FOR POTENTIAL EXPOSURE TO GROUNDWATER BY A FUTURE UTILITY WORKER
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

CAS No.	Compound	Exposure Point Concentration (EPC) (µg/L) [1]		Utility Worker Calculated Screening Level (SL) (HQ = 1.0) (µg/L) [2]		Carcinogenic? [3]	Percent of cumulative non-carcinogenic risk?	Percent of cumulative carcinogenic risk?	Utility Worker Non-Carcinogenic Risk Ratio (EPC/SL)	Utility Worker Carcinogenic Risk Ratio (EPC/SL)
				non-carcinogenic	carcinogenic					
Volatile Organic Compounds										
71-43-2	Benzene	1.4	Max	19400	6130	both	0.19%	--	0.000073	2.3E-10
108-90-7	Chlorobenzene	37	Max	48500	--	no	2.0%	--	0.00076	--
106-46-7	1,4-Dichlorobenzene	7.4	Max	90600	16800	both	0.21%	--	0.000082	4.4E-10
91-20-3	Naphthalene	0.2 J	Max	28200	--	no	0.022%	--	0.0000085	--
Metals										
7439-96-5	Manganese	3390	Max	89200	--	no	98%	--	0.038	--
								Cumulative Risk Ratio	**0.04**	**7E-10**

(1) Exposure Point Concentration is the maximum detected concentration for all groundwater samples combined.

(2) Calculated screening level for utility workers calculated using the USEPA RSL calculator for recreator; substituting site-specific and receptor-specific exposure parameters for utility workers. The calculations and exposure parameters are provided in **Appendix B**.
(3) "yes" indicates that the chemical exerts carcinogenic effects; "no" indicates that the chemical exerts non-carcinogenic effects; and "both" indicates that the chemical exerts both carcinogenic and non-carcinogenic effects
µg/L = micrograms per liter
Max = Maximum detected concentration

TABLE 8.1
CONSTITUENTS OF CONCERN AND CLEANUP GOALS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

COPC	Medium	Exceeds NJDEP NRDCSRS?	Identified as Risk Driver?	COC?	NJDEP NRDCSRS (mg/kg) [a/b/]
Volatile Organic Compound					
Benzene	Soil	No	No	No	--
Semi-Volatile Organic Compound					
1,4-Dichlorobenzene	Soil	No	No	No	--
Naphthalene	Soil	Yes	No	No	--
2-Methylnaphthalene	Soil	No	No	No	--
Acenaphthene	Soil	No	No	No	--
Dibenzofuran	Soil	NA	No	No	--
Fluorene	Soil	No	No	No	--
Hexachlorobenzene	Soil	Yes	No	No	--
Anthracene	Soil	No	No	No	--
Fluoranthene	Soil	No	No	No	--
Benzidine	**Soil**	**Yes**	**Yes**	**Yes**	**0.70**
Pyrene	Soil	No	No	No	--
Benzo(a)anthracene	**Soil**	**Yes**	**Yes**	**Yes**	**2.0**
Chrysene	Soil	Yes	No	No	--
Benzo(b)fluoranthene	**Soil**	**Yes**	**Yes**	**Yes**	**2.0**
Benzo(k)fluoranthene	**Soil**	**Yes**	**Yes**	**Yes**	**23**
Benzo(a)pyrene	**Soil**	**Yes**	**Yes**	**Yes**	**0.20**
Indeno(1,2,3-cd)pyrene	Soil	Yes	No	No	--
Dibenz(a,h)anthracene	**Soil**	**Yes**	**Yes**	**Yes**	**0.20**
Pesticides/PCBs					
Aroclor 1016	Soil	Yes	No	No	--
Aroclor 1260	Soil	Yes	No	No	--
Aroclor 1242	**Soil**	**Yes**	**Yes**	**Yes**	**1.0** [c/]
Metals					
Aluminum	Soil	NA	No	No	--
Antimony	Soil	No	No	No	--
Arsenic	**Soil**	**Yes**	**Yes**	**Yes**	**19**
Beryllium	Soil	No	No	No	--
Cadmium	Soil	No	No	No	--
Cobalt	Soil	No	Yes	No	--
Copper	Soil	No	No	No	--
Lead	Soil	Yes	No	No	--
Manganese	Soil	No	No	No	--
Mercury	Soil	Yes	No	No	--
Nickel	Soil	No	No	No	--
Selenium	Soil	No	No	No	--
Silver	Soil	No	No	No	--
Thallium	Soil	Yes	No	No	--
Vanadium	Soil	No	No	No	--
Zinc	Soil	No	No	No	--

Notes:
COPC: Constituent of Potential Concern
COC: Constituent of Concern
NJDEP: New Jersey Department of Environmental Protection
NRDCSRS: Non-Residential Direct Contact Soil Remediation Standard
[a/] mg/kg = milligrams per kilogram.
[b/] non residential direct contact soil remediation standard or criterion only listed if analyte is a COC.
[c/] Additional criteria from 40 Code of Federal Regulations (CFR) 761.61(a - c) also are applicable when concentrations exceed 1 mg/kg in soil.

TABLE 9.1
SCREENING OF SPECIFIC RESPONSE ACTIONS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Environmental Media	General Response Actions	Technology	Process Options	Description	Evaluation Comments
Soil/ Landfill Contents	No Action			No action is completed at the site.	Used as a baseline for evaluation of action alternatives. No Action will be retained for further evaluation.
	Risk and Hazard Management	Deed Restriction	Institutional Control	A deed notice would be recorded to document that soil at the site exceeds the standards for unrestricted use and unlimited exposure and would establish the requirements for maintenance and inspection of the remedy.	Deed restrictions will be required if waste is left in place to restrict future landuse, provide notice to intrusive workers, and prevent the installation of drinking water wells. Deed restrictions **will be retained** for further evaluation.
		Signs	Engineering Control	Signs can be installed with or without fencing to deter trespassers or warn site users of potential site risks.	Signs along with fencing would be necessary if PCBs were left in place at concentrations greater than 25 mg/kg in soil. This engineering control **will <u>not</u> be retained** for further evaluation.
		Fencing	Engineering Control	Security fences installed around areas with waste.	Fencing would only be necessary if the landfills were not covered, or if soils with PCB concentrations greater than 25 mg/kg were left in place. The use of fencing around the areas with PCBs is undesirable because the future landuse for the site is designated as open space. Because direct contact with the landfill materials is the most significant risk posed by the landfill, and removal of "hot spots" is being retained, this engineering control **will <u>not</u> be retained** for further evaluation.
	Containment	Surface Controls	Grading	Reshaping of topography to manage infiltration and run-off to control erosion	Grading the site to route stormwater away from the landfilled waste provide a method to mitigate erosion during flood events. Filling surface depressions where settlement has occurred will promote surface water runoff away from the buried waste. This technology **will be retained** for further evaluation.
			Revegetation	Used most often with other containment technologies such as caps. Vegetation is used to stabilize the soil surface and promote evapotranspiration. Seeding, fertilizing, and watering may be required until vegetation has established itself.	Establishing native vegetation that does not require supplemental irrigation would be more esthetically pleasing and would require less long-term maintenance than alternatives such as placing a gravel layer. This technology **will be retained** for further evaluation.
		Cap	Native Soil Cover	Uncontaminated native soil (non-clays) placed over landfill. This technology would include revegetation to stabilize the soil and prevent wind and water erosion.	Highly viable because direct contact and erosion are the primary hazards. This technology **will be retained** for further evaluation.

TABLE 9.1
SCREENING OF SPECIFIC RESPONSE ACTIONS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Environmental Media	General Response Actions	Technology	Process Options	Description	Evaluation Comments
			Evapotranspiration (ET) Covers	Consists of a layer of soil covered by native grasses. The soil contains no barrier or impermeable layers and uses two natural processes to control infiltration. The uncompacted soil provides a water reservoir and ET empties the soil water reservoir.	Because leachate generation is not a primary concern at this site the design of an ET cover is not necessary. A native soil cover can provide an equivalent level of protection. This technology **will <u>not</u> be retained** for further evaluation.
			Single Barrier Asphalt, Concrete, Clay or Flexible Membrane Liner Covers	Single barrier covers are used to form a surface barrier between landfill and the environment. The primary function of a single barrier cap is to reduce surface infiltration, prevent direct contract, limit gas emissions and provide erosion control.	Because infiltration and gas emissions are not concerns at FTMM-08 this system provides no added benefit over using a native soil cover. Cracking and deterioration would occur over time and result in higher maintenance costs without providing any further protection. This technology **will <u>not</u> be retained** for further evaluation.
			RCRA Subtitle D (Municipal Solid Waste) Cover	The design is generally a function of the bottom liner system or natural subsoils present. The cover must meet the following specifications: The material must have a permeability no greater than 1 x 10^{-5} cm/s, or equivalent permeability of any bottom liner or natural subsoils present, whichever is less. The infiltration layer must contain at least 45 cm of earthen material. The erosion control layer must be at least 15 cm of earthen material capable of sustaining native plant growth.	Because of the age of the landfill and the type of waste in place infiltration/leachate collection and gas emissions are not concerns at FTMM-08. This technology **will <u>not</u> be retained** for further evaluation.
			RCRA Subtitle C (Hazardous Waste) Cover	The RCRA C multilayered landfill cap is a baseline design that is used in RCRA hazardous waste applications. These caps generally consist of an upper vegetative (topsoil) layer, a drainage layer, and a low permeability layer which consists of a synthetic liner over 2 feet of compacted clay. The compacted clay liners are effective if they retain certain moisture content but are susceptible to cracking if the clay material is desiccated. As a result alternate cap designs are usually considered for arid environments.	Because of the age of the landfill and the type of waste in place, infiltration/leachate collection and gas emissions are not concerns at FTMM-08. This technology **will <u>not</u> be retained** for further evaluation.

TABLE 9.1
SCREENING OF SPECIFIC RESPONSE ACTIONS
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Environmental Media	General Response Actions	Technology	Process Options	Description	Evaluation Comments
	Containment	Vertical Barrier	Slurry Wall/Sheet Piling, Grout Curtain, Sparge wall	Engineered systems designed to stop or reduce the flux of the contamination from the landfill area	COC concentrations in groundwater present a relatively low risk and do not pose a risk to down gradient receptors. This technology **will not be retained** for further evaluation.
	Removal	Excavation	Mechanical Excavation of Debris	Mechanical excavation is the use of excavation equipment to remove buried waste. Waste would be transported to a nearby licensed disposal or recycling facility. Clean backfill would be imported and the site would be revegetated and graded once the wastes are removed.	Capital costs for alternative would be very high and does not provide a significant benefit to the government. This alternative **will not be retained** for detailed evaluation.
			Mechanical Excavation of PCB-Impacted Material	Removal of areas of soil contamination that have impacted or have the potential to impact groundwater, or pose a risk to human receptors. Soil would be transported and disposed in a facility licensed to accept the waste.	There are three areas in FTMM-08 where PCB concentrations in soil exceed 25 mg/kg. In accordance with TSCA, leaving soil in place with PCBs greater than 25 mg/kg would require fencing/signs or a low permeability cap. Therefore, limited removal of soils with PCB concentrations greater than 25 mg/kg is recommended in conjunction with a soil cover. This alternative **will be retained** for detailed evaluation.
			Consolidation	Excavation of landfill material and redisposal in a single location	Because the future landuse at this site is designated as passive open space, consolidation of FTMM-08 with other landfills does not offer a significant benefit to the government. This technology **will not be retained** for further evaluation.
		Enhanced bioremediation	Anaerobic bioremediation	The practice of adding hydrogen (an electron donor) to groundwater and/or soil to increase the number and vitality of indigenous microorganisms performing anaerobic bioremediation (reductive dechlorination) on any anaerobically degradable compound or chlorinated contaminant	COC concentrations are relatively low, not persistent, and are likely due to turbidity in the samples. This technology **will not be retained** for detailed evaluation.

TABLE 11.1
CRITERIA FOR DETAILED EVALUATION OF REMEDIAL ALTERNATIVES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Criterion		How the Criterion is Applied
Threshold Criteria		
1	Overall Protection of Human Health and the Environment	Assesses the ability of a remedial alternative to eliminate, reduce, or control the risks associated with exposure pathways, including direct contact, potential migration, and risks to ecosystems.
2	Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	Evaluates the potential of a remedial alternative to comply with chemical-specific, location-specific, and action-specific ARARs. Compliance with other to-be-considered (TBC) criteria is also evaluated, but is not mandatory.
Primary Balancing Criteria		
3	Long-Term Effectiveness and Permanence	Measures the ability of a remedial alternative to permanently protect human health and the environment.
4	Reduction of Toxicity, Mobility, or Volume (TMV) Through Treatment	Evaluates the ability of a remedial alternative to permanently or significantly reduce the TMV of the constituents, particularly through treatment.
5	Short-Term Effectiveness	Assesses the protection of human health and the environment during implementation of a remedial alternative.
6	Implementability	Evaluates technical feasibility and the difficulty of applying the remedial alternative at the site, the reliability of the technology, the unknowns associated with the remedial alternative, and the need for treatability studies. Assesses administrative requirements, including regulatory agency approval and the need for permits and waivers. Assesses mobilization needs and the accessibility of equipment and trained personnel required to implement the remedial alternative.
7	Cost	Assesses the capital, operation, and maintenance costs of each remedial alternative.
Modifying Criteria		
8	State Acceptance	Evaluates the technical and administrative issues and concerns the State may have regarding the remedial alternative.
9	Community Acceptance	Evaluates the issues and concerns the public may have regarding the remedial alternative.

Source: 40 CFR 300.430(e) (9) and 300.100(f) (1).

TABLE 11.2
EVALUATION OF REMEDIAL ALTERNATIVES
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

	Criterion	Remedial Alternative 1 No Action	Remedial Alternative 2 Institutional/Engineering Controls, Limited Removal of Isolated Areas with Concentrations of PCBs Exceeding 25 mg/kg, Vegetated Soil with Regrading
1	Overall Protection of Human Health and the Environment	Provides no protection of human health and the environment.	ICs prevent uncontrolled exposure of potential receptors to contaminated media. Controls/monitoring will be required prior to excavation activities to ensure any soil removed from the site is properly handled. Land use will be restricted to preclude residential development and uncontrolled reuse of soil from beneath the site. A CEA will be established for groundwater. Landfill cover will prevent direct contact with remaining soil and landfill debris.
2	Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	Does not comply with the identified ARARs and To-Be Considered (TBC) criteria.	Complies with the identified ARARs and TBC criteria.
3	Long-Term Effectiveness and Permanence	Provides no long-term effectiveness or protection from existing contamination.	Limited removal and off-site disposal of soil with PCB concentrations over 25 mg/kg will prevent contact with high-level waste. Landfill cover will prevent direct contact with remaining soil and landfill debris. The soil cover would be graded to promote runoff of precipitation. ICs will ensure that receptor exposure to contaminated media is controlled within the boundary of FTMM-08, and that potential routes for exposure are considered in the event of future land use changes. An IC implementation plan will document the soil cover inspection and reporting requirements and specify when cover maintenance activities are required.
4	Reduction in Toxicity, Mobility, or Volume (TMV) Through Treatment	Reduction in COCs is occurring through natural processes, but is not monitored.	Because soils with high PCB concentrations will be excavated, reductions of TMV through treatment were not included in the remedy. Wastes will remain in place beneath the soil cover.
5	Short-Term Effectiveness	Does not include engineered cleanup, and therefore has no associated construction. Due to the lack of construction activity, there is the community or the environment for remedy implementation, however because no ICs would be implemented there would be no mechanism for providing notice to intrusive workers regarding the contamination in place.	Due to limited PCB-impacted soil removal activities, there will be construction. Construction activities are expected to be minimal and last less than a week. Due to the lack of extensive construction activity, there is little risk posed to workers who perform removal activities and landfill cover inspections, the community, or the environment.
6	Implementability	No action is readily implementable.	Implementation of removal of PCB-contaminated soil and landfill cover is technical feasible and readily executed. The cover would be 2-feet in depth and would cover approximately 7.2 acres. Implementation of ICs is technically feasible and readily executed.
7	Total Present Value (TPV) Cost	**$28,000**	**$2,858,000**

FIGURES

Figure 1.1 Fort Monmouth Location
Figure 1.2 FTMM-08 Location
Figure 1.3 Layout of FTMM-08
Figure 2.1 FTMM-08 Soil Sample Locations
Figure 2.2 FTMM-08 Hydrogen Releasing Compound Treatment Areas
Figure 2.3 FTMM-08 Surface Water and Sediment Sample Locations
Figure 3.1 FTMM-08 Shallow Groundwater Contours – September 29, 2014
Figure 3.2 FTMM-08 Shallow Groundwater Contours – October 1, 2015
Figure 4.1 Summary of Method to Determine COPCs
Figure 6.1 Evaluation of Risk to Human Receptors
Figure 6.2 Human Health Conceptual Site Model
Figure 6.3 Potential Hotspots of Risk Drivers at FTMM-08
Figure 9.1 Areas of FTMM-08 with PCB-Contaminated Soil
Figure 9.2 PCBs in Soil – Detail Areas A and B
Figure 9.3 PCBs in Soil – Detail Area C



Legend

Installation Boundary

Site Description:
Fort Monmouth
Main Post & Charles Wood Area
Monmouth County, NJ
Longitude: 74˚ 2' 33.39" W
Latitude: 40˚ 18' 49.33" N
Longitude and Latitude represent the center point of Main Post.

N

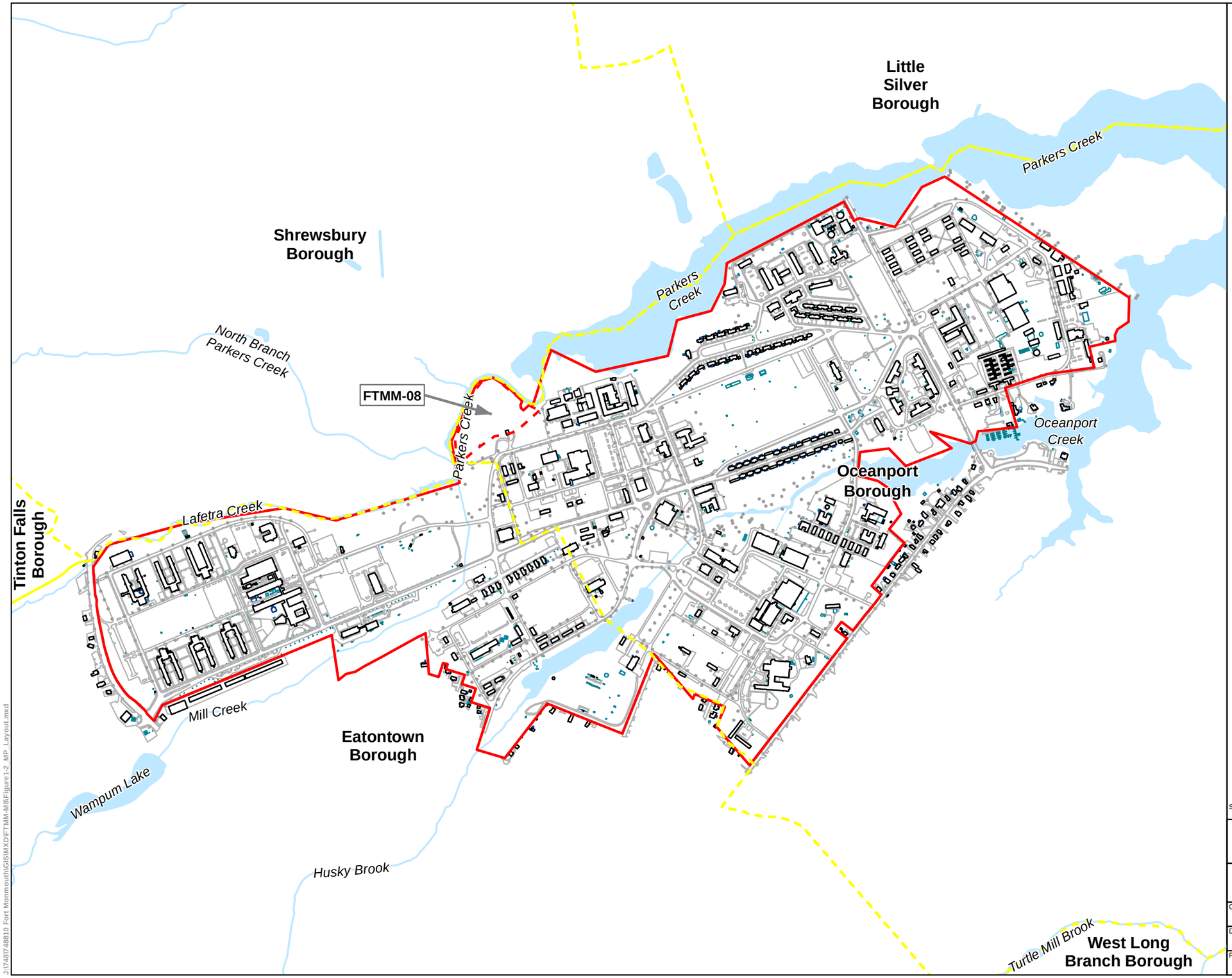
1 inch = 2,500 feet

0 0.5 1 Miles

Source: Bing Maps online imagery; ESRI Data and Maps, 2011.

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**
Fort Monmouth Location	
CREATED BY: **TS**	REVIEWED BY: **JH**
DATE: **May 2014**	FIGURE NUMBER: **Figure 1.1**
PROJECT NUMBER: **748810.02050**	FILE: **Figure1-1_Location.mxd**

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Legend

- Surface Water Feature
- FTMM-08 Landfill Boundary
- Municipal Boundary
- Installation Boundary

N

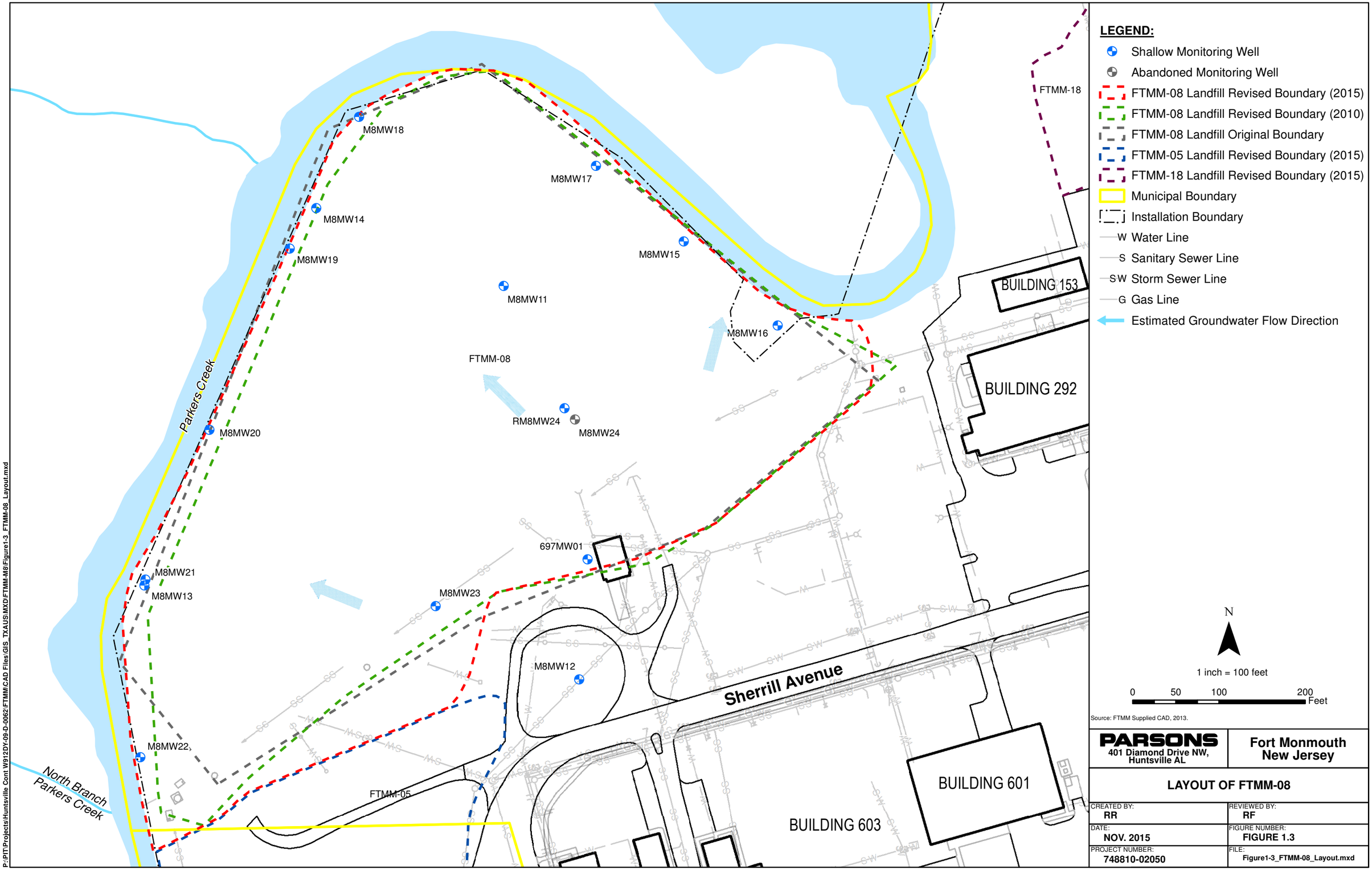
1 inch = 1,000 feet

0 250 500 1,000 1,500 2,000 2,500 Feet

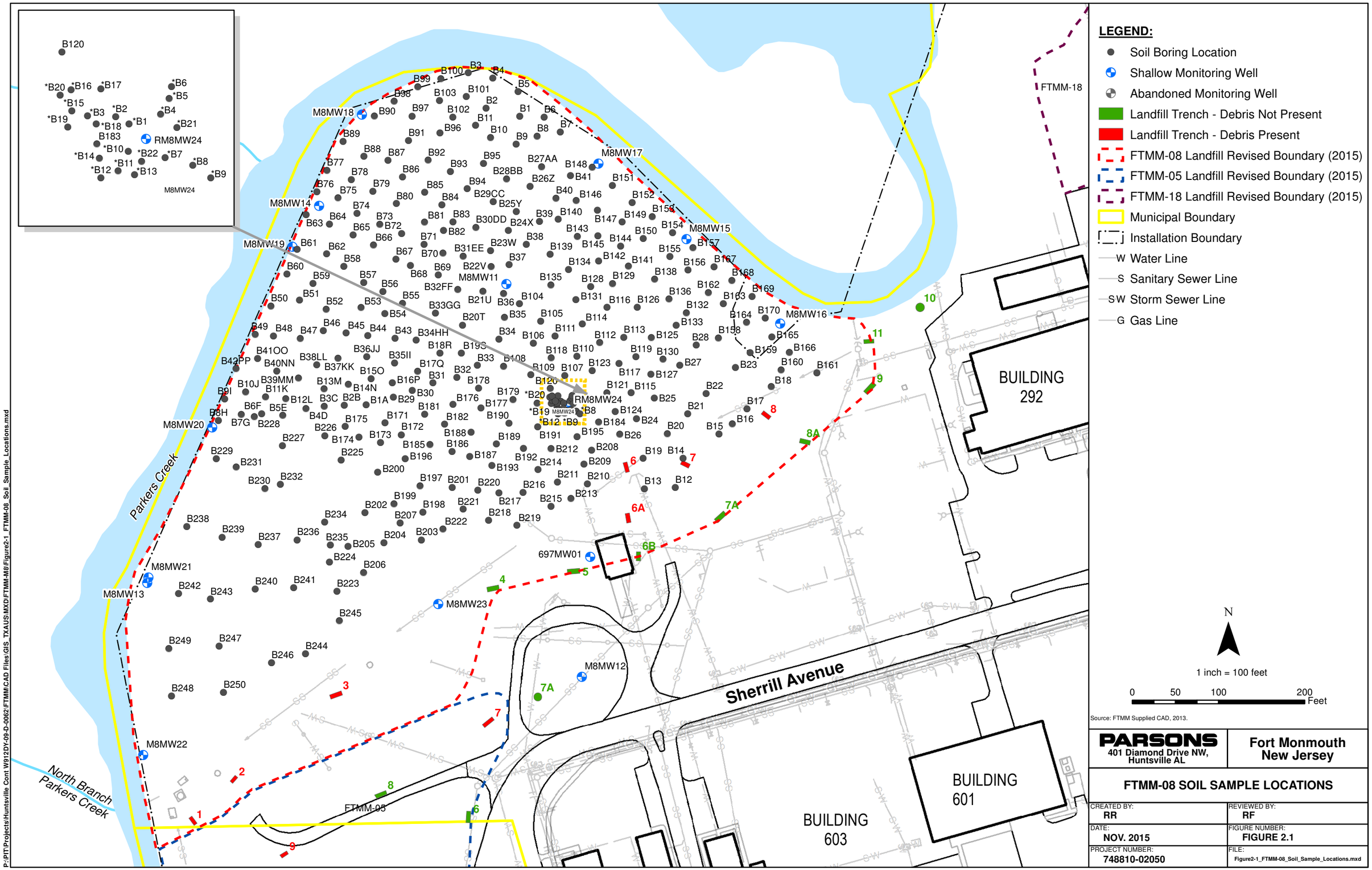
Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
FTMM-08 Location	
CREATED BY: TS	REVIEWED BY: RF
DATE: May 2014	FIGURE NUMBER: Figure 1.2
PROJECT NUMBER: 748810.02050	FILE: Figure1-2_MP_Layout.mxd

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LEGEND:

- Soil Boring Location
- Shallow Monitoring Well
- Abandoned Monitoring Well
- Landfill Trench - Debris Not Present
- Landfill Trench - Debris Present
- FTMM-08 Landfill Revised Boundary (2015)
- FTMM-05 Landfill Revised Boundary (2015)
- FTMM-18 Landfill Revised Boundary (2015)
- Municipal Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

N

1 inch = 100 feet

0 50 100 200 Feet

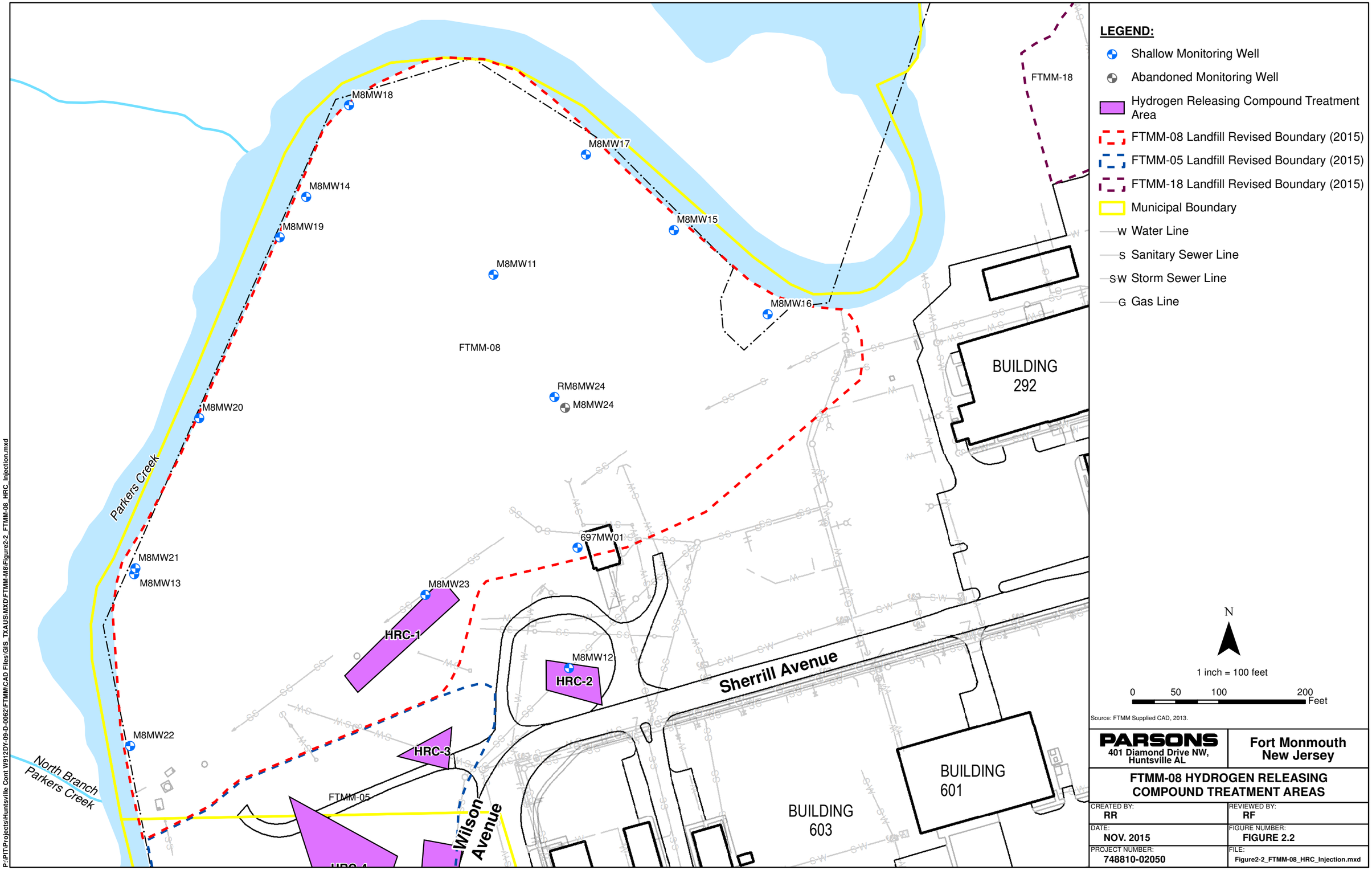
Source: FTMM Supplied CAD, 2013.

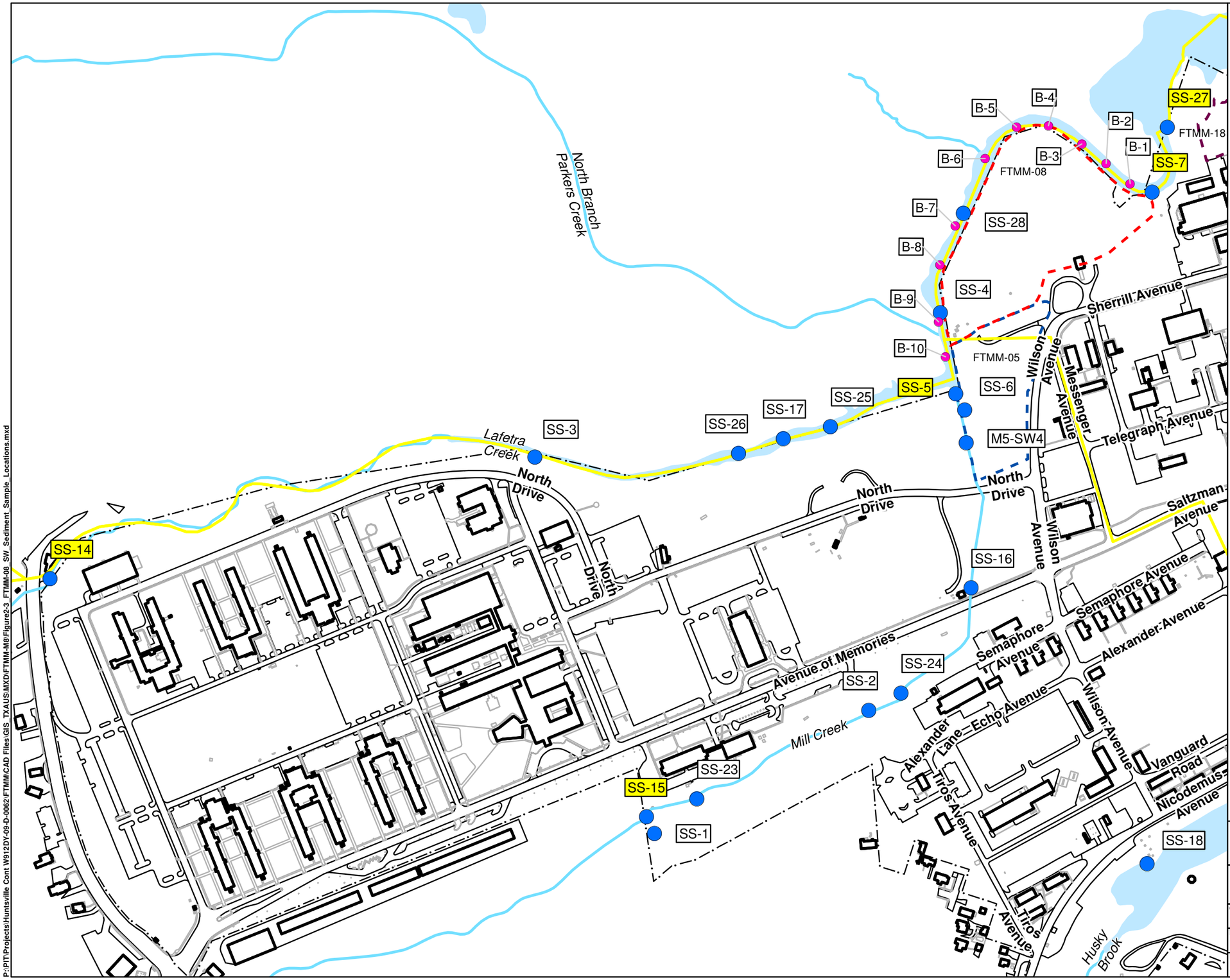
PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**

FTMM-08 SOIL SAMPLE LOCATIONS

CREATED BY: RR	REVIEWED BY: RF
DATE: NOV. 2015	FIGURE NUMBER: FIGURE 2.1
PROJECT NUMBER: 748810-02050	FILE: Figure2-1_FTMM-08_Soil_Sample_Locations.mxd

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M8MW18
M8MW17
M8MW14
M8MW19
M8MW15
M8MW11
M8MW16
FTMM-18
FTMM-08
RM8MW24
M8MW24
M8MW20
Parkers Creek
M8MW21
M8MW13
697MW01
M8MW23
HRC-1
M8MW12
HRC-2
Sherrill Avenue
M8MW22
HRC-3
North Branch
Parkers Creek
FTMM-05
Wilson Avenue
BUILDING
292
BUILDING
601
BUILDING
603
LEGEND:
Shallow Monitoring Well
Abandoned Monitoring Well
Hydrogen Releasing Compound Treatment Area
FTMM-08 Landfill Revised Boundary (2015)
FTMM-05 Landfill Revised Boundary (2015)
FTMM-18 Landfill Revised Boundary (2015)
Municipal Boundary
W Water Line
S Sanitary Sewer Line
SW Storm Sewer Line
G Gas Line
N
1 inch = 100 feet
0 50 100 200
Feet
Source: FTMM Supplied CAD, 2013.
PARSONS
401 Diamond Drive NW,
Huntsville AL
Fort Monmouth
New Jersey
FTMM-08 HYDROGEN RELEASING
COMPOUND TREATMENT AREAS
CREATED BY: RR
REVIEWED BY: RF
DATE: NOV. 2015
FIGURE NUMBER: FIGURE 2.2
PROJECT NUMBER: 748810-02050
FILE: Figure2-2_FTMM-08_HRC_Injection.mxd
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LEGEND:

- Sediment Sample Location
- Surface Water Sample Location
- FTMM-08 Landfill Revised Boundary (2015)
- FTMM-05 Landfill Revised Boundary (2015)
- FTMM-18 Landfill Revised Boundary (2015)
- Municipal Boundary
- Installation Boundary
- SS-5 Surface Water Sample Location Associated with FTMM-08

N

1 inch = 400 feet

0 200 400 800 Feet

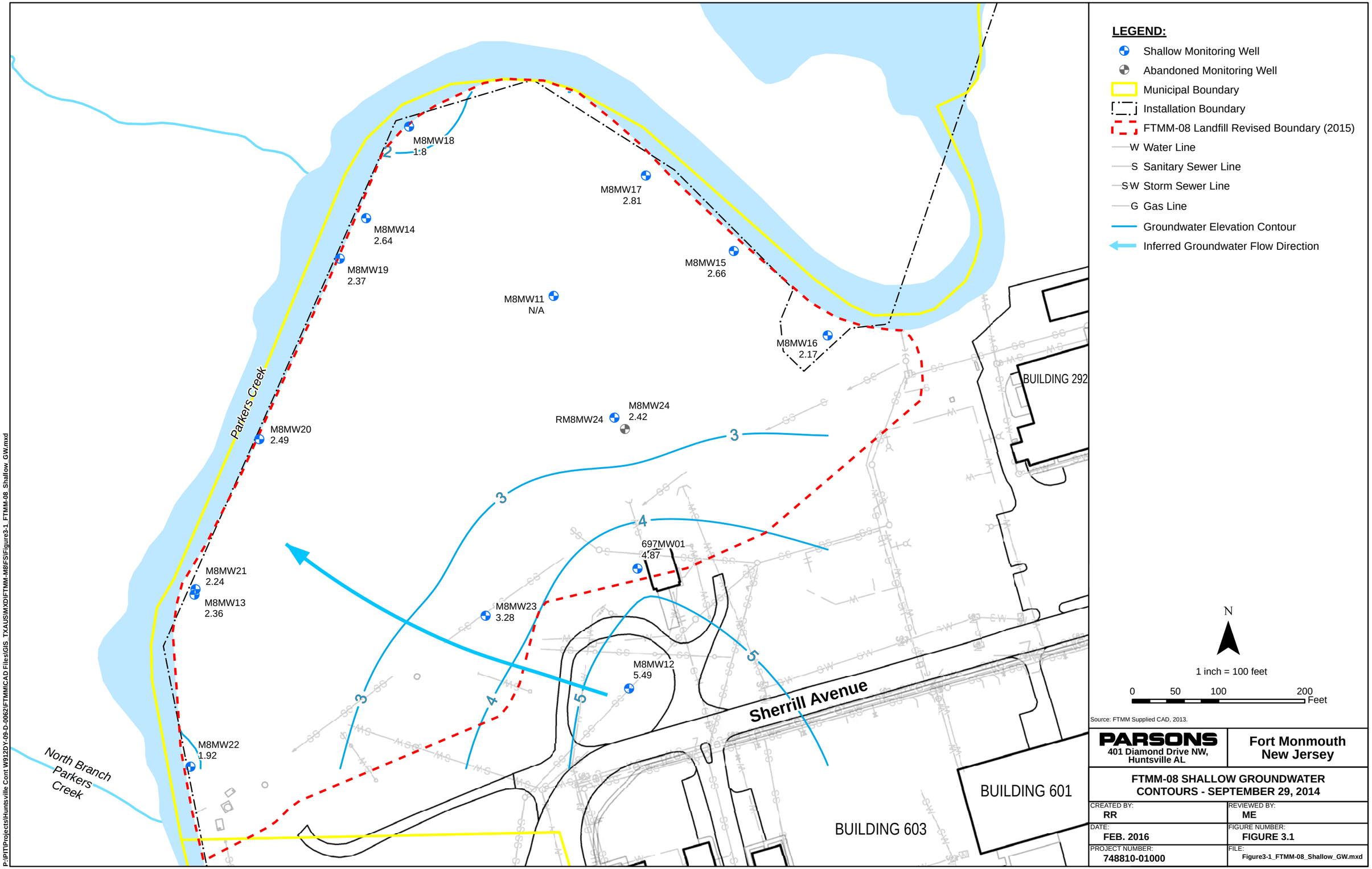
Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**

FTMM-08 SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

CREATED BY: RR	REVIEWED BY: RF
DATE: NOV. 2015	FIGURE NUMBER: FIGURE 2.3
PROJECT NUMBER: 748810-02050	FILE: Figure2-3_FTMM-08_SW_Sediment_Sample_Locations.mxd

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M8MW18
1.92
M8MW17
3.07
M8MW14
1.54
M8MW19
2.48
M8MW15
2.75
M8MW11
N/A
M8MW16
2.34
RM8MW24
2.22
M8MW24
M8MW20
1.48
697MW01
3.23
M8MW21
3.04
M8MW13
2.61
M8MW23
0.93
M8MW12
3.75
M8MW22
1.70
Parkers Creek
North Branch Parkers Creek
Sherrill Avenue
BUILDING 292
BUILDING 601
BUILDING 603
2
3

LEGEND:

- Shallow Monitoring Well
- Abandoned Monitoring Well
- Municipal Boundary
- Installation Boundary
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- Inferred Groundwater Flow Direction

NOTE:

Groundwater elevations in monitoring wells M8MW17, M8MW21,and M8MW23 were considered anomalous compared to the fluid levels at neighboring wells.

N

1 inch = 100 feet

0 50 100 200 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW,
Huntsville AL

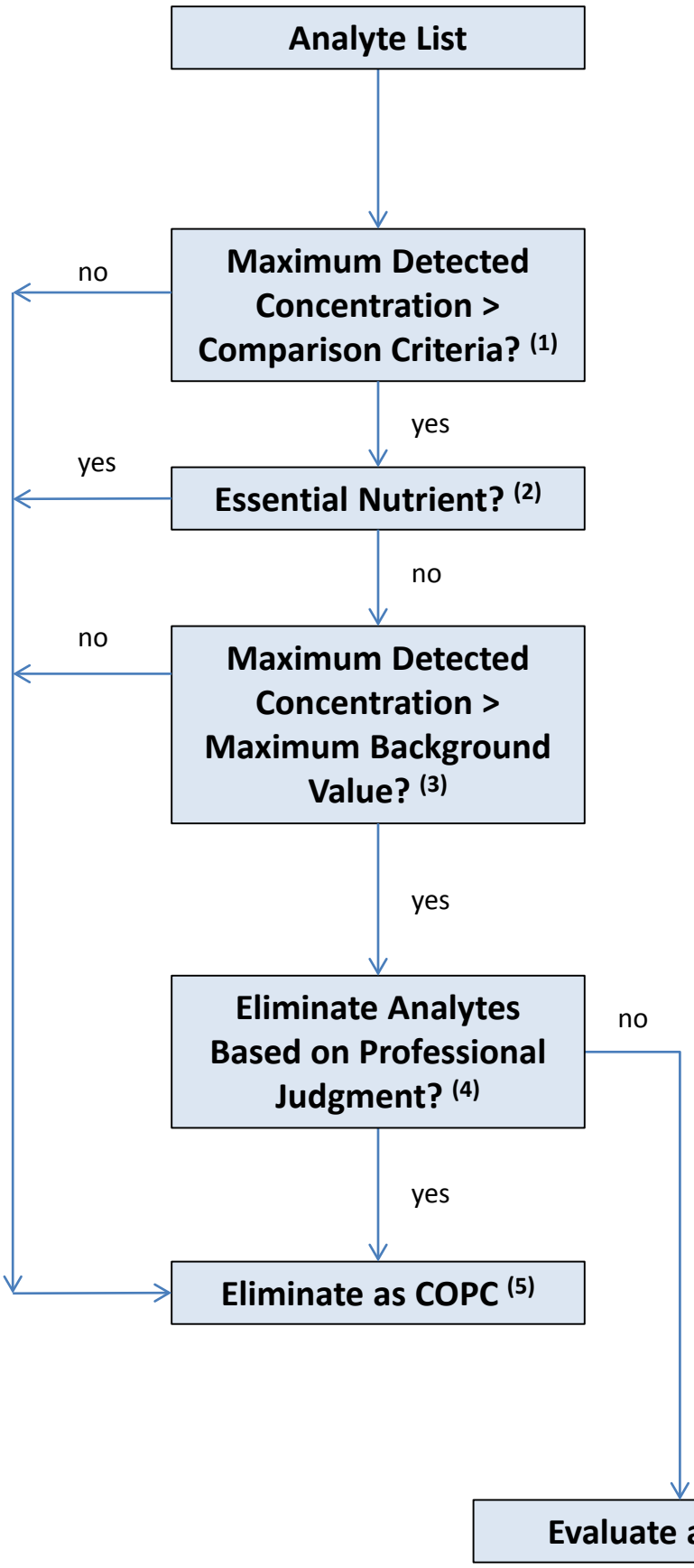
**Fort Monmouth
New Jersey**

FTMM-08 SHALLOW GROUNDWATER CONTOURS - OCTOBER 1, 2015

CREATED BY:	REVIEWED BY:
RR	ME
DATE:	FIGURE NUMBER:
FEB. 2016	FIGURE 3.2
PROJECT NUMBER:	FILE:
748810-01000	Figure3-2_FTMM-08_GW.mxd

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FIGURE 4.1
Summary of Method to Determine COPCs



(1) Preliminary Comparison Criteria are:

a. Soil: USEPA Residential Regional Screening Levels (RSLs) (Target Risk [TR] = 1 X 10^{-6} and Target Hazard Quotient [THQ] = 0.1)
b. Groundwater: USEPA Tapwater RSLs (TR = 1 X 10^{-6} and THQ = 0.1)
c. Surface Water: A hierarchy of USEPA human health criteria was used in the priority shown below.
    1. National Recommended Water Quality Criteria (NRWQC) (organism only),
    2. NRWQC (water + organism),
    3. Tapwater RSLs, and
    4. Maximum Contaminant Levels (MCLs)
d. Sediment: USEPA Residential RSLs for Soil (TR = 1 X 10^{-6} and THQ = 0.1)

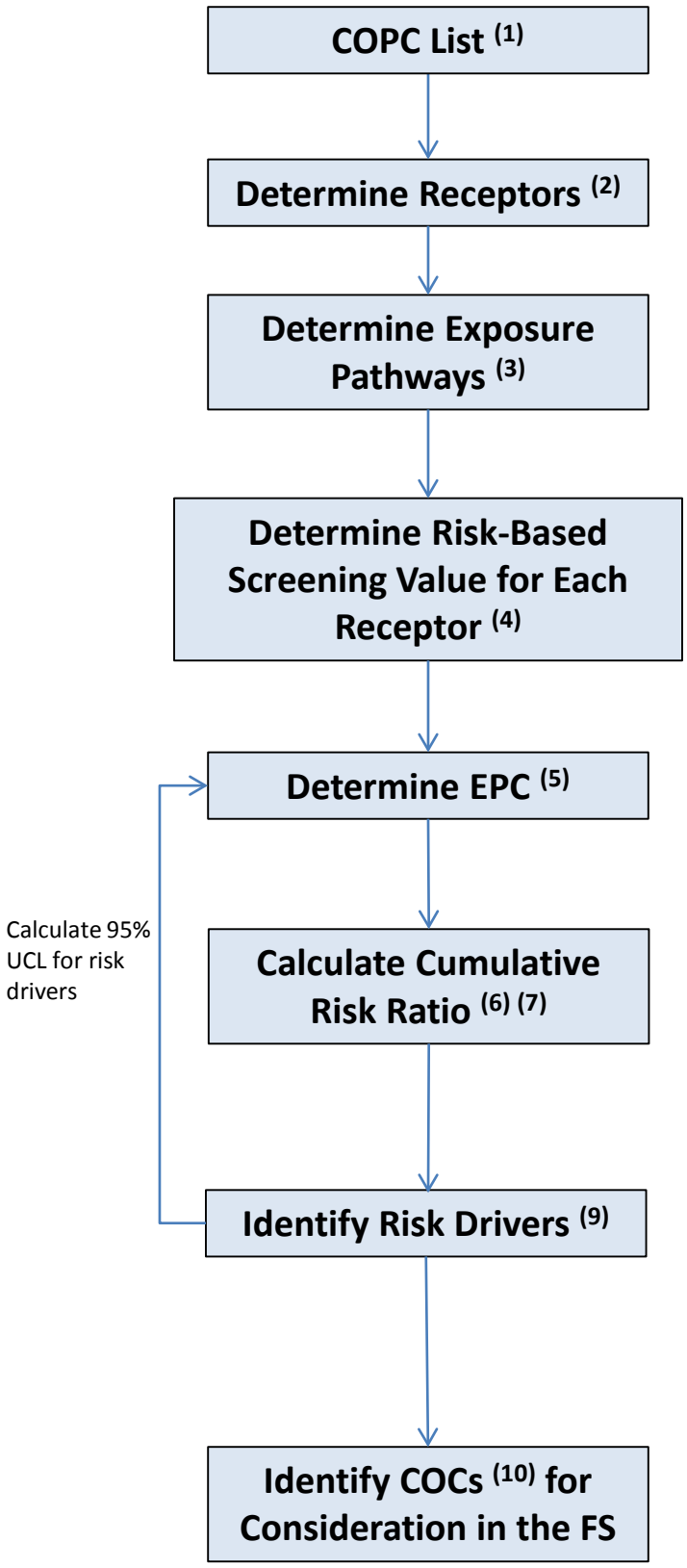
(2) Essential nutrients : calcium, iron, magnesium, sodium, and potassium

(3) Maximum background concentrations for metals were used because background data set was small (10 data points) and did not follow a parametric distribution. Weston (1995) concluded that the maximum background was approximately equivalent to a 95% Upper Tolerance Limit (UTL) for metals.

(4) Assessment as to whether exceedances of comparison criteria are representative of site-related contamination or are due to turbidity, upstream/upgradient sources, laboratory contamination, natural background conditions, properly applied pesticide usage, etc.

(5) Constituent of potential concern

Figure 6.1
Evaluation of Risk to Human Receptors



(1) COPCs determined from comparison to screening criteria (see previous flow chart)

(2) Receptors include current and future outdoor workers, utility workers, and future recreational users

(3) Soil: incidental ingestion, dermal contact and inhalation of particulates and volatiles
Groundwater: ingestion as drinking water and dermal contact
Surface water/sediment: incidental ingestion and dermal contact

(4) The screening values used in the risk ratio will be:

- Soil: USEPA Industrial worker regional screening level (RSL) (Target Risk (TR) = 1 X 10-6 and Target Hazard Quotient (THQ) = 1.0); site-specific recreational user screening level calculated for each analyte
- Groundwater: USEPA tap water RSL (TR = 1 X 10-6 and THQ=1.0) (which includes outdoor workers and recreational users)
- Surface water: USEPA National Recommended Water Quality Criteria, Human Health Criteria, Organism Only
- Sediment: USEPA Industrial worker RSL (TR = 1 X 10-6 and THQ=1.0)

(5) Exposure Point Concentration, initially the maximum detected concentration.

(6) Risk ratio calculated for carcinogens as:
Cumulative risk = Σ(Target Risk) x (EPC/Screening level)
For non-carcinogens as:
HI = Σ(Target Hazard Index) x (EPC/Screening level)

(7) Lead is evaluated based on the potential for exposure
to increase blood lead levels. Therefore, lead is not included in the cumulative non-carcinogenic and carcinogenic risk estimates. The risk ratio for lead is calculated as: lead risk = (EPC/Screening level)

(8) Risk drivers are the individual analytes that contribute more than 25% to the cumulative risk ratio. For risk drivers a 95% Upper Confidence Limit (UCL) will be calculated.

(9) Chemical of Concern

Figure 6.2
Human Health Conceptual Site Model
Site FTMM-08
Fort Monmouth, New Jersey

Potential Medium of Concern	Potential Route of Exposure	Potentially Exposed Population	Pathway Completeness and Assumptions
Soil	• Incidental ingestion of soil • Inhalation of volatiles and particulates from soil • Dermal contact with soil	• Current outdoor worker • Future outdoor worker • Future indoor worker • Future utility worker • Future recreational user	• FTMM-08 has been an inactive landfill since 1981. It is currently vacant and unused. Since 1981, there has been growth and stabilization of vegetation (grass, trees, and bushes) along the surface and boundaries of the landfill. Current activities at the site include infrequent visits to the site, such as those that would be performed during landfill cap inspection and maintenance. There are no new development activities occurring on site.The Fort Monmouth Economic Redevelopment Planning Authority reuse plan calls for the Fort Monmouth landfills to be designated as passive open space. • There are potentially complete exposure pathways associated with the current outdoor worker via incidental ingestion, inhalation of volatiles and particulates, and dermal contact. An exposure frequency of 225 days per year and an exposure duration of 25 years are assumed for this scenario. Thus, it is a very conservative evaluation for a potential current outdoor worker who would have much less exposure (*e.g.*, current worker that visits the site to perform mowing and landscaping activities). • There are potentially complete exposure pathways associated with the future outdoor worker via incidental ingestion, inhalation of volatiles and particulates, and dermal contact. This pathway is not included in the risk ratio analysis because it is assumed to be conservatively evaluated under the current outdoor worker scenario (based on the exposure frequency and exposure duration). • There are potentially complete exposure pathways associated with the future indoor worker, if commercial buildings were constructed on the site, via incidental ingestion, inhalation of volatiles and

Figure 6.2
Human Health Conceptual Site Model
Site FTMM-08
Fort Monmouth, New Jersey

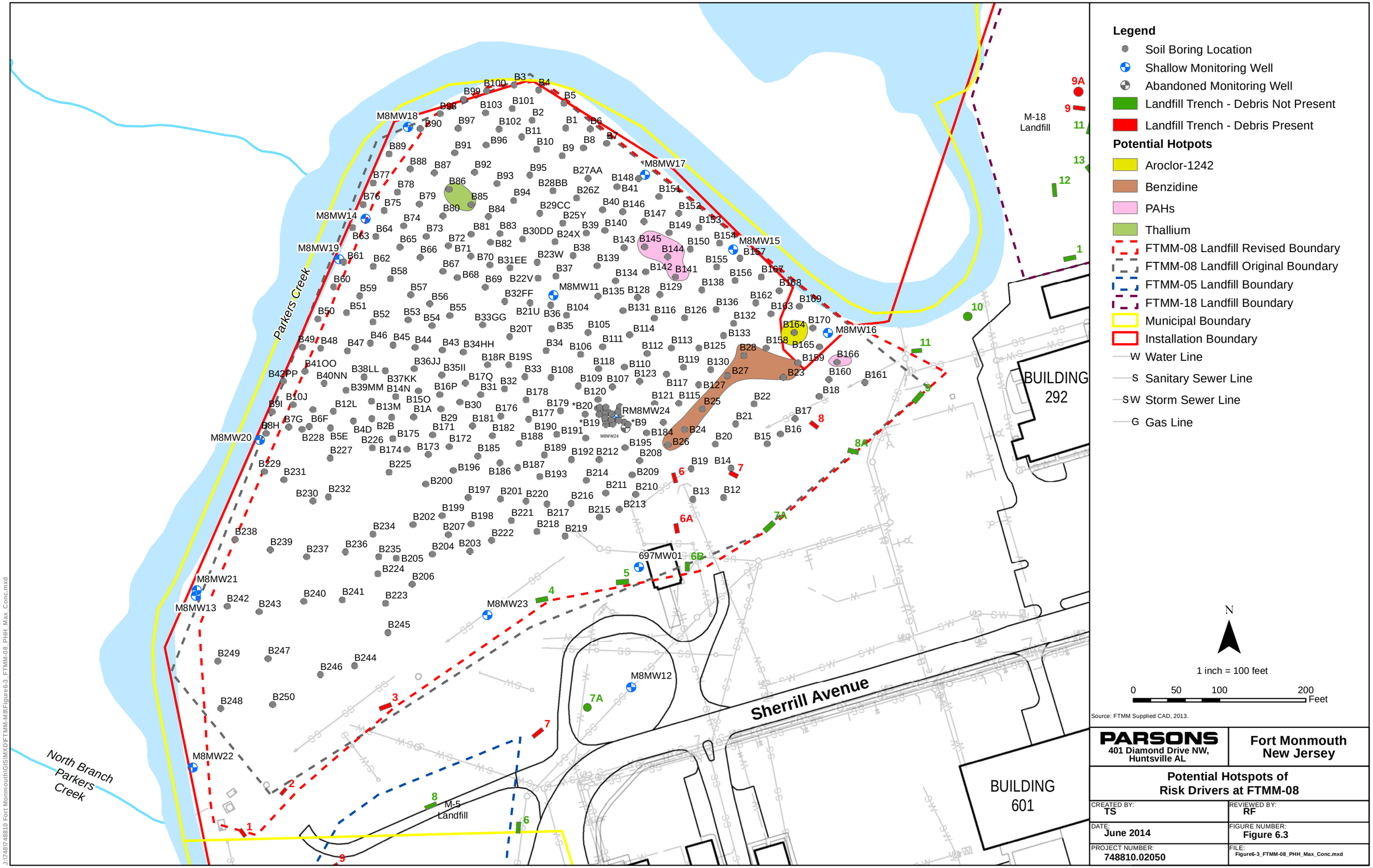
Potential Medium of Concern	Potential Route of Exposure	Potentially Exposed Population	Pathway Completeness and Assumptions
			particulates, and dermal contact. This pathway is not included in the risk ratio analysis because it is assumed to be conservatively evaluated under the current outdoor worker scenario (future indoor workers would have much less exposure to soil). • Future utility workers have a complete exposure pathway to soil via incidental ingestion, inhalation of volatiles and particulates, and dermal contact. An exposure frequency of 30 days per year for a one year project duration are assumed for this scenario. • Future recreational users have a complete exposure pathway to soil via incidental ingestion, inhalation of volatiles and particulates, and dermal contact, in part as an adolescent (aged 6-<16) and in part as an adult. An exposure frequency of 50 days per year (that is, onsite once a week for 50 weeks of the year) and an exposure duration of 24 years are assumed for this scenario. This potentially exposed population also includes persons who may be trespassing at the site, as they are expected to be on-site no more frequently than recreational users. • The site is not residential and is not planned for residential use. Therefore, residential exposure pathways are incomplete.

Figure 6.2
Human Health Conceptual Site Model
Site FTMM-08
Fort Monmouth, New Jersey

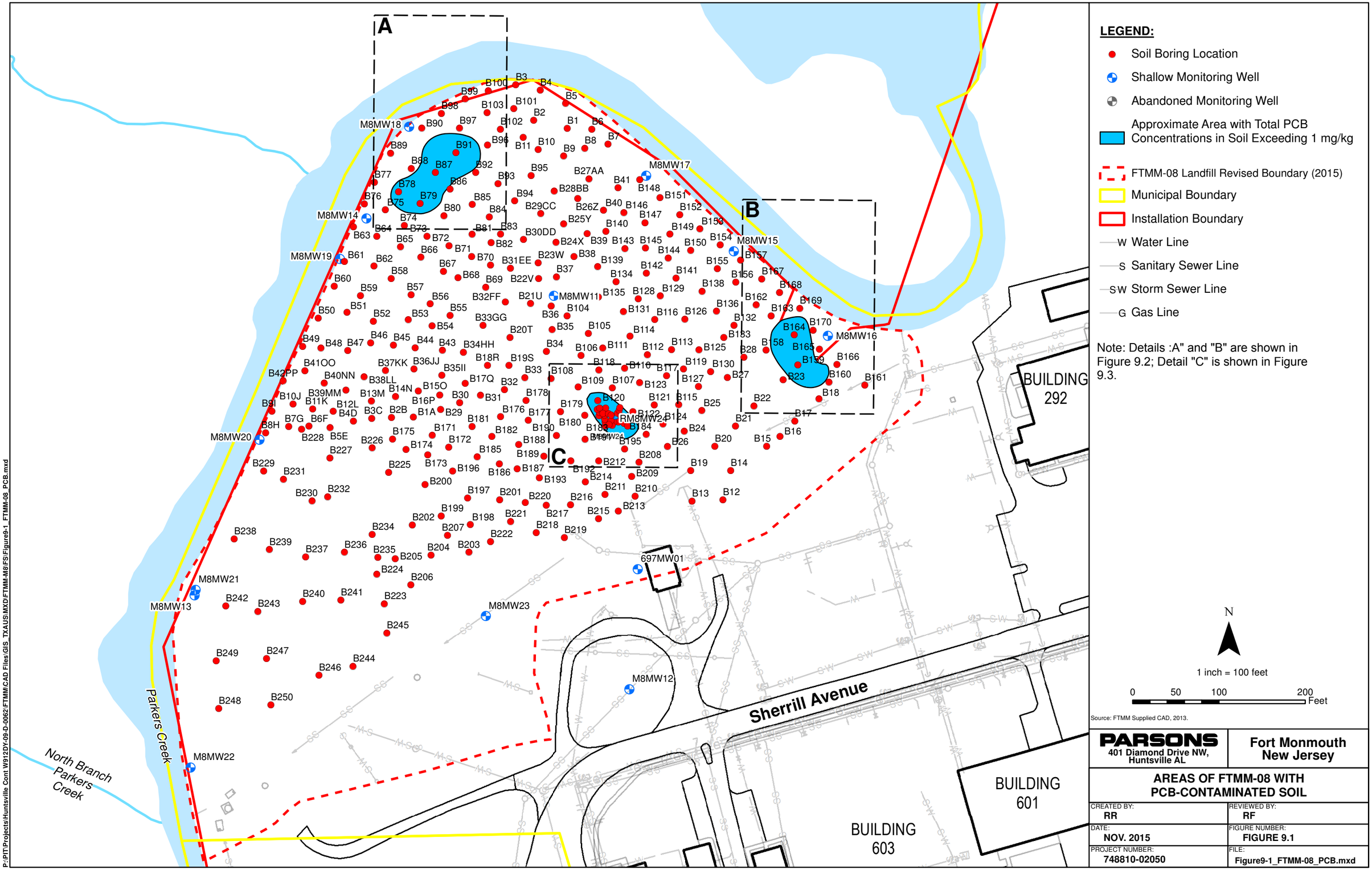
Potential Medium of Concern	Potential Route of Exposure	Potentially Exposed Population	Pathway Completeness and Assumptions
Surface Water/Sediment	• Ingestion of aquatic organisms (e.g., fish and shellfish) • Incidental ingestion of surface water/sediment • Inhalation of volatiles from sediment • Dermal contact with surface water/sediment	• Current outdoor worker • Future outdoor worker • Future utility worker • Future recreational user	• Mill Creek and Lafetra Creek are upstream of FTMM-08, and flow to Parkers Creek, downstream of FTMM-08. • No COPCs were identified in surface water or sediment. Surface water and sediment exposure pathways are incomplete for all receptors.

Figure 6.2
Human Health Conceptual Site Model
Site FTMM-08
Fort Monmouth, New Jersey

Potential Medium of Concern	Potential Route of Exposure	Potentially Exposed Population	Pathway Completeness and Assumptions
Groundwater	• Incidental ingestion of groundwater • Dermal contact with groundwater	• Future utility worker	• FTMM-08 is a landfill that was used for demolition waste disposal in the MP. It is currently vacant and unused. There are no new development activities occurring. The Fort Monmouth Economic Redevelopment Planning Authority reuse plan calls for the Fort Monmouth landfills to be designated as passive open space. • Future utility workers may be present on the site, involved in single short-term excavation projects at a given location, such as would be expected to be associated with repair or installation of utility lines. Utility workers are assumed to be on-site for 30 days of the year, for one year and would be expected to come in contact with shallow groundwater during excavation activities. Future utility workers have a complete exposure pathway to soil via incidental ingestion, inhalation of volatiles and particulates, and dermal contact. An exposure frequency of 30 days per year for a one year project duration are assumed for this scenario. • The site is not residential and is not planned for residential use. Therefore, residential exposure pathways are incomplete.



J:\748\748810 Fort Monmouth\GIS\MXD\FTMM-M8\Figure6-3_FTMM-08_PHH_Max_Conc.mxd



LEGEND:

- Soil Boring Location
- Shallow Monitoring Well
- Abandoned Monitoring Well
- Approximate Area with Total PCB Concentrations in Soil Exceeding 1 mg/kg
- FTMM-08 Landfill Revised Boundary (2015)
- Municipal Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

Note: Details :A" and "B" are shown in Figure 9.2; Detail "C" is shown in Figure 9.3.

N

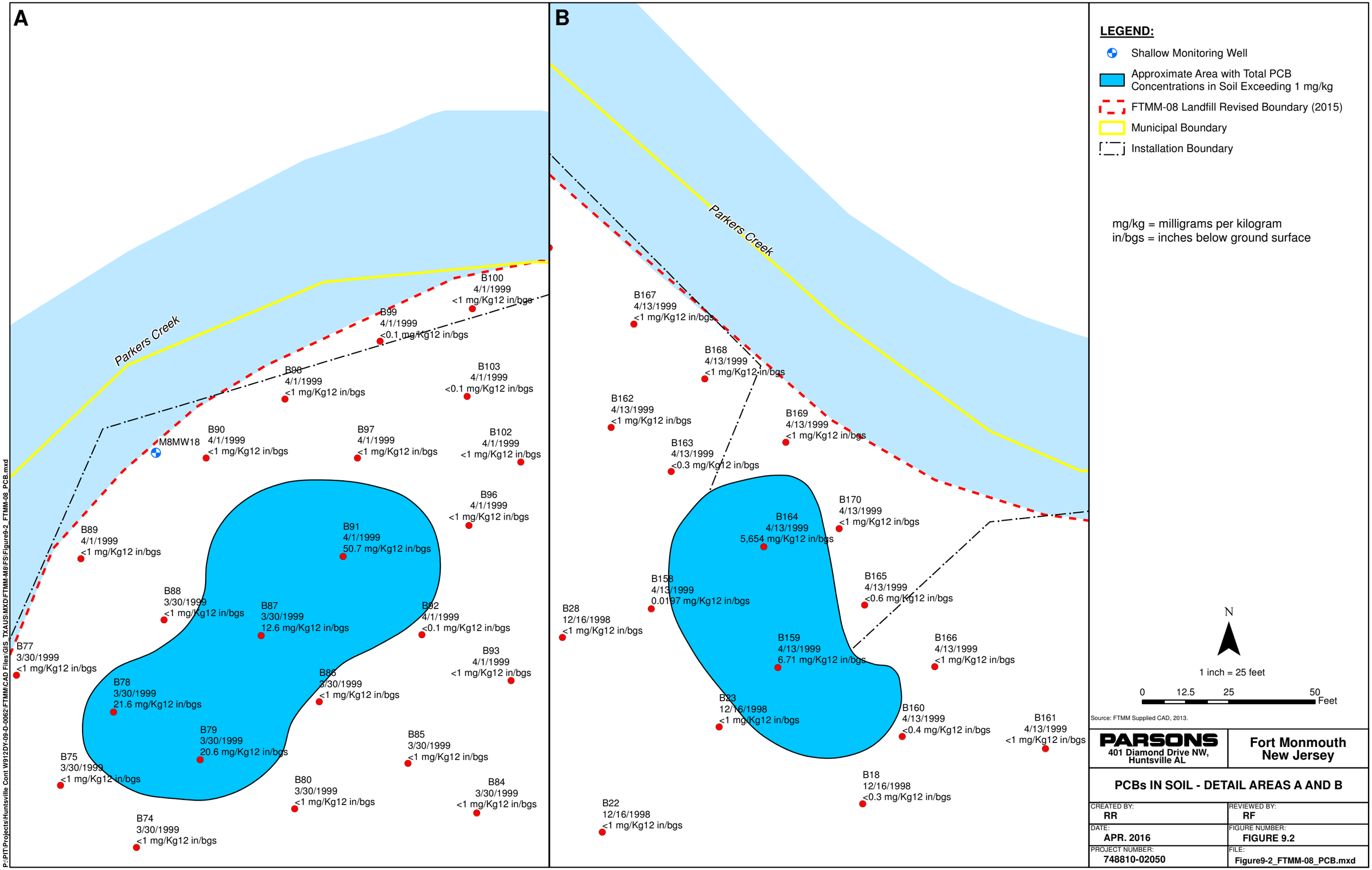
1 inch = 100 feet

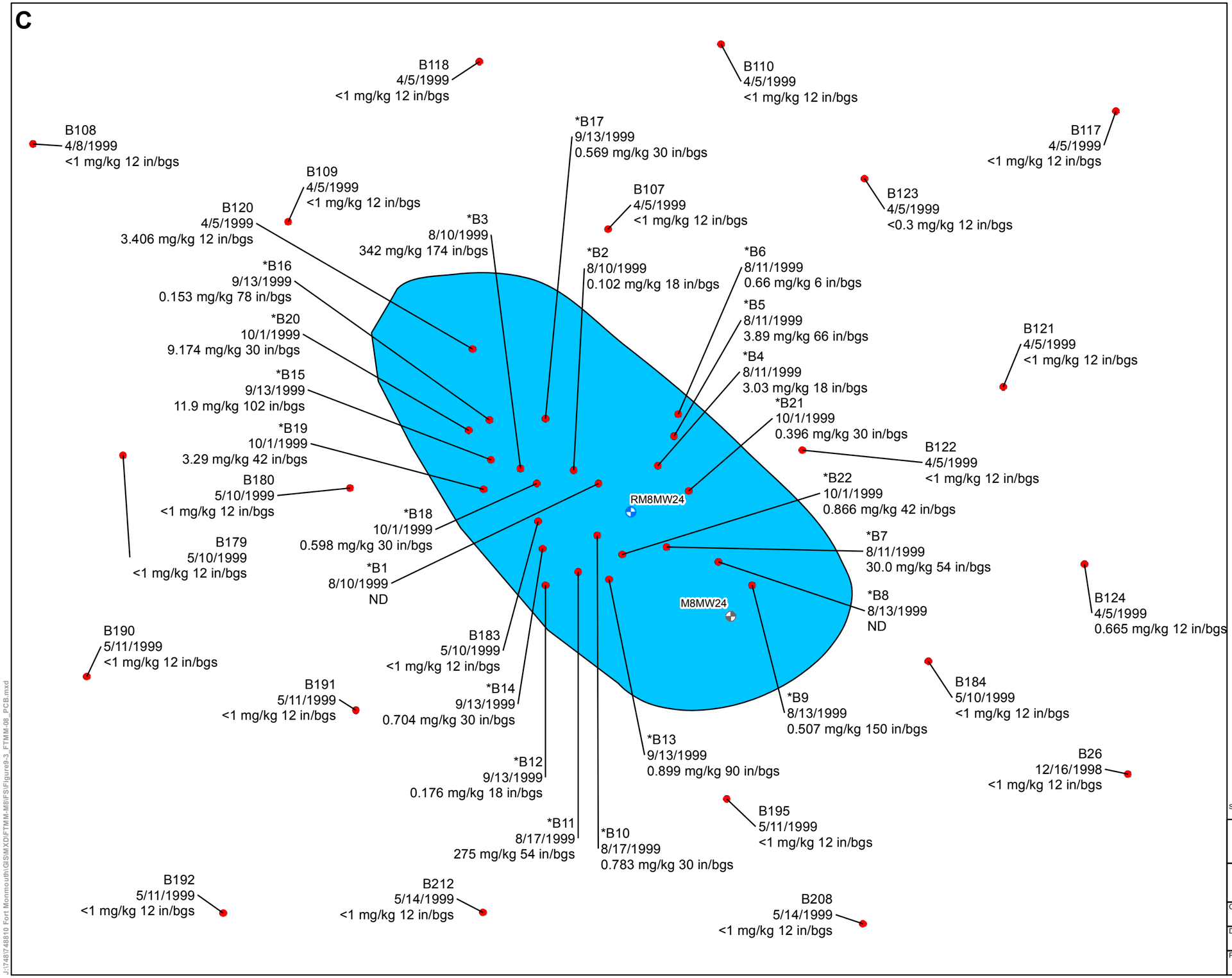
0 50 100 200 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**
AREAS OF FTMM-08 WITH PCB-CONTAMINATED SOIL	
CREATED BY: RR	REVIEWED BY: RF
DATE: NOV. 2015	FIGURE NUMBER: FIGURE 9.1
PROJECT NUMBER: 748810-02050	FILE: Figure9-1_FTMM-08_PCB.mxd

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A
B
Parkers Creek
Parkers Creek
M8MW18
B74 3/30/1999 <1 mg/Kg12 in/bgs
B75 3/30/1999 <1 mg/Kg12 in/bgs
B77 3/30/1999 <1 mg/Kg12 in/bgs
B78 3/30/1999 21.6 mg/Kg12 in/bgs
B79 3/30/1999 20.6 mg/Kg12 in/bgs
B80 3/30/1999 <1 mg/Kg12 in/bgs
B84 3/30/1999 <1 mg/Kg12 in/bgs
B85 3/30/1999 <1 mg/Kg12 in/bgs
B86 3/30/1999 <1 mg/Kg12 in/bgs
B87 3/30/1999 12.6 mg/Kg12 in/bgs
B88 3/30/1999 <1 mg/Kg12 in/bgs
B89 4/1/1999 <1 mg/Kg12 in/bgs
B90 4/1/1999 <1 mg/Kg12 in/bgs
B91 4/1/1999 50.7 mg/Kg12 in/bgs
B92 4/1/1999 <0.1 mg/Kg12 in/bgs
B93 4/1/1999 <1 mg/Kg12 in/bgs
B96 4/1/1999 <1 mg/Kg12 in/bgs
B97 4/1/1999 <1 mg/Kg12 in/bgs
B98 4/1/1999 <1 mg/Kg12 in/bgs
B99 4/1/1999 <0.1 mg/Kg12 in/bgs
B100 4/1/1999 <1 mg/Kg12 in/bgs
B102 4/1/1999 <1 mg/Kg12 in/bgs
B103 4/1/1999 <0.1 mg/Kg12 in/bgs
B18 12/16/1998 <0.3 mg/Kg12 in/bgs
B22 12/16/1998 <1 mg/Kg12 in/bgs
B23 12/16/1998 <1 mg/Kg12 in/bgs
B28 12/16/1998 <1 mg/Kg12 in/bgs
B158 4/13/1999 0.0197 mg/Kg12 in/bgs
B159 4/13/1999 6.71 mg/Kg12 in/bgs
B160 4/13/1999 <0.4 mg/Kg12 in/bgs
B161 4/13/1999 <1 mg/Kg12 in/bgs
B162 4/13/1999 <1 mg/Kg12 in/bgs
B163 4/13/1999 <0.3 mg/Kg12 in/bgs
B164 4/13/1999 5,654 mg/Kg12 in/bgs
B165 4/13/1999 <0.6 mg/Kg12 in/bgs
B166 4/13/1999 <1 mg/Kg12 in/bgs
B167 4/13/1999 <1 mg/Kg12 in/bgs
B168 4/13/1999 <1 mg/Kg12 in/bgs
B169 4/13/1999 <1 mg/Kg12 in/bgs
B170 4/13/1999 <1 mg/Kg12 in/bgs
LEGEND:
Shallow Monitoring Well
Approximate Area with Total PCB Concentrations in Soil Exceeding 1 mg/kg
FTMM-08 Landfill Revised Boundary (2015)
Municipal Boundary
Installation Boundary
mg/kg = milligrams per kilogram
in/bgs = inches below ground surface
N
1 inch = 25 feet
0 12.5 25 50 Feet
Source: FTMM Supplied CAD, 2013.
PARSONS
401 Diamond Drive NW, Huntsville AL
Fort Monmouth New Jersey
PCBs IN SOIL - DETAIL AREAS A AND B
CREATED BY: RR
REVIEWED BY: RF
DATE: APR. 2016
FIGURE NUMBER: FIGURE 9.2
PROJECT NUMBER: 748810-02050
FILE: Figure9-2_FTMM-08_PCB.mxd
P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS_TXAUS\MXD\FTMM-M8\FS\Figure9-2_FTMM-08_PCB.mxd



Legend

- Shallow Monitoring Well
- Abandoned Monitoring Well
- Approximate Area with Total PCB Concentrations in Soil Exceeding 1 mg/kg screening level. Because of the heterogenous nature of soil samples, this area includes some borings with maximum detections less than 1 mg/kg.

* Indicates borings installed from August to October 1999 (ATC, 2000). Results shown are the maximum concentrations detected.

ND = Not Detected
mg/kg = milligrams per kilogram
in/bgs = inches below ground surface

N

1 inch = 12 feet

0 2 4 6 8 10 12 14 16 18 20 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
PCBs in Soil – Detail Area C	
CREATED BY: TS	REVIEWED BY: JB
DATE: November 2013	FIGURE NUMBER: Figure 9.3
PROJECT NUMBER: 748810.02050	FILE: Figure9-3_FTMM-08_PCB.mxd

J:\748\748810 Fort Monmouth\GIS\MXD\FTMM-M8IFS\Figure9-3_FTMM-08_PCB.mxd

APPENDICES

Appendix A	Key Historical Reports and Background Information (also included electronically on CD)
Appendix B	Recreational User Screening Level Equations and Calculations and ProUCL Output (only included electronically on CD)
Appendix C	Feasibility Study Cost Estimate

APPENDIX A
KEY HISTORICAL REPORTS AND BACKGROUND INFORMATION

(Appendix A is also provided electronically on the CD of this report)

1. Parsons 2015 landfill delineation files: historic aerial photograph analysis, trench logs
2. Remedial Action Work Plan, Landfill M-8, Main Post, Fort Monmouth, New Jersey, September 2000
3. Remedial Action Work Plan, Landfill M-5, Main Post, Fort Monmouth, New Jersey, September 2000
4. Regional Geologic Cross-Sections
5. Table 5/Cover Material Summary for the Landfill Delineation Project
6. NJDEP Comments on the Final Baseline Groundwater Report (August 2013), July 3, 2014
7. NJDEP Approval Re: November 26, 2014 Response to Comments – On the Final Baseline Ground Water Sampling Report (August 2013), February 5, 2015
8. Historic Groundwater Sampling Results
9. M-8 Landfill Site Remedial Action Progress Report 4th Quarter 2002- 3rd Quarter 2004, Fort Monmouth, New Jersey, December 2005
10. M-8 Landfill Site Remedial Action Progress Report 4th Quarter 2004- 3rd Quarter 2005, Fort Monmouth, New Jersey, March 2009
11. M-8 Landfill Site Remedial Action Progress Report 4th Quarter 2005- 3rd Quarter 2006, Fort Monmouth, New Jersey, June 2009
12. M-8 Landfill Site Remedial Action Progress Report (4th Quarter 2006 through 4th Quarter 2008), Fort Monmouth, New Jersey, September 2010
13. M-8 Landfill Site Remedial Action Progress Report (1st Quarter 2009 through 4th Quarter 2010), Fort Monmouth, New Jersey, April 2012
14. Land Use Plan 2008
15. Remedial Investigation Report for Near-Surface Soils, M-5 Landfill Site, March 15, 2004
16. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December 1995.

APPENDIX B

RECREATIONAL USER SCREENING LEVEL EQUATIONS AND CALCULATIONS AND PROUCL OUTPUT

The equations used to calculate screening values for utility workers are shown below.

The following abbreviations are used:

- SL = Screening Level
- nc = noncarcinogenic
- ing = ingestion
- der = dermal
- inh = inhalation
- ca = carcinogenic

Units definitions:

- mg = milligrams
- kg = kilograms
- cm = centimeters
- cm^2 = square centimeters
- cm^3 = cubic centimeters
- m^3 = cubic meters
- m^2 = square meter
- s = seconds
- g = gram
- L = liter
- µg = microgram

SOIL:

Utility Worker. The utility workers would be exposed to surface soil and subsurface soil (e.g. during trenching activities) through incidental ingestion of soil, dermal contact with soil, and inhalation of volatiles and particulates from soil.

The default parameters for the utility worker are shown in Table 1. The inhalation default parameters are shown in Table 2. The soil screening levels for the utility worker, in mg/kg, are calculated as:

Noncarcinogenic - adult

Ingestion

$$SL_{nc-ing} = \frac{(THQ)\ (AT_{nc})\ (BW_{adult})}{(EF_{adult})\ (ED_{adult})\ \left(\frac{1}{RfD_O}\right)\ (IRS_{adult})\ (CF_{soil})}$$

Dermal

$$SL_{nc-der} = \frac{(THQ)\ (AT_{nc})\ (BW_{adult})}{(EF_{adult})\ (ED_{adult})\ \left(\frac{1}{(RfD_O)\ (GIABS)}\right)\ (SA_{adult})\ (AF_{adult})\ (ABS_d)\ (CF_{soil})}$$

Inhalation

$$SL_{nc-inh} = \frac{(THQ)\,(AT_{nc})}{(EF_{adult})\,(ED_{adult})\,(ET)\left(\frac{1}{RfC}\right)\left(\frac{1}{VF_s} + \frac{1}{PEF}\right)}$$

Total

$$SL_{nc-total} = \frac{1}{\left(\frac{1}{SL_{nc-ing}} + \frac{1}{SL_{nc-der}} + \frac{1}{SL_{nc-inh}}\right)}$$

Carcinogenic - adult

Ingestion

$$SL_{ca-ing} = \frac{(TR)\,(AT_c)\,(BW_{adult})}{(EF_{adult})\,(ED_{adult})\,(CSF_o)\,(IRS_{adult})\,(CF_{soil})}$$

Dermal

$$SL_{ca-der} = \frac{(TR)\,(AT_c)\,(BW_{adult})}{(EF_{adult})\,(ED_{adult})\left(\frac{CSF_O}{GIABS}\right)(SA_{adult})\,(AF_{adult})\,(ABS_d)\,(CF_{soil})}$$

Inhalation

$$SL_{ca-inh} = \frac{(TR)\,(AT_c)}{(EF_{adult})\,(ED_{adult})\,(ET)\;\;(IUR)\,(CF_{air})\left(\frac{1}{VF_s} + \frac{1}{PEF}\right)}$$

Total

$$SL_{ca-total} = \frac{1}{\left(\frac{1}{SL_{ca-ing}} + \frac{1}{SL_{ca-der}} + \frac{1}{SL_{ca-inh}}\right)}$$

Supporting Equations

Particulate Emission Factor, in m^3 air / kg soil

$$PEF = \left({}^{Q}/_{C}\right)\left(\frac{3{,}600\ {}^{seconds}/_{hour}}{(0.036)\ (1-V)\ \left(\left(\frac{U_m}{U_t}\right)^3\right)[F(x)]}\right)$$

Volatilization Factor, in m^3 air / kg soil

$$VF_s = \left({}^{Q}/_{C}\right)\left(\frac{\left((3.14)\ (D_A)\ (T)\right)^{1/2}\ (CF_{vol})}{\left((2\ )\ (\rho_b)\ \ (D_A)\right)}\right)$$

Where:

$$D_A = \frac{\left(\left(\theta_a^{\,10/3}\right)\ (D_i)\ \left(H'\right)\right) + \left(\left(\theta_w^{\,10/3}\right)\ (D_w)\right)}{(n^2)\ \left(\left((\rho_b)\ (K_d)\right) + \ \theta_w + \ \left((\theta_a)\ (H')\right)\right)}$$

GROUNDWATER:

Utility Worker. The utility worker would be exposed to groundwater encountered during trenching activities through incidental ingestion of water, dermal contact with water, and inhalation of volatiles from water.

The default exposure parameters for groundwater are shown in Table 3. The groundwater screening levels for the utility worker, in µg/L, are calculated as:

Noncarcinogenic – adult

Ingestion

$$SL_{nc-ing} = \frac{(THQ)\,(AT_{nc})\,(BW_{adult})\left(\frac{1000\mu g}{mg}\right)}{(EF_{adult})\,(ED_{adult})\,\left(\frac{1}{RfD_O}\right)\,(IRW_{adult})}$$

Dermal

For Inorganics:

$$SL_{nc-der} = \frac{(DA_{event})\,\left(\frac{1000cm^3}{L}\right)}{(K_p)\,(t_{event})}$$

For Organics:

$$If\ t_{event} \le t^*, then\ SL_{nc-der} = \frac{(DA_{event})\,\left(\frac{1000cm^3}{L}\right)}{(2)\,(FA)\,(K_p)\sqrt{\frac{((6)\,(\tau_{event})\,(t_{event}))}{\pi}}}$$

$$If\ t_{event} > t^*, then\ SL_{nc-der} = \frac{(DA_{event})\,\left(\frac{1000cm^3}{L}\right)}{(FA)\,(K_p)\left[\frac{t_{event}}{(1+B)} + \left((2)\,(\tau_{event})\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right)\right]}$$

Where DA_{event}, in µg/cm^2-event

$$DA_{event} = \frac{(THQ)\,(AT_{nc})\,(BW_{adult})\,\left(\frac{1000\mu g}{mg}\right)}{\left(\frac{1}{(RfD_O)\,(GIABS)}\right)\,(ED_{adult})\,(EV)\,(EF_{adult})\,(SA_{adult})}$$

Inhalation

$$SL_{nc-inh} = \frac{(THQ)\,(AT_{nc})\left(\frac{1000\mu g}{mg}\right)}{(EF_{adult})\,(ED_{adult})\,(t_{event})\left(\frac{1}{RfC}\right)\,(K)}$$

Total

$$SL_{nc-total} = \frac{1}{\left(\frac{1}{SL_{nc-ing}} + \frac{1}{SL_{nc-der}} + \frac{1}{SL_{nc-inh}}\right)}$$

Carcinogenic – adult

Ingestion

$$SL_{ca-ing} = \frac{(TR)\,(AT_c)\,(BW_{adult})\left(\frac{1000\mu g}{mg}\right)}{(IRW_{adult})\,(EF_{adult})\,(ED_{adult})\,(CSF_O)}$$

Dermal

For Inorganics:

$$SL_{ca-der} = \frac{(DA_{event})\left(\frac{1000cm^3}{L}\right)}{(K_p)\,(t_{event})}$$

For Organics:

$$If\ t_{event} \le t^*, then\ SL_{ca-der} = \frac{(DA_{event})\left(\frac{1000cm^3}{L}\right)}{(2)\,(FA)\,(K_p)\sqrt{\frac{((6)\,(\tau_{event})\,(t_{event}))}{\pi}}}$$

$$If\ t_{event} > t^{*}, then\ SL_{ca-der} = \frac{(DA_{event})\left(\frac{1000cm^3}{L}\right)}{(FA)\left(K_p\right)\left[\frac{t_{event}}{(1+B)} + \left((2)\left(\tau_{event}\right)\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right)\right]}$$

Where DA_{event} is µg/cm^2-event:

$$DA_{event} = \frac{(TR)\,(AT_c)\,(BW_{adult})\left(\frac{1000\mu g}{mg}\right)}{\left(\frac{CSF_o}{GIABS}\right)\,(EF_{adult})\,(EV)\,(ED_{adult})\,(SA_{adult})}$$

Inhalation

$$SL_{ca-inh} = \frac{(TR)\,(AT_c)}{(EF_{adult})\,(ED_{adult})\,(t_{event})\left(\frac{1\ day}{24\ hours}\right)(IUR)\,(K)}$$

Total

$$SL_{ca-total} = \frac{1}{\left(\frac{1}{SL_{ca-ing}} + \frac{1}{SL_{ca-der}} + \frac{1}{SL_{ca-inh}}\right)}$$

The equations to calculate screening values for recreational users are shown below.

The following abbreviations are used:

- nc = non-carcinogenic
- ing = ingestion
- der = dermal
- inh = inhalation
- ca = carcinogenic
- mu = mutagenic
- adl = adolescent
- adjust = adjusted

SOIL

Non-carcinogenic adolescent

Ingestion

$$SL_{nc-ing} = \frac{(THQ)\,(AT)\,(ED_{adl})\,(BW_{adl})}{(EF)\,(ED)\left(\frac{1}{RfD_O}\right)\,(IR_{adl})\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Dermal

$$SL_{nc-der} = \frac{(THQ)\,(AT)(ED_{adl})\,(BW_{adl})}{(EF)\,(ED)\left(\frac{1}{RfD_O\,\times GIABS}\right)\,(SA_{adl})\,(AF_{adl})\,(\,ABS_d\,)\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Inhalation

$$SL_{nc-inh} = \frac{(THQ)\,(AT)\,(ED_{adl})}{(EF)\,(ED_{adl})\,(ET_{adl})\left(\frac{1}{RfC}\right)\left(\frac{1}{VF_s} + \frac{1}{PEF_w}\right)}$$

Total

$$SL_{nc-total} = \frac{1}{\frac{1}{SL_{nc-ing}} + \frac{1}{SL_{nc-der}} + \frac{1}{SL_{nc-inh}}}$$

Non-carcinogenic adult

Ingestion

$$SL_{nc-ing} = \frac{(THQ)\,(AT)\,(ED_{adult})\,(BW_{adult})}{(EF)\,(ED)\left(\frac{1}{RfD_O}\right)(IR_{adult})\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Dermal

$$SL_{nc-der} = \frac{(THQ\,)\,(AT)\,(ED_{adult})\,(BW_{adult})}{(EF)\,(ED)\left(\frac{1}{RfD_O \times GIABS}\right)(SA_{adult})\,(AF_{adult})\,(ABS_d\,)\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Inhalation

$$SL_{nc-inh} = \frac{(THQ)\,(AT)\,(ED_{adult})}{(EF)\,(ED_{adult})\,(ET_{adult})\left(\frac{1}{RfC}\right)\left(\frac{1}{VF_s} + \frac{1}{PEF_w}\right)}$$

Total

$$SL_{nc-total} = \frac{1}{\frac{1}{SL_{nc-ing}} + \frac{1}{SL_{nc-der}} + \frac{1}{SL_{nc-inh}}}$$

Carcinogenic

Ingestion

$$SL_{ca-ing} = \frac{(TR)\,(AT)\,(LT)}{(CfS_O)\,(IFS_{adj})\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Where:

$$IFS_{adjust} = \frac{(ED_{adl}\,)\,(EF_{adl}\,)\,(IRS_{adl})}{BW_{adl}} + \frac{(ED_{adult}\,)\,(EF_{adult}\,)\,(IRS_{adult})}{BW_{adult}}$$

Dermal

$$SL_{ca-der} = \frac{(TR)\,(AT)\,(LT)}{\left(\frac{CsF_O}{GIABS}\right)(DFS_{adj})\,(ABS_d)\left(\frac{10^{-6}kg}{1\,mg}\right)}$$

Where:

$$DFS_{adjust} = \frac{(ED_{adl})(EF_{adl})(SA_{adl})(AF_{adl})}{BW_{adl}} + \frac{(ED_{adult})(EF_{adult})(SA_{adult})(AF_{adult})}{BW_{adult}}$$

Inhalation

$$SL_{ca-inh} = \frac{(TR)(AT)(LT)}{(EF_{rec})(ED_{rec})(ET_{rec})\left(\frac{1\ day}{24\ hours}\right)(IUR)\left(\frac{1000\mu g}{mg}\right)\left(\frac{1}{VF_s} + \frac{1}{PEF}\right)}$$

Total

$$SL_{ca-total} = \frac{1}{\frac{1}{SL_{ca-ing}} + \frac{1}{SL_{ca-der}} + \frac{1}{SL_{ca-inh}}}$$

Supporting Equations

Particulate Emission Factor

$$PEF = \left(\frac{Q}{C}\right)\left(\frac{3{,}600\ {seconds}/{hour}}{(0.036)(1-V)\left(\frac{U_m}{U_t}\right)^3 [F(x)]}\right)$$

Volatilization Factor

$$VF = \left(\frac{Q}{C}\right)\left(\frac{\left((3.14)(D_A)(T)\right)^{1/2}(CF_{vol})}{\left((2)(\rho_b)(D_A)\right)}\right)$$

Where:

$$\left(\left(\left(\theta_a^{10/3}\right)(D_i)(H')\right) + \left(\left(\theta_w^{10/3}\right)(D_w)\right)\right) \Big/ n^2$$

$$D_A = \frac{}{\left((\rho_b)(K_d)\right) + \theta_w + \left((\theta_a)(H')\right)}$$

Summary of Exposure Assumptions for Soil for each Potential Receptor

Abbreviation	Parameter	Units	Outdoor Worker	Sources	Rationale	Utility Worker	Sources	Rationale	Recreational User	Sources	Rationale
THQ	Target Hazard Quotient	unitless	1	USEPA, 2014b	USEPA RSL Users Guide, Table 1	1	USEPA, 2014b	USEPA RSL Users Guide, Table 1	1	USEPA, 2014b	USEPA RSL Users Guide, Table 1
AT_{nc}	Averaging Time – noncarcinogens	days	9,125	USEPA, 1989	Exhibit 6-9; Period over which exposure is averaged; ED expressed in days (25 years x 365 days)	365	USEPA, 2014c	Source references USEPA, 1989, page 6-23; ED expressed in days (1 year x 365 days)	5,110 (adult) 3,650 (adl)	USEPA, 1989	Exhibit 6-9; Period over which exposure is averaged; ED expressed in days (14 years adult x 365 days or 10 years adl x 365 days)
AT_c	Averaging Time – carcinogens	days	25,550	USEPA, 2014c as "lifetime"	70-year lifetime expressed in days (70 years x 365 days)	25,550	USEPA, 2014c as "lifetime"	70-year lifetime expressed in days (70 years x 365 days)	25,550	USEPA, 2014c as "lifetime"	70-year lifetime expressed in days (70 years x 365 days)
ED	Exposure Duration	years	25	USEPA, 2014c	Source references USEPA, 1991a, Page 15; RME scenario for industrial worker	1	USEPA, 2002	Exhibit 5-1; USEPA, default value for construction workers	14 (adult) 10 (adl)	Professional judgment	Adult: Represents the number of years returning to the same location as an adult, assumes 16 to <30 years of age Adl: Represents the number of years returning to the same location as an adolescent; assumes 6 to <16 years of age
BW	Body Weight	kg	80	USEPA, 2014c	Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 – 78	80	USEPA, 2014c	Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 – 78	80 (adult) 44 (adl)	Adult: USEPA, 2014c Adl: USEPA, 2011	Adult: Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 to 78 years of age Adl: Table 8-3, mean of body weights for 6 to <11 and 11 to <16 years
EF	Exposure Frequency	days/year	225	USEPA, 2014c	Source references USEPA, 1991, page 15, outdoor worker RME scenario	30	Professional judgment	Assumes project of one month duration	50	Professional judgment	Assumes recreational user on site once per week every week of the year, except for 2 weeks vacation
IRS	Soil Ingestion Rate	mg/day	100	USEPA, 2014c	Source references USEPA, 1991, page 15, same as adult resident	330	USEPA, 2014b	Source references USEPA, 2002, Exhibit 5-1, USEPA recommended value for construction worker	50 (adult) 100 (adl)	USEPA, 2011	Adult: Table 5-1, General Population Central Tendency, Adult soil and dust ingestion Adl: Table 5-1, General Population Central Tendency, soil and dust ingestion for 6 to <21 years of age
EV	Event Frequency	events/day	1	USEPA, 2004a	Exhibit 3-5, industrial RME scenario	1	USEPA, 2004a	Exhibit 3-5, industrial RME scenario	1	Professional judgment	Recreational users are expected to be onsite one event per day
FI	Fraction Ingested	unitless	1	USEPA, 1989, page 6-39	Assumes that all of contaminated soil contacted is from the site	1	USEPA, 1989, page 6-39	Assumes that all of contaminated soil contacted is from the site	1	USEPA, 1989, page 6-39	Assumes that all of contaminated soil contacted is from the site
CF_s	Conversion Factor-soil	kg/mg	1E-06	USEPA, 1989	Exhibit 6-14	1E-06	USEPA, 1989	Exhibit 6-14	1E-06	USEPA, 1989	Exhibit 6-14

Summary of Exposure Assumptions for Soil for each Potential Receptor (Continued)

Abbreviation	Parameter	Units	Outdoor Worker	Sources	Rationale	Utility Worker	Sources	Rationale	Recreational User	Sources	Rationale
GIABS	Gastrointestinal Absorption Factor (also, OAF = Oral Absorption Factor)	unitless	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed in gastrointestinal tract	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed in gastrointestinal tract	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed in gastrointestinal tract
SA	Exposed Skin Surface Area	cm^2	3,470	USEPA, 2014c	Source references USEPA, 2011, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female adults); assumes wearing shoes and long pants	3,470	USEPA, 2014c	Source references USEPA, 2011, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female adults); assumes wearing shoes and long pants	3,470 (adult) 2,160 (adl)	USEPA, 2014c; USEPA, 2011	Adult: Source references USEPA, 2011, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female adults); assume wearing shoes and long pants Adl: Table 7-2, weighted average of mean values for head, hands, and arms (mean value for arm times 45% to account for forearm) (Age 6 to <16 years of age); assume wearing shoes and long pants
AF	Adherence Factor	mg/cm^2	0.12 (1)	USEPA, 2014c	Source references USEPA, 2011, Table 7-2, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult commercial/ industrial activities	0.20	USEPA, 2011	Table 7-2, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult utility worker number 1	0.09 (adult) 0.04 (adl) (1)	USEPA, 2011	Adult: Table 7-2, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult Gardener number 1 Adl: Table 7-2, Table 7-4, and Section 7.2.2; arithmetic mean of weighted average of body part-specific (hands, forearms, face, mean adherence factors for child playing outdoor sports
ABS_d	Dermal Absorption Factor	unitless	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed dermally; USPEA RSL Summary Table-	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed dermally; USPEA RSL Summary Table -	Chemical-specific	USEPA, 2015b	Fraction of contaminant absorbed dermally; USPEA RSL Summary Table -
ET	Exposure Time	hour/day	8	USEPA, 2014c	The work day	8	USEPA, 2014c	The work day	2	Professional judgment	Assumes recreational users on site for two hours each event
VF	Volatilization Factor-soil	m^3/kg	Chemical Specific	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document	Chemical Specific	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document	Chemical specific	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document
PEF	Particulate Emission Factor	m^3/kg	3.23E+09	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document	3.23E+09	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document	3.23E+09	USEPA, 2002, 2014b	Calculated using inputs in Table 4 of this document

Summary of Exposure Parameters for VF / PEF

Abbreviation	Parameter	Units	All Receptors	Sources	Rationale
Q/C	Inverse of mean concentration at center of square source area for Philadelphia, Pennsylvania	g/m^2-s per kg/m^3	87.36898	USEPA, 2014b	Source references USEPA, 2002, Exhibit D-2
V	Fraction of vegetative cover	unitless	0.5 (50%)	USEPA, 2014b	Source references USEPA, 2002, Equation 4-5
U_m	Mean annual wind speed	m/s	4.69	USEPA, 2014b	Source references USEPA, 2002, Equation 4-5
U_t	Equivalent threshold value of wind speed at 7m	m/s	11.32	USEPA, 2014b	Source references USEPA, 2002, Equation 4-5
F(x)	Function Dependent on U_m /U_t	unitless	0.194	USEPA, 2014b, Cowherd et. al. 1985	Source references USEPA, 2002, Equation 4-5

Summary of Exposure Parameters for VF / PEF (Continued)

Abbreviation	Parameter	Units	All Receptors	Sources	Rationale
D_A	Apparent diffusivity	cm^2/s	Chemical-specific	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
C_{sat}	Soil saturation concentration	mg/kg	Chemical-specific	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
T	Exposure interval	seconds	9.5E+08	USEPA, 2002	USEPA, 2002, Equation 4-8
ρ_b	Dry soil bulk density	g/cm^3	1.5	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
θ_a	Air-filled Soil Porosity	L_{air}/L_{soil}, calculated as $n - \theta_w$	0.28	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
n	Total Soil Porosity	L_{pore}/L_{soil}	0.43	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
θ_w	Water-filled Soil Porosity	L_{water}/L_{soil}	0.15	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8

Summary of Exposure Parameters for VF / PEF (Continued)

Abbreviation	Parameter	Units	All Receptors	Sources	Rationale
ρ_s	Soil particle density	g/cm^3	2.65	USEPA, 2014b	Source references USEPA, 2002, Equation 4-8
D_i	Diffusivity in Air	cm^2/second	Chemical-specific	USEPA, 2015c	--
H'	Henry's law constant	Dimensionless	Chemical-specific	USEPA, 2015c	--
D_w	Diffusivity in Water	cm^2/second	Chemical-specific	USEPA, 2015c	--
K_d	Soil-water Partition Coefficient	L/kg	Chemical-specific	USEPA, 2015c	Calculated as K_{OC} X f_{OC}
K_{OC}	Soil organic carbon-water Partition Coefficient	L/kg	Chemical-specific	USEPA, 2015c	--
f_{OC}	Organic Carbon Content of Soil	g/g	0.006 (0.006%)	USEPA, 2014b	Source references USEPA, 2002, Equation 5-14
S	Water Solubility	mg/L	Chemical-specific	USEPA, 2015c	--

Summary of Exposure Parameters for Groundwater or Surface Water

Abbreviation	Parameter	Units	Outdoor Worker	Sources	Rationale	Utility Worker	Sources	Rational	Recreational User	Sources	Rationale
IRW	Groundwater or Surface Water Ingestion	L/day	0.02	USEPA, 2014d	Section 4.5; During wading activities, water ingestion of 10 ml/hour for adults, converted to L/day assuming the outdoor worker is in contact with surface water for 2 hours per day	0.02	USEPA, 2014d	Section 4.5; During wading activities, water ingestion of 10 ml/hour for adults, converted to L/day assuming the utility worker is in contact with groundwater in a trench for 2 hours per day	0.02 (adult) 0.02(adl)	USEPA, 2014d	Section 4-5; During wading activities, water ingestion of 10 ml/hour for adolescents and adults, converted to L/day assuming the recreational user is in contact with surface water for 2 hours per day
K_p	Permeability Constant	cm/hour	Chemical-specific	USEPA, 2015c	Dermal permeability coefficient of compound in water	Chemical-specific	USEPA, 2015c	Dermal permeability coefficient of compound in water	Chemical-specific	USEPA, 2015c	Dermal permeability coefficient of compound in water
SA	Skin Surface Area	cm^2	4,835	USEPA, 2011	Table 7-2; weighted average of mean values for hands, feet, and lower legs (mean value for legs times 40% to account for lower leg) (male and female, 21+years)	4,840	USEPA, 2011	Table 7-2; weighted average of mean values for hands, feet, and lower legs (mean value for legs times 40% to account for lower leg) (male and female, 21+years)	4,835 (adult) 3093 (adl)	USEPA, 2011	Adult: Table 7-2; weighted average of mean values for hands, feet, and lower legs (mean value for legs times 40% to account for lower leg) (male and female, 21+years). Adl: Table 7-2; weighted average of mean values for hands, feet, and lower legs (mean value for legs times 40% to account for lower leg) (6 to <16 years of age)
VF_{air}	Volatilization Factor	L/m^3	0.5	USEPA, 2014b	Source references USEPA, 1991b, page 20	0.5	USEPA, 2014b	Source references USEPA, 1991b, page 20	0.5	USEPA, 2014b	Source references USEPA, 1991b, page 20
EV	Event Frequency	events/day	1	Professional judgment	Assumes an outdoor worker may come into contact with surface water during routine maintenance activities, for one event per day.	1	USEPA, 2002	Exhibit 1-2. Assumes a worker may come into contact with groundwater during excavation or trenching activities, for one event per day.	1	Professional judgment	Assumes a recreational user may come into contact with surface water during wading activities, for one event per day.
ET	Exposure time as a fraction of the day spent at the site	unitless	0.083 (2 hours/day)	Professional judgment	Assumes an outdoor worker may come into contact with surface water during work activities, for one event per day, 2 hours per event.	0.083 (2 hours/day)	Professional judgment	Assumes an utility worker may come into contact with groundwater during work activities, for one event per day, 2 hours per event.	0.083 (2 hours/day)	Professional judgment	Assumes a recreational user may come into contact with surface water during wading activities, for one event per day, 2 hours per event.

Summary of Exposure Parameters for Groundwater or Surface Water (Continued)

Abbreviation	Parameter	Units	Outdoor Worker	Sources	Rationale	Utility Worker	Sources	Rational	Recreational User	Sources	Rationale
t_{event}	Event Duration	hours/event	2	Professional judgment	Assumes an outdoor worker may come into contact with surface water during work activities, for one event per day, 2 hours per event.	2	Professional judgment	Assumes an utility worker may come into contact with groundwater during work activities, for one event per day, 2 hours per event.	2	Professional judgment	Assumes a recreational user may come into contact with surface water during wading activities, for one event per day, 2 hours per event.
EF	Exposure Frequency	days/year	225	USEPA, 2014c	Source references USEPA, 1991aa, page 15, outdoor worker RME scenario	30	Professional judgment	Assumes project of one month duration	50	Professional judgment	Assumes recreational user on site once per week every week of the year, except for 2 weeks vacation
ED	Exposure Duration	year	25	USEPA, 2014c	Source references USEPA, 1991a, Page 15; RME scenario for industrial worker	1	USEPA, 2002	Exhibit 5-1; USEPA, default value for construction workers	14 (adult) 10 (adl)	Professional judgment	Adult: Represents the number of years returning to the same location as an adult, age 16 to <30 years of age Adl: Represents the number of years returning to the same location as an adolescent; assumes adolescent recreational user 6 to <16 years of age
ED	Exposure Duration-for inhalation	year	--	--	--	--	--	--	23	Professional judgment	Combined 10 years as adolescent and 14 years as adult
BW	Body Weight	kg	80	USEPA, 2014c	Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 – 78	80	USEPA, 2014c	Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 – 78	80 (adult) 44 (adl)	USEPA, 2014c, USEPA, 2011	Adult: Source references USEPA, 2011, Table 8-3; weighted mean values for adults 21 – 78 Adl: Table 8-3, weighted mean value for adolescent age 6 to <16 years of age
AT_{nc}	Averaging Time – noncarcinogens	days	9,125	USEPA, 1989	Exhibit 6-9; Period over which exposure is averaged; ED expressed in days (25 years x 365 days)	365	USEPA, 2014c	Source references USEPA, 1989, page 6-23; ED expressed in days (1 year x 365 days)	5,110 (adult) 3,650 (adl)	USEPA, 1989	Exhibit 6-9; Period over which exposure is averaged; ED expressed in days (14 years adult x 365 days or 10 years adl x 365 days)
AT_c	Averaging Time – carcinogens	days	25,550	USEPA, 2014c as “lifetime”	70-year lifetime expressed in days (70 years x 365 days)	25,550	USEPA, 2014c as “lifetime”	70-year lifetime expressed in days (70 years x 365 days)	25,550	USEPA, 2014c as “lifetime”	70-year lifetime expressed in days (70 years x 365 days)

Summary of Exposure Parameters for Groundwater or Surface Water (Continued)

Abbreviation	Parameter	Units	Outdoor Worker	Sources	Rationale	Utility Worker	Sources	Rational	Recreational User	Sources	Rationale
FA	Fraction absorbed	unitless	Chemical-specific	USEPA, 2004	Exhibit B-3	Chemical-specific	USEPA, 2004	Exhibit B-3	Chemical-specific	USEPA, 2004	Exhibit B-3
B	Relative contribution of permeability coefficient	unitless	Chemical-specific	USEPA, 2015c	--	Chemical-specific	USEPA, 2015c	--	Chemical-specific	USEPA, 2015c	--
t^*	Time it takes to reach steady state	hours	Chemical-specific	USEPA, 2004	Exhibit B-3	Chemical-specific	USEPA, 2004	Exhibit B-3	Chemical-specific	USEPA, 2004	Exhibit B-3
τ_{event}	Lag Time per Event	hr/event	Chemical-specific	USEPA, 2015c	--	Chemical-specific	USEPA, 2015c	--	Chemical-specific	USEPA, 2015c	--

General Statistics on Uncensored Data

Date/Time of Computation 9/8/2015 11:24:43 AM

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Full Precision OFF

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General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

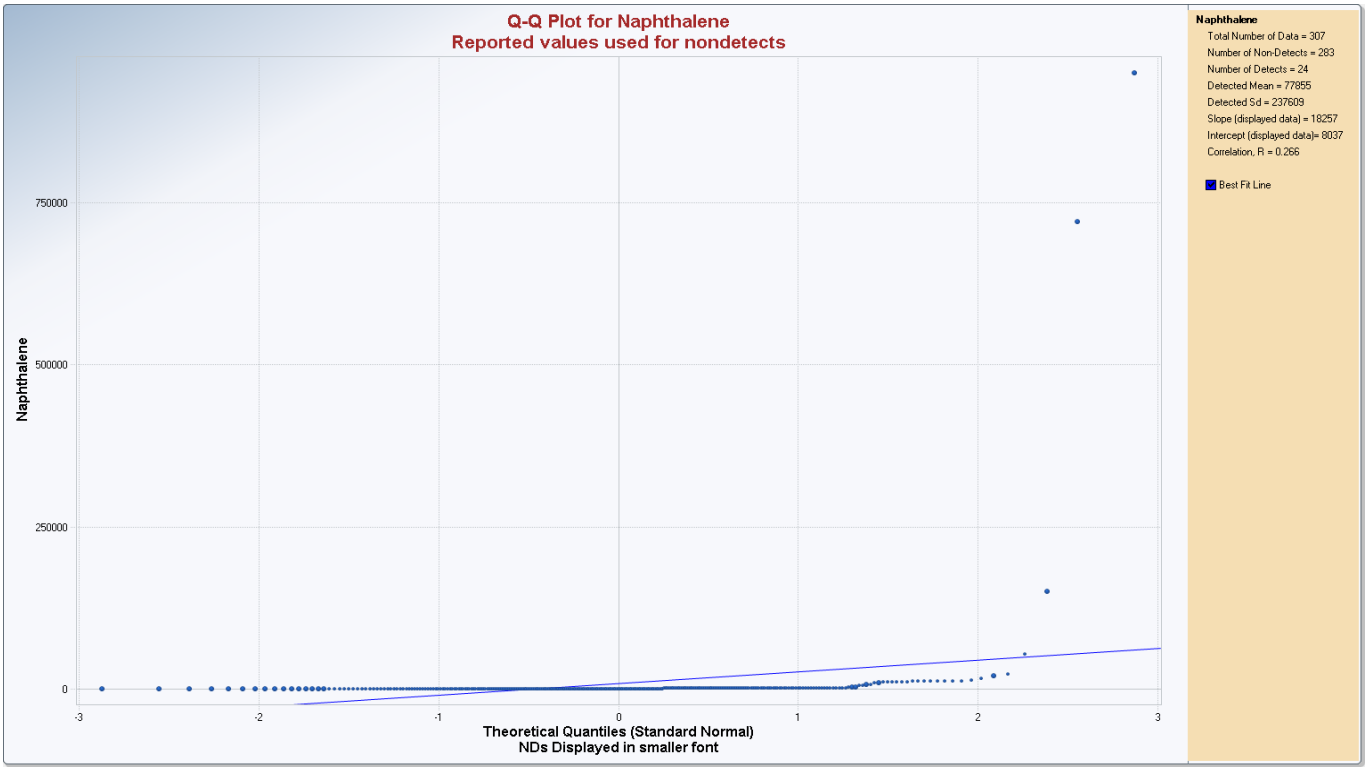
Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Naphthalene	307	0	24	283	92.18%	900	54000	6358	4.663E+9	68289	10.74
Benzidine	307	0	5	302	98.37%	900	58000	1015	761749	872.8	0.86
Benzo(a)anthracene	307	0	192	115	37.46%	900	23000	16592	3.236E+10	179897	10.84
Chrysene	307	0	231	76	24.76%	900	23000	23579	6.637E+10	257616	10.93
Benzo(b)fluoranthene	307	0	189	118	38.44%	900	23000	27367	1.148E+11	338807	12.38
Benzo(k)fluoranthene	307	0	187	120	39.09%	900	23000	18890	4.691E+10	216589	11.47
Benzo(a)pyrene	307	0	186	121	39.41%	900	23000	24731	8.602E+10	293290	11.86
Indeno(1,2,3-cd)pyrene	307	0	116	191	62.21%	900	23000	7253	6.223E+9	78885	10.88
Dibenz(a,h)anthracene	307	0	27	280	91.21%	900	54000	4841	2.911E+9	53954	11.15
Aroclor-1242	597	0	10	587	98.32%	0	0.661	10.13	53583	231.5	22.84
Aroclor-1260	597	0	49	548	91.79%	0	0.808	0.182	2.68	1.637	8.997
Arsenic	307	0	307	0	0.00%	N/A	N/A	41.76	298376	546.2	13.08
Lead	307	0	307	0	0.00%	N/A	N/A	164.8	184760	429.8	2.609
Thallium	307	0	2	305	99.35%	0.203	1.671	0.872	70.01	8.367	9.591
Mercury	307	0	301	6	1.95%	0.022	0.027	1.345	155	12.45	9.254
Dibenzofuran	307	0	18	289	94.14%	900	54000	5631	3.886E+9	62338	11.07
Fluoranthene	307	0	226	81	26.38%	900	23000	43649	2.370E+11	486817	11.15
Pyrene	307	0	233	74	24.10%	900	23000	39126	2.083E+11	456439	11.67
Antimony	307	0	210	97	31.60%	0.239	0.924	4.246	209.2	14.46	3.406
Cobalt	307	0	307	0	0.00%	N/A	N/A	3.337	81.74	9.041	2.709
Nickel	307	0	307	0	0.00%	N/A	N/A	74.75	672690	820.2	10.97

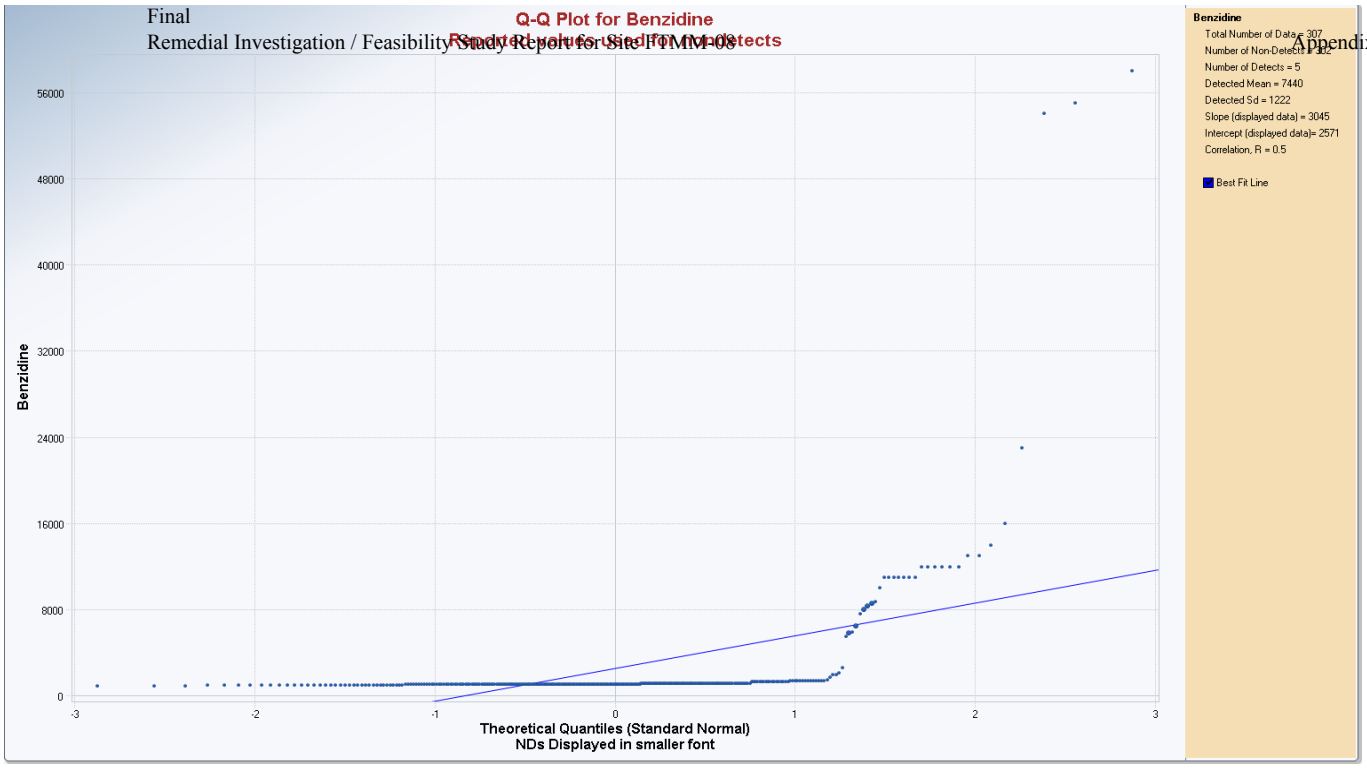
General Statistics for Raw Data Sets using Detected Data Only

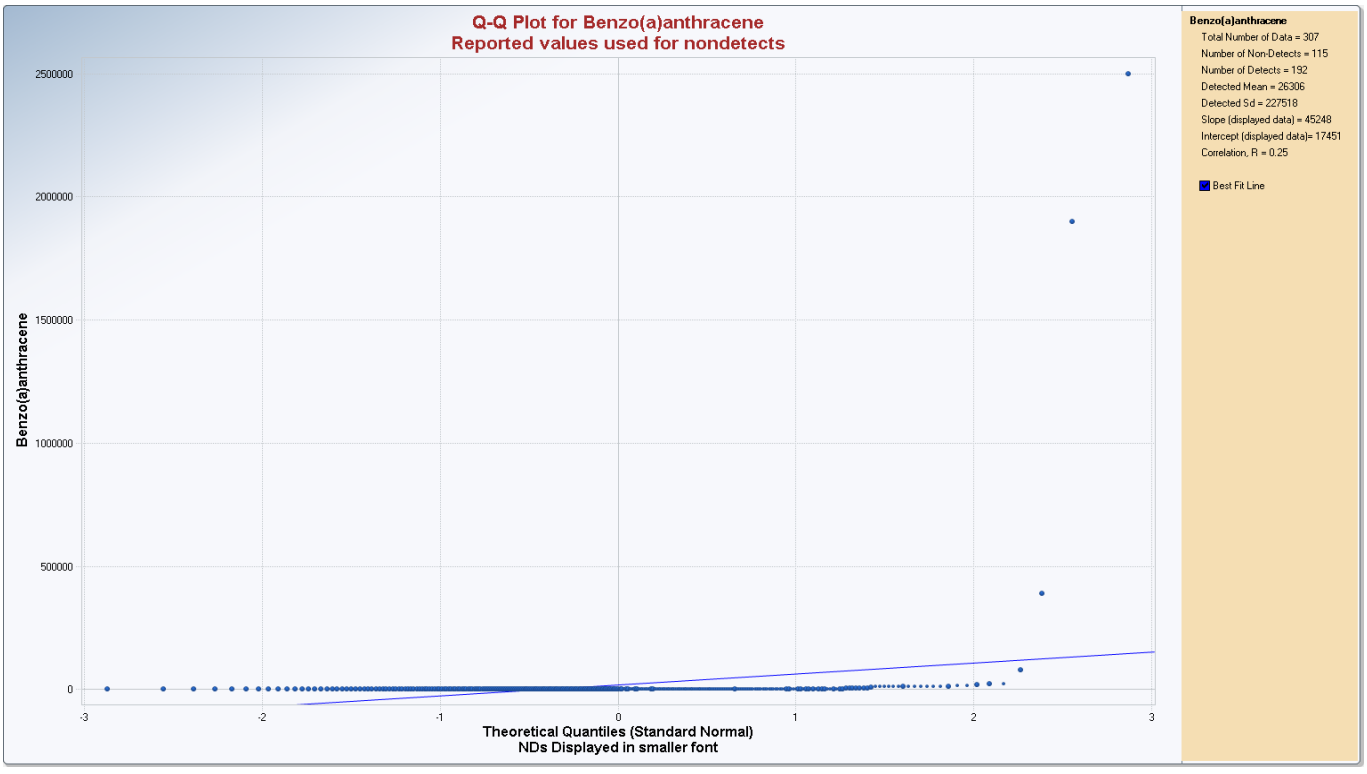
Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Naphthalene	24	0	130	950000	77855	365	5.646E+10	237609	274.3	3.251	3.052
Benzidine	5	0	5800	8600	7440	8000	1493000	1222	889.5	-0.655	0.164
Benzo(a)anthracene	192	0	110	2500000	26306	305	5.176E+10	227518	215	9.775	8.649
Chrysene	231	0	100	3800000	31176	460	8.835E+10	297237	341	11.19	9.534
Benzo(b)fluoranthene	189	0	110	5400000	44215	320	1.867E+11	432097	222.4	11.22	9.773
Benzo(k)fluoranthene	187	0	100	3100000	30769	320	7.706E+10	277605	222.4	9.939	9.022
Benzo(a)pyrene	186	0	110	4500000	40569	330	1.421E+11	376968	229.8	10.56	9.292
Indeno(1,2,3-cd)pyrene	116	0	110	1200000	18719	240	1.640E+10	128058	148.3	8.128	6.841
Dibenz(a,h)anthracene	27	0	140	850000	51612	390	3.188E+10	178553	370.6	4.028	3.46
Aroclor-1242	10	0	0.0197	5654	605.1	16.59	3154354	1776	19.04	3.15	2.935
Aroclor-1260	49	0	0.083	30.03	2.216	0.462	28.73	5.36	0.372	3.981	2.419
Arsenic	307	0	1.43	9580	41.76	8.83	298376	546.2	3.277	17.51	13.08
Lead	307	0	4.38	5050	164.8	56.6	184760	429.8	56.04	7.846	2.609
Thallium	2	0	86.9	119	103	103	515.2	22.7	23.8	N/A	0.22
Mercury	301	0	0.02	216	1.372	0.195	158.5	12.59	0.173	16.65	9.18
Dibenzofuran	18	0	120	910000	91609	335	6.186E+10	248719	303.9	2.875	2.715
Fluoranthene	226	0	110	7200000	59113	485	3.225E+11	567848	407.7	11.09	9.606
Pyrene	233	0	110	7400000	51395	490	2.751E+11	524461	429.9	12.69	10.2
Antimony	210	0	0.253	152	6.08	1.275	296.6	17.22	1.05	5.701	2.832
Cobalt	307	0	0.669	130	3.337	2.45	81.74	9.041	1.067	12.4	2.709
Nickel	307	0	3.02	12400	74.75	8.52	672690	820.2	3.662	13.44	10.97

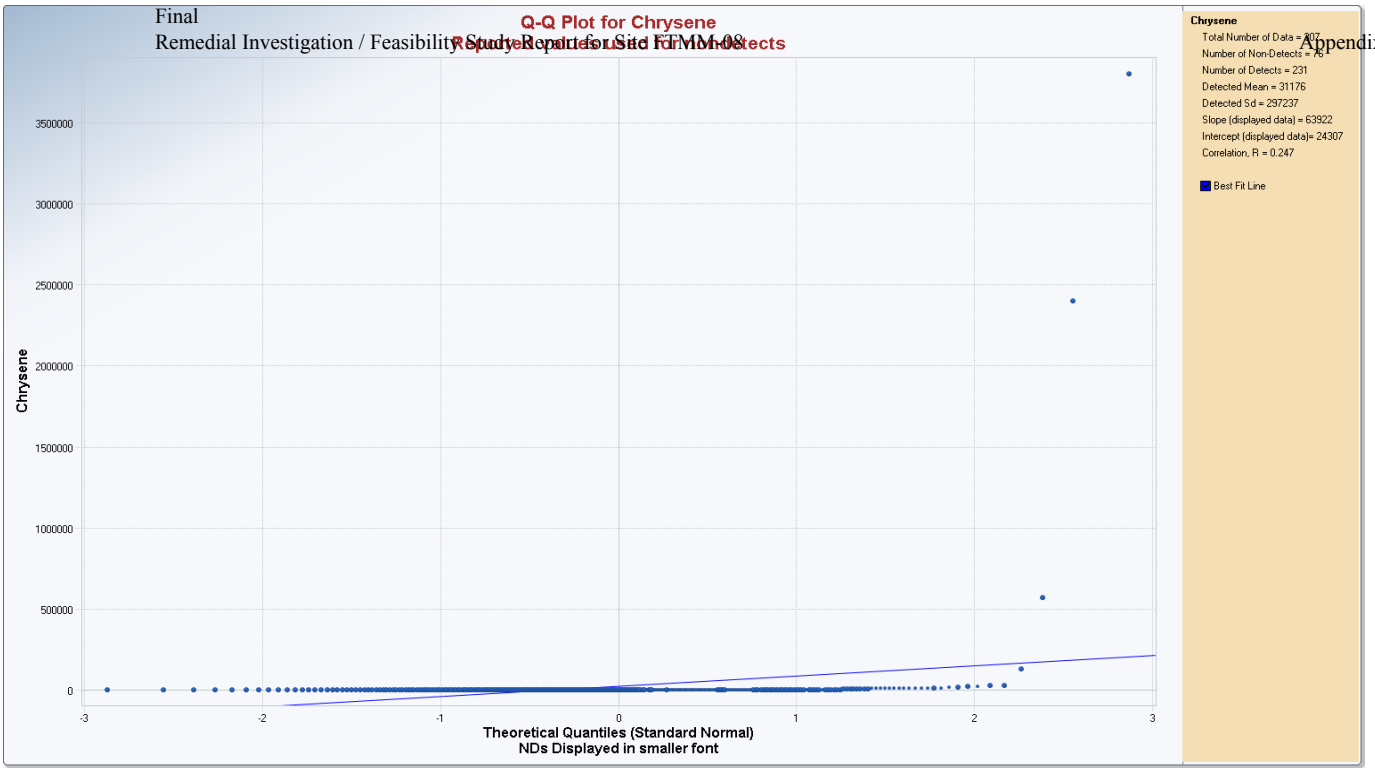
Percentiles using all Detects (Ds) and Non-Detects (NDs)

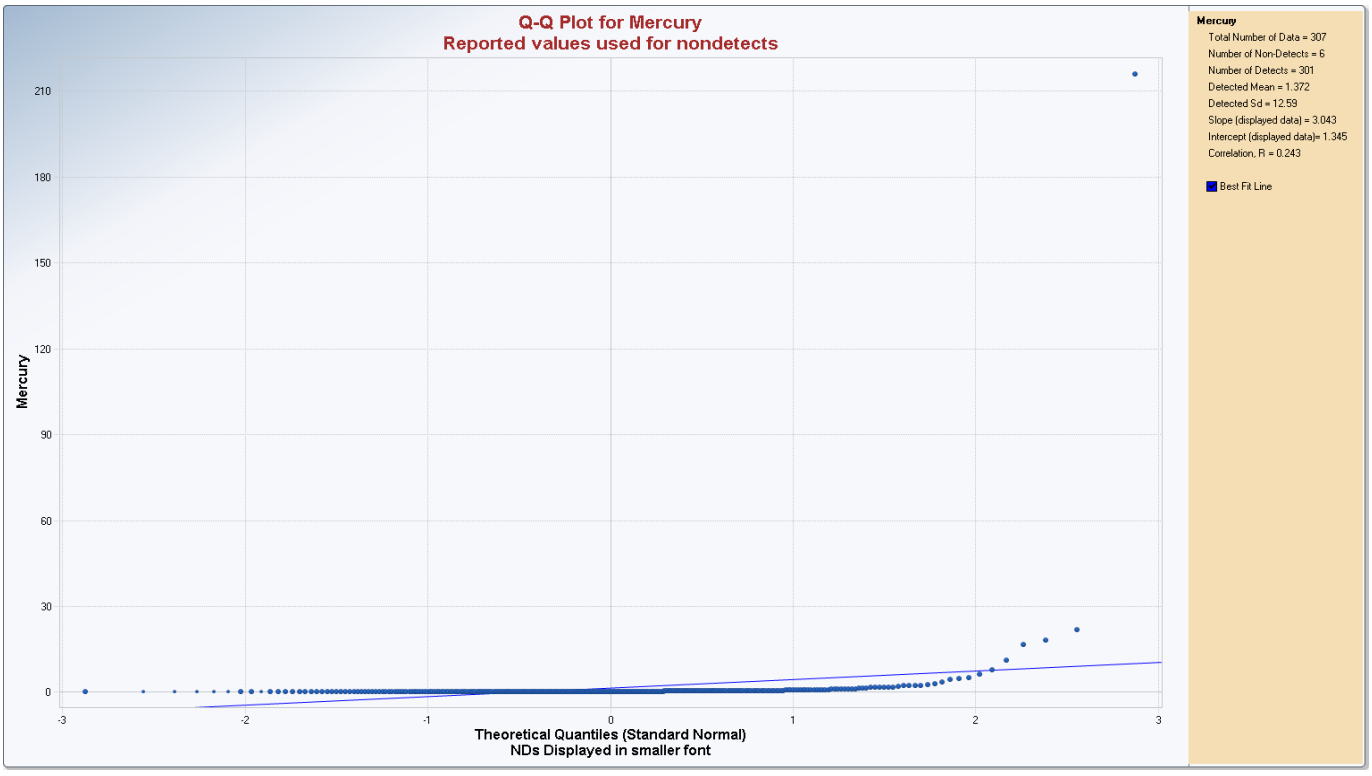
Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Naphthalene	307	0	1000	1100	1100	1100	1200	1280	2300	11700	52140
Benzidine	307	0	1000	1100	1100	1100	1200	1300	3760	11000	22580
Benzo(a)anthracene	307	0	170	220	250	880	1200	1200	2840	11700	76580
Chrysene	307	0	210	290	340	720	1200	1300	4740	12000	124060
Benzo(b)fluoranthene	307	0	170	230	280	930	1200	1200	3520	11000	42740
Benzo(k)fluoranthene	307	0	170	220	280	930	1200	1200	2780	11000	48380
Benzo(a)pyrene	307	0	180	230	270	970	1200	1200	3140	12000	62480
Indeno(1,2,3-cd)pyrene	307	0	170	242	370	1100	1200	1200	2000	11000	34280
Dibenz(a,h)anthracene	307	0	1000	1100	1100	1100	1200	1300	1820	11000	52140
Aroclor-1242	597	0	0	0	0	0.0213	0.356	0.361	0.372	0.379	8.711
Aroclor-1260	597	0	0	0	0	0.0697	0.0819	0.0828	0.086	0.367	3.426
Arsenic	307	0	5.676	6.81	7.27	8.83	11.85	12.86	15.7	18.81	29.13
Lead	307	0	12.68	23.76	29.4	56.6	127	168	304.8	642.6	1650
Thallium	307	0	0.593	0.627	0.638	0.682	0.731	0.745	0.807	0.865	1.445
Mercury	307	0	0.0596	0.082	0.094	0.189	0.378	0.48	0.968	2.2	16.27
Dibenzofuran	307	0	1000	1100	1100	1100	1200	1300	1580	11700	52140
Fluoranthene	307	0	200	290	340	800	1200	1480	6380	12000	180940
Pyrene	307	0	190	270	330	770	1200	1400	5160	12000	200220
Antimony	307	0	0.431	0.46	0.471	0.821	1.985	2.768	6.594	15.89	72.92
Cobalt	307	0	1.192	1.504	1.695	2.45	3.115	3.398	4.534	5.512	7.492
Nickel	307	0	5.054	5.994	6.485	8.52	11.55	12.48	15.54	21.37	100.2

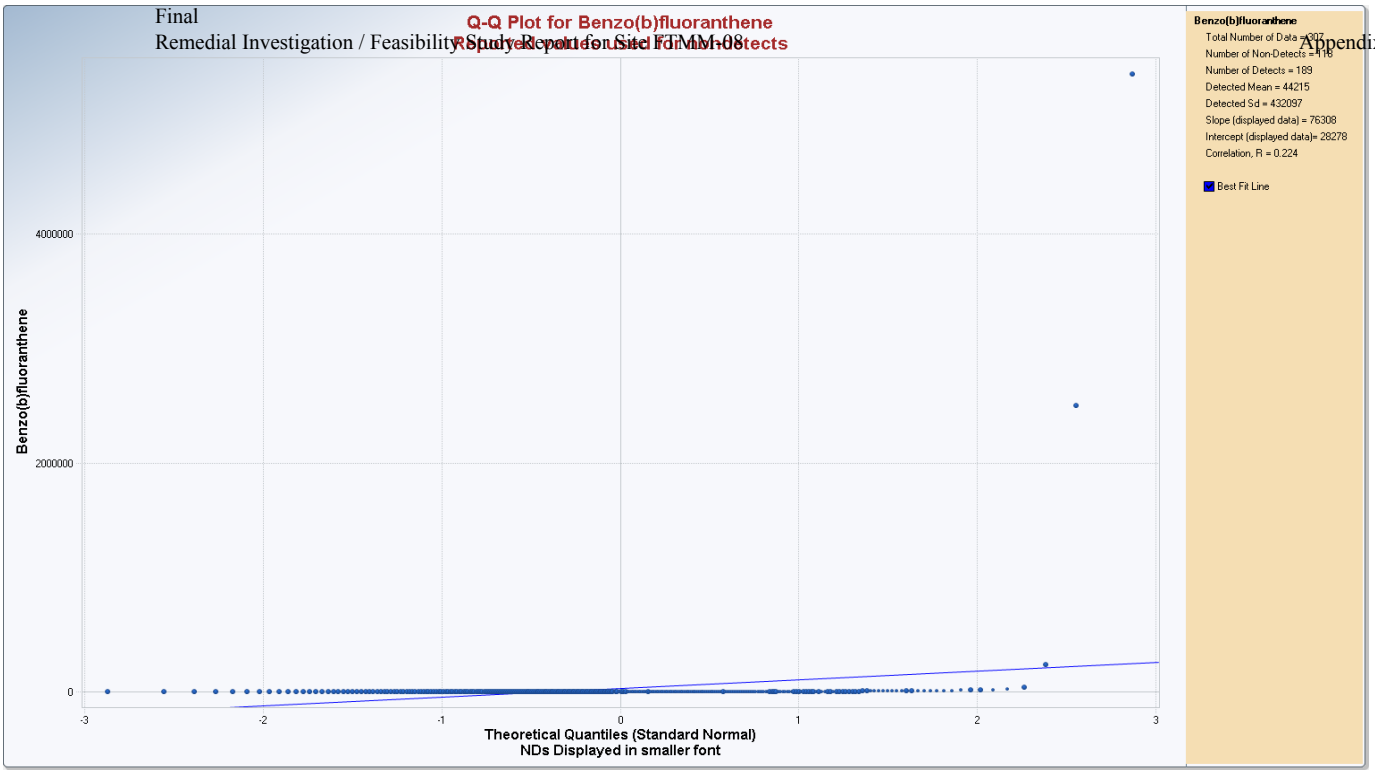


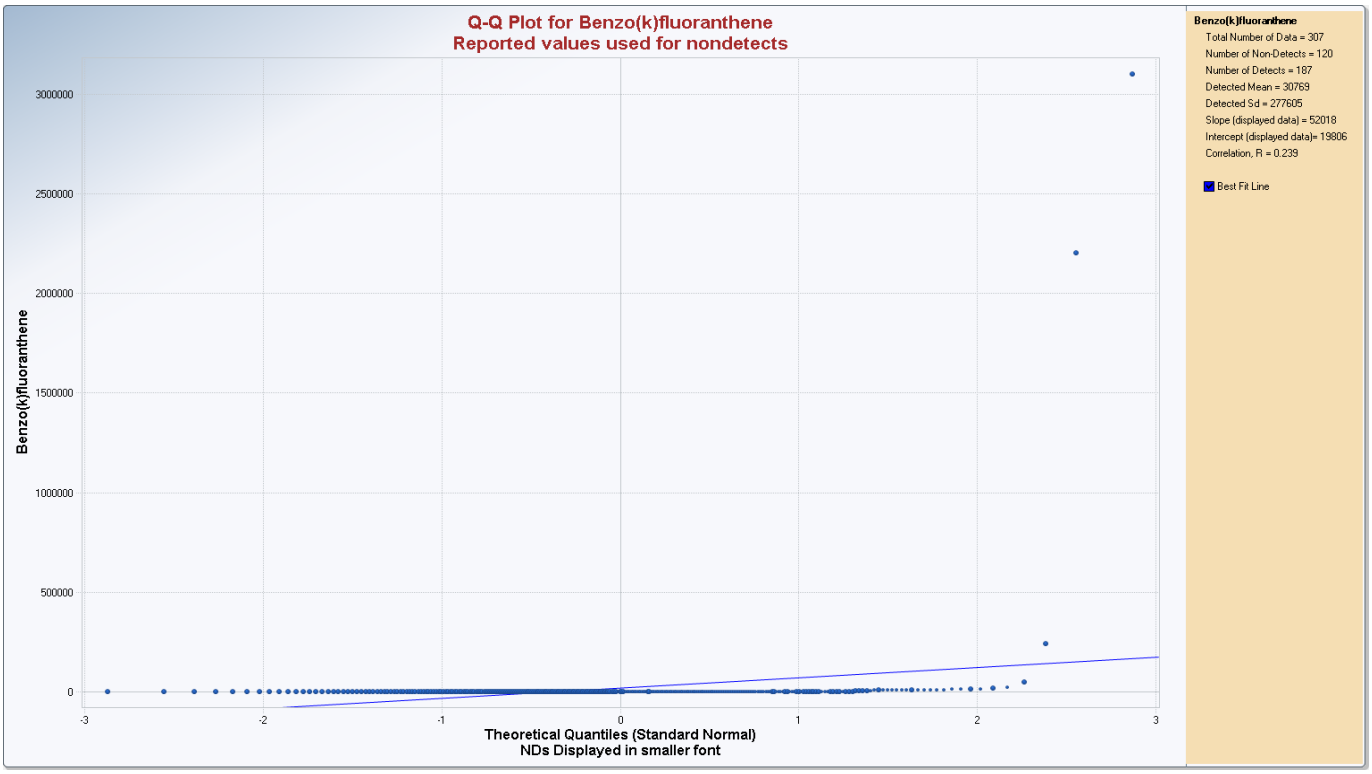

Q-Q Plot for Benzidine
Reported values used for nondetects
Benzidine
Total Number of Data = 307
Number of Non-Detects = 302
Number of Detects = 5
Detected Mean = 7440
Detected Sd = 1222
Slope (displayed data) = 3045
Intercept (displayed data)= 2571
Correlation, R = 0.5
Best Fit Line
Benzidine
56000
48000
40000
32000
24000
16000
8000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

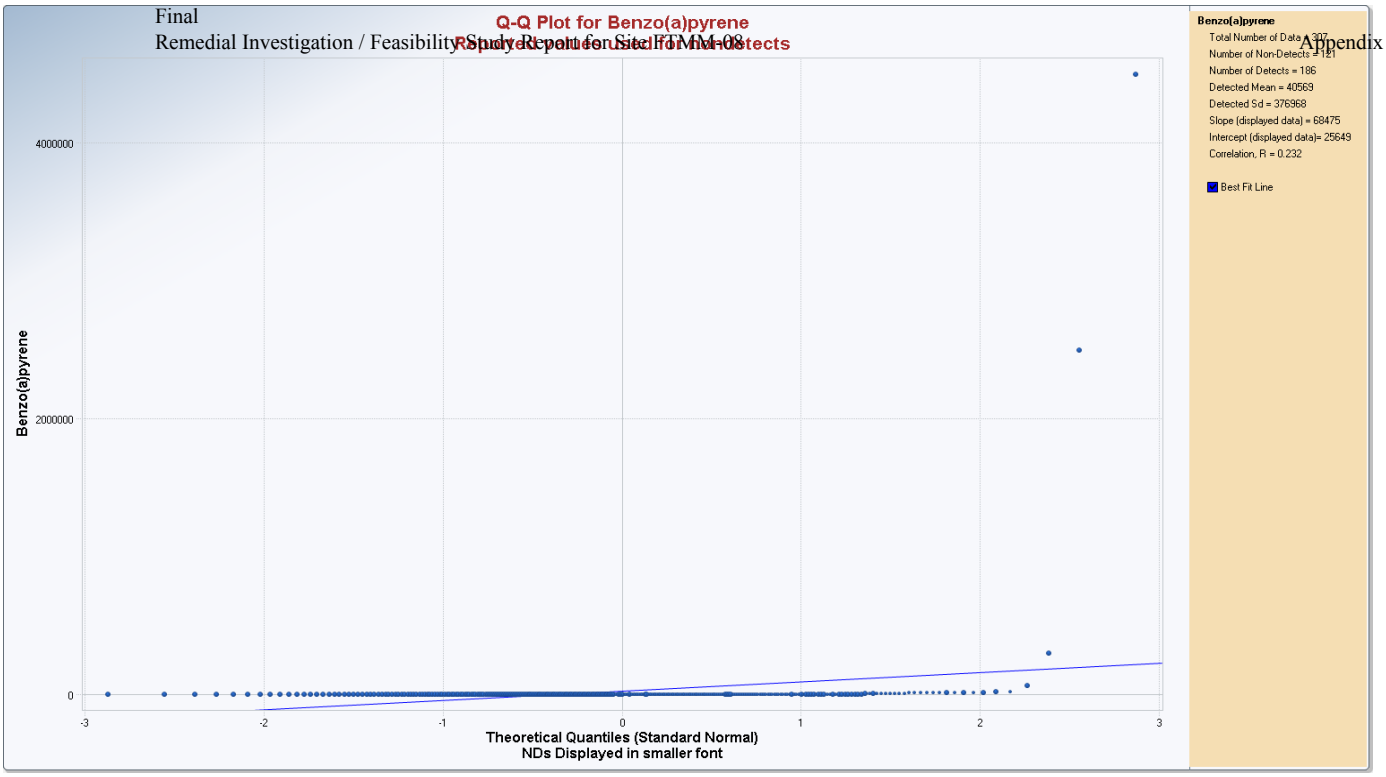

Q-Q Plot for Benzo(a)anthracene
Reported values used for nondetects
Benzo(a)anthracene
Total Number of Data = 307
Number of Non-Detects = 115
Number of Detects = 192
Detected Mean = 26306
Detected Sd = 227518
Slope (displayed data) = 45248
Intercept (displayed data)= 17451
Correlation, R = 0.25
Best Fit Line
Benzo(a)anthracene
2500000
2000000
1500000
1000000
500000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

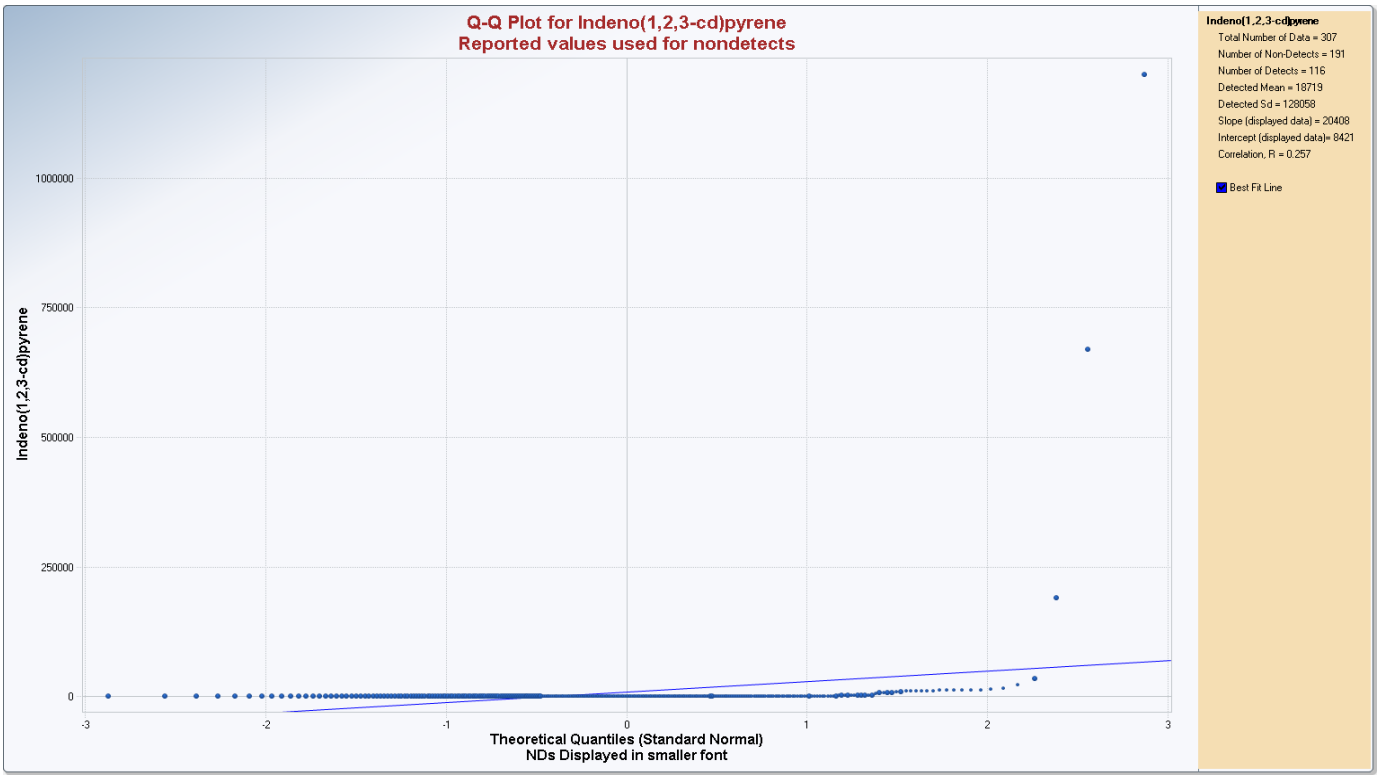

Q-Q Plot for Chrysene
Reported values used for nondetects
Chrysene
Total Number of Data = 307
Number of Non-Detects = 76
Number of Detects = 231
Detected Mean = 31176
Detected Sd = 297237
Slope (displayed data) = 63922
Intercept (displayed data)= 24307
Correlation, R = 0.247
Best Fit Line
Chrysene
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

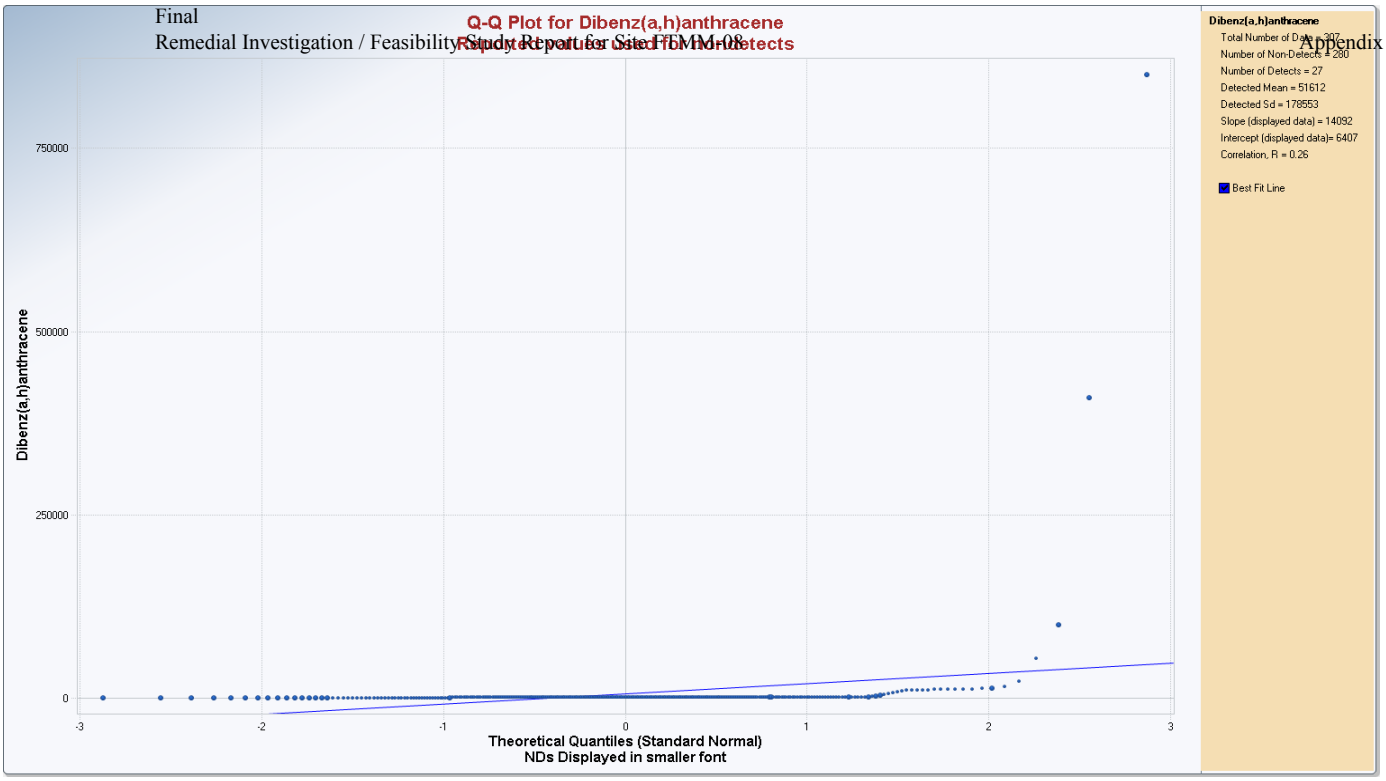

Q-Q Plot for Mercury
Reported values used for nondetects
Mercury
Total Number of Data = 307
Number of Non-Detects = 6
Number of Detects = 301
Detected Mean = 1.372
Detected Sd = 12.59
Slope (displayed data) = 3.043
Intercept (displayed data)= 1.345
Correlation, R = 0.243
Best Fit Line
Mercury
210
180
150
120
90
60
30
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

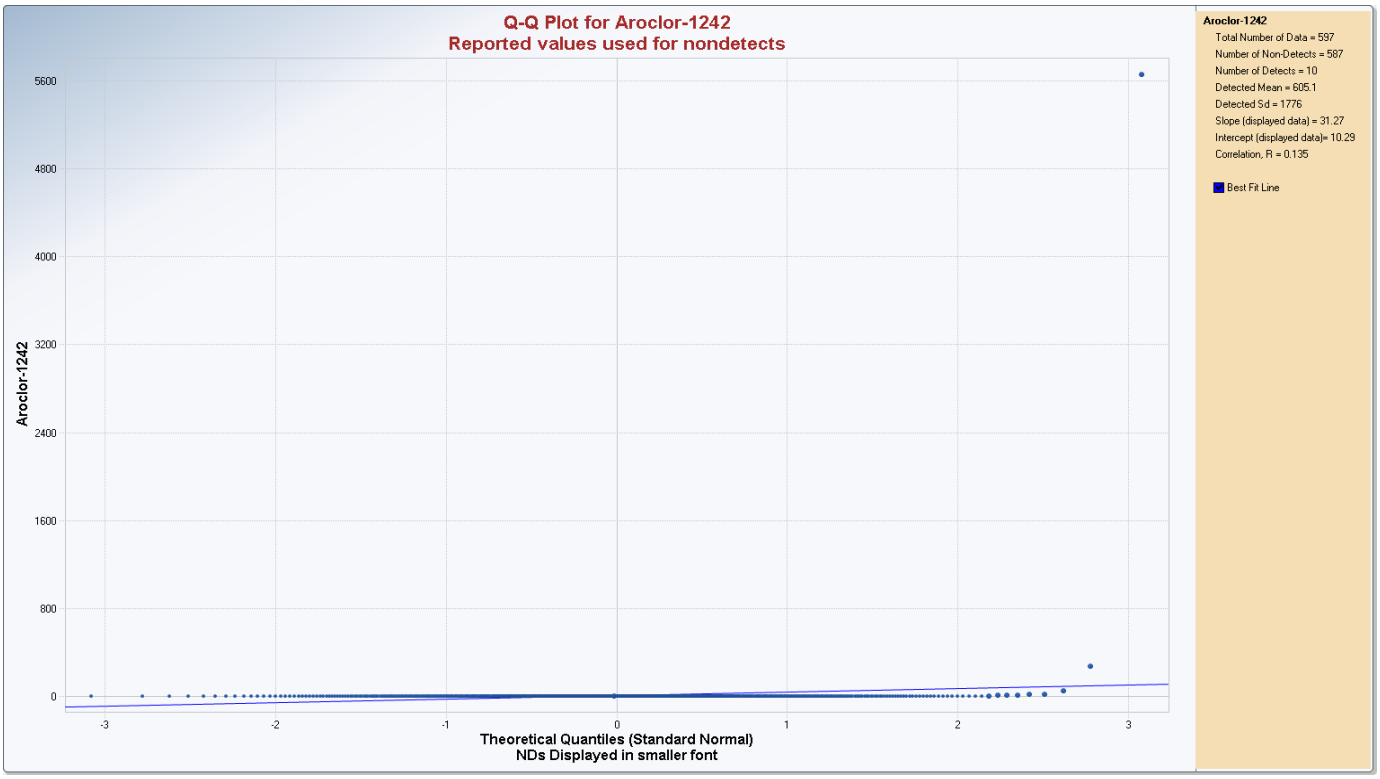

Q-Q Plot for Benzo(b)fluoranthene
Reported values used for nondetects
Benzo(b)fluoranthene
Total Number of Data = 307
Number of Non-Detects = 118
Number of Detects = 189
Detected Mean = 44215
Detected Sd = 432097
Slope (displayed data) = 76308
Intercept (displayed data)= 28278
Correlation, R = 0.224
Best Fit Line
Benzo(b)fluoranthene
4000000
2000000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

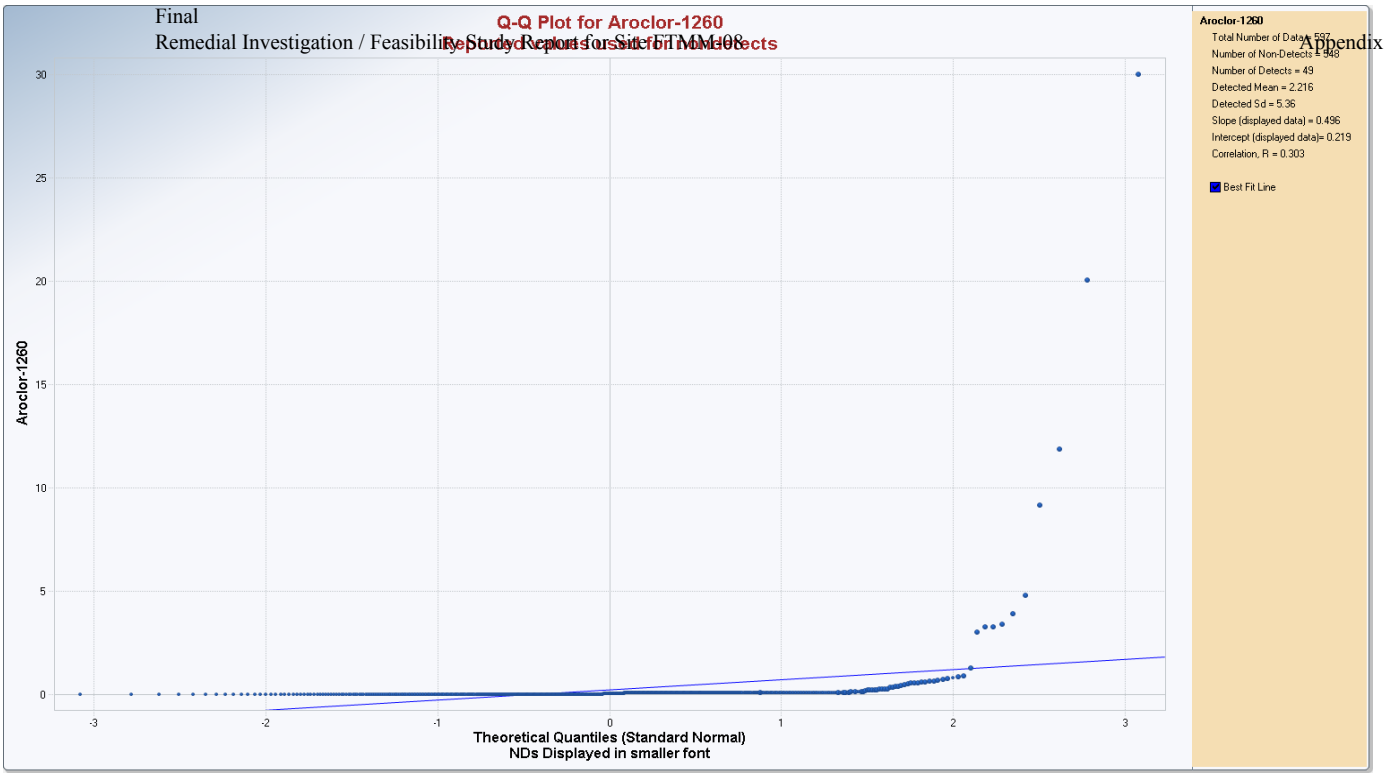

Q-Q Plot for Benzo(k)fluoranthene
Reported values used for nondetects
Benzo(k)fluoranthene
Total Number of Data = 307
Number of Non-Detects = 120
Number of Detects = 187
Detected Mean = 30769
Detected Sd = 277605
Slope (displayed data) = 52018
Intercept (displayed data)= 19806
Correlation, R = 0.239
Best Fit Line
Benzo(k)fluoranthene
3000000
2500000
2000000
1500000
1000000
500000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

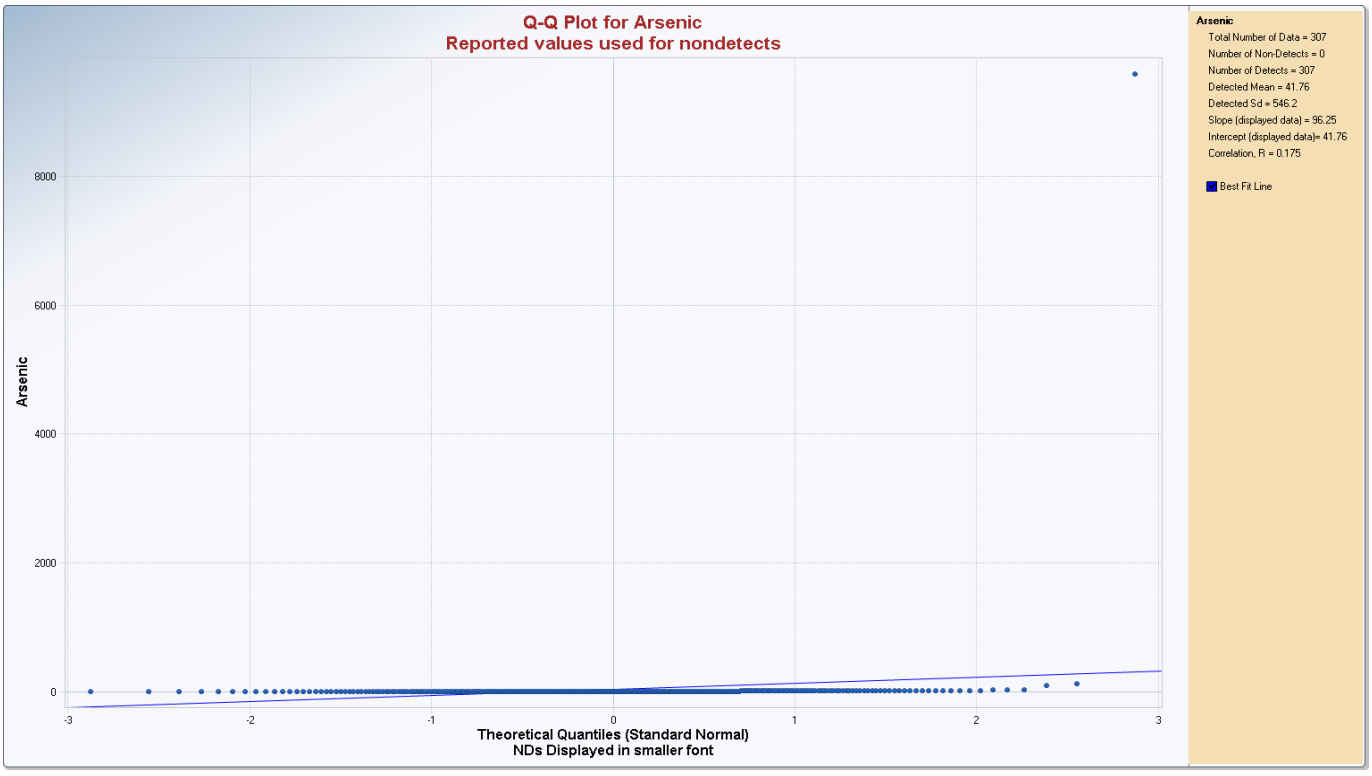

Q-Q Plot for Benzo(a)pyrene
Reported values used for nondetects
Benzo(a)pyrene
Total Number of Data = 307
Number of Non-Detects = 121
Number of Detects = 186
Detected Mean = 40569
Detected Sd = 376968
Slope (displayed data) = 68475
Intercept (displayed data)= 25649
Correlation, R = 0.232
Best Fit Line
Benzo(a)pyrene
4000000
2000000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

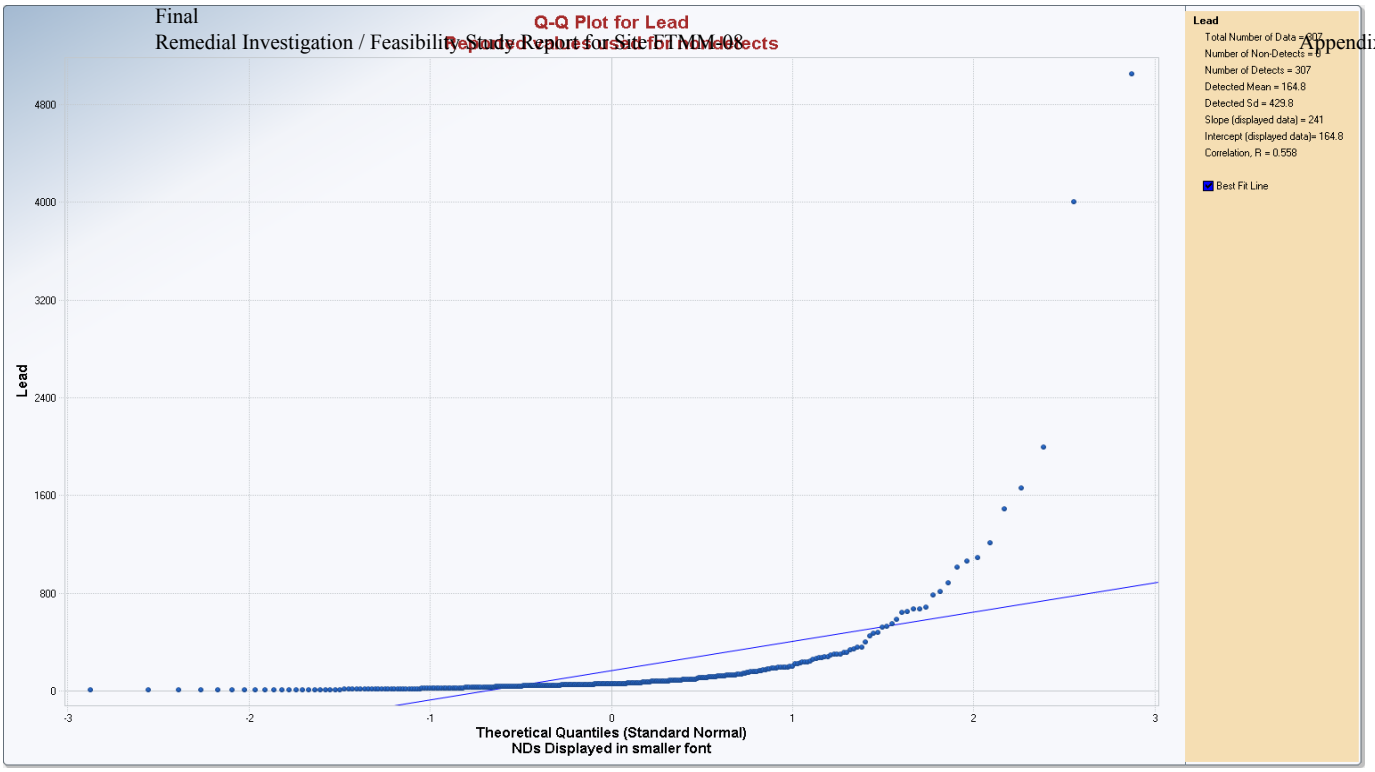

Q-Q Plot for Indeno(1,2,3-cd)pyrene
Reported values used for nondetects
Indeno(1,2,3-cd)pyrene
Total Number of Data = 307
Number of Non-Detects = 191
Number of Detects = 116
Detected Mean = 18719
Detected Sd = 128058
Slope (displayed data) = 20408
Intercept (displayed data)= 8421
Correlation, R = 0.257
Best Fit Line
Indeno(1,2,3-cd)pyrene
1000000
750000
500000
250000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

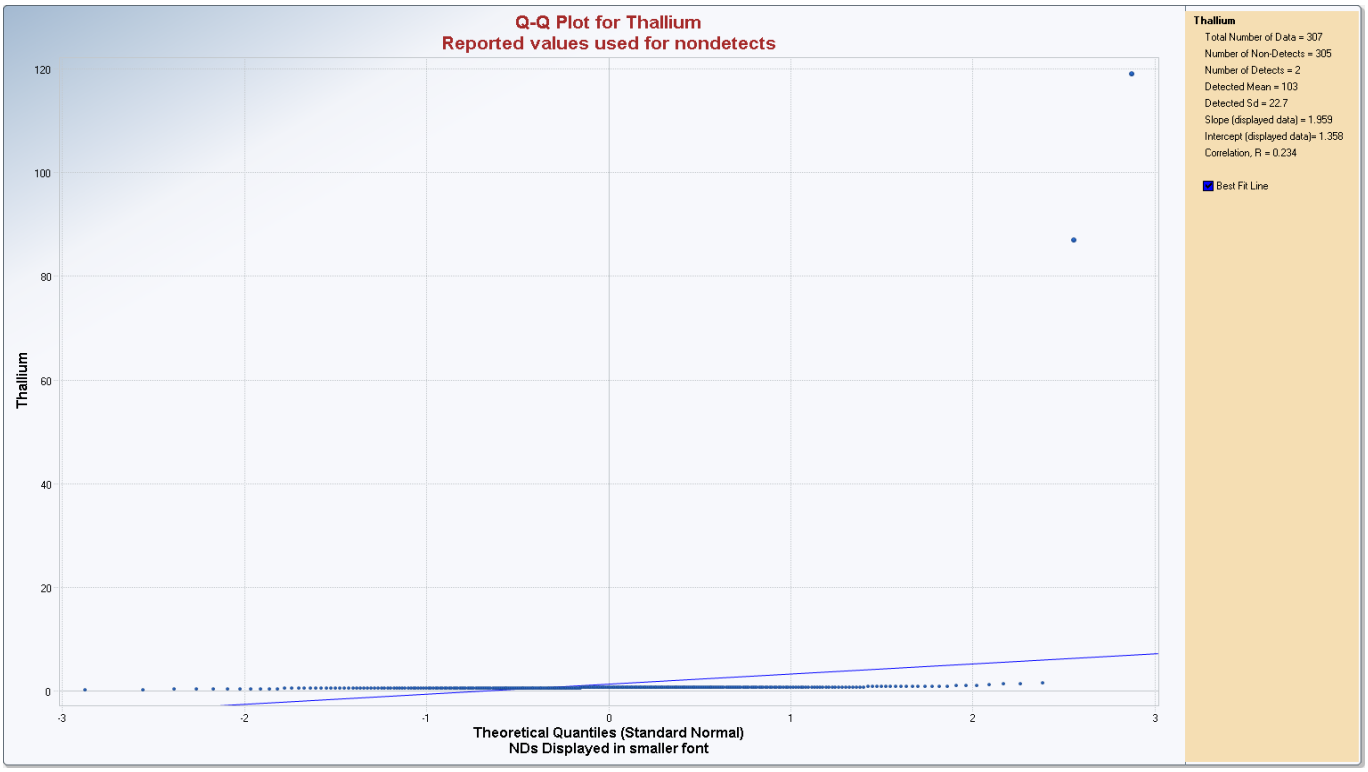

Q-Q Plot for Dibenz(a,h)anthracene
Reported values used for nondetects
Dibenz(a,h)anthracene
Total Number of Data = 307
Number of Non-Detects = 280
Number of Detects = 27
Detected Mean = 51612
Detected Sd = 178553
Slope (displayed data) = 14092
Intercept (displayed data)= 6407
Correlation, R = 0.26
Best Fit Line
Dibenz(a,h)anthracene
750000
500000
250000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

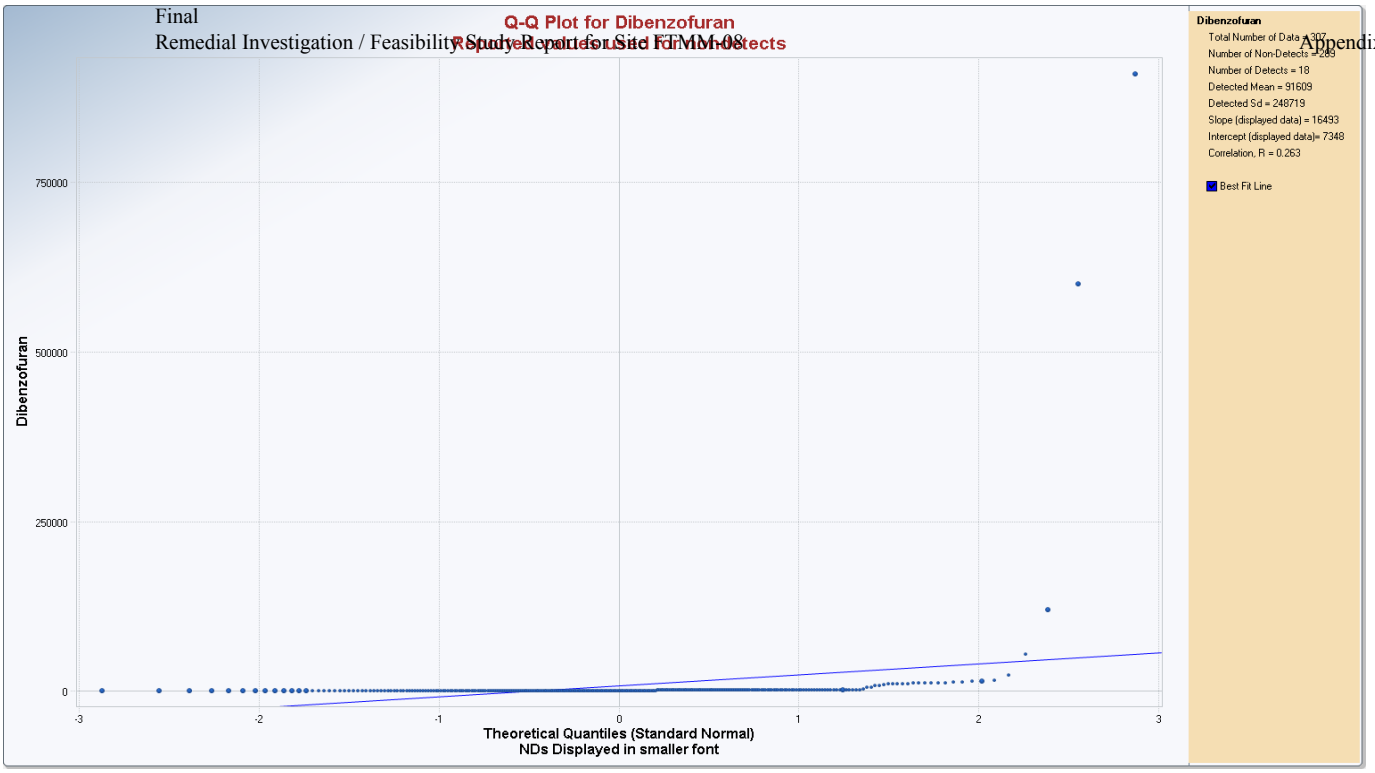

Q-Q Plot for Aroclor-1242
Reported values used for nondetects
Aroclor-1242
Total Number of Data = 597
Number of Non-Detects = 587
Number of Detects = 10
Detected Mean = 605.1
Detected Sd = 1776
Slope (displayed data) = 31.27
Intercept (displayed data)= 10.29
Correlation, R = 0.135
Best Fit Line
Aroclor-1242
5600
4800
4000
3200
2400
1600
800
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

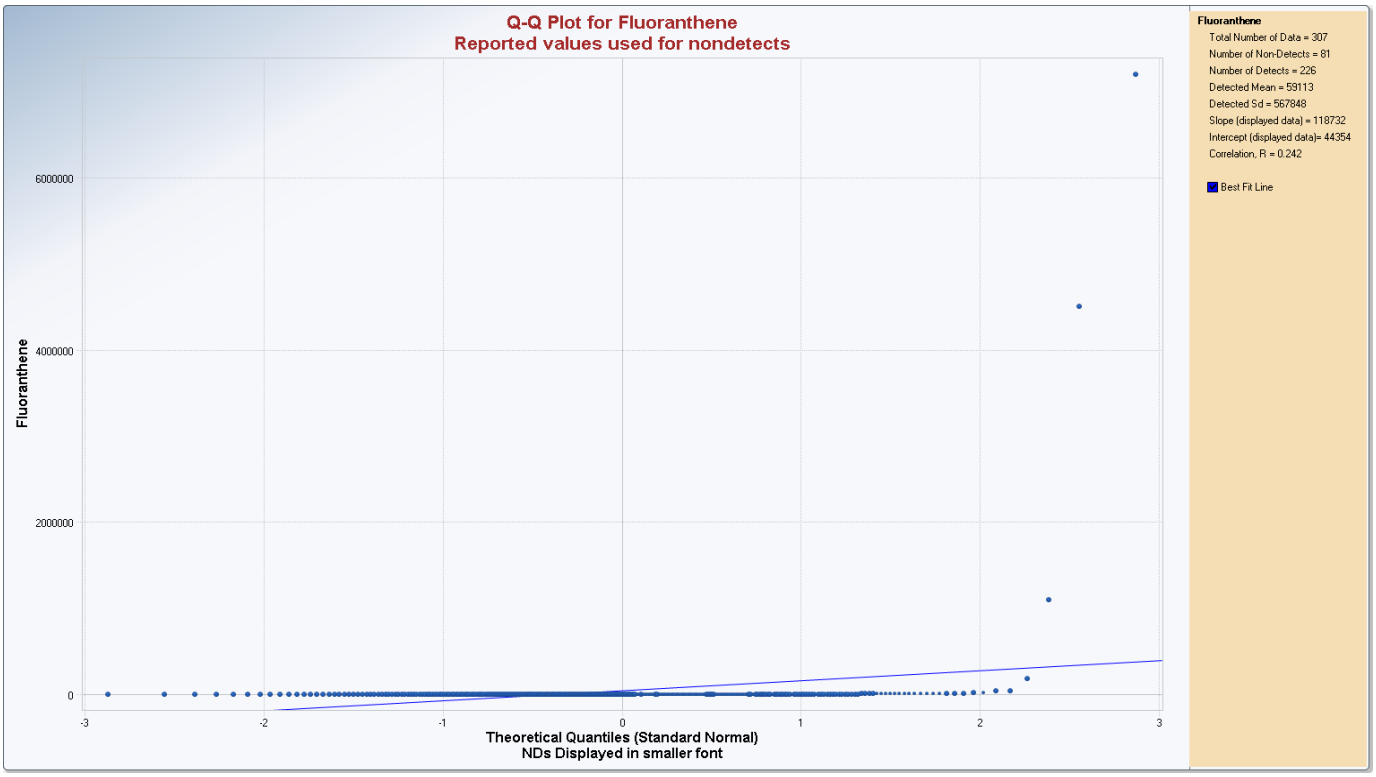

Q-Q Plot for Aroclor-1260
Reported values used for nondetects
Aroclor-1260
Total Number of Data = 587
Number of Non-Detects = 538
Number of Detects = 49
Detected Mean = 2.216
Detected Sd = 5.36
Slope (displayed data) = 0.496
Intercept (displayed data)= 0.219
Correlation, R = 0.303
Best Fit Line
Aroclor-1260
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

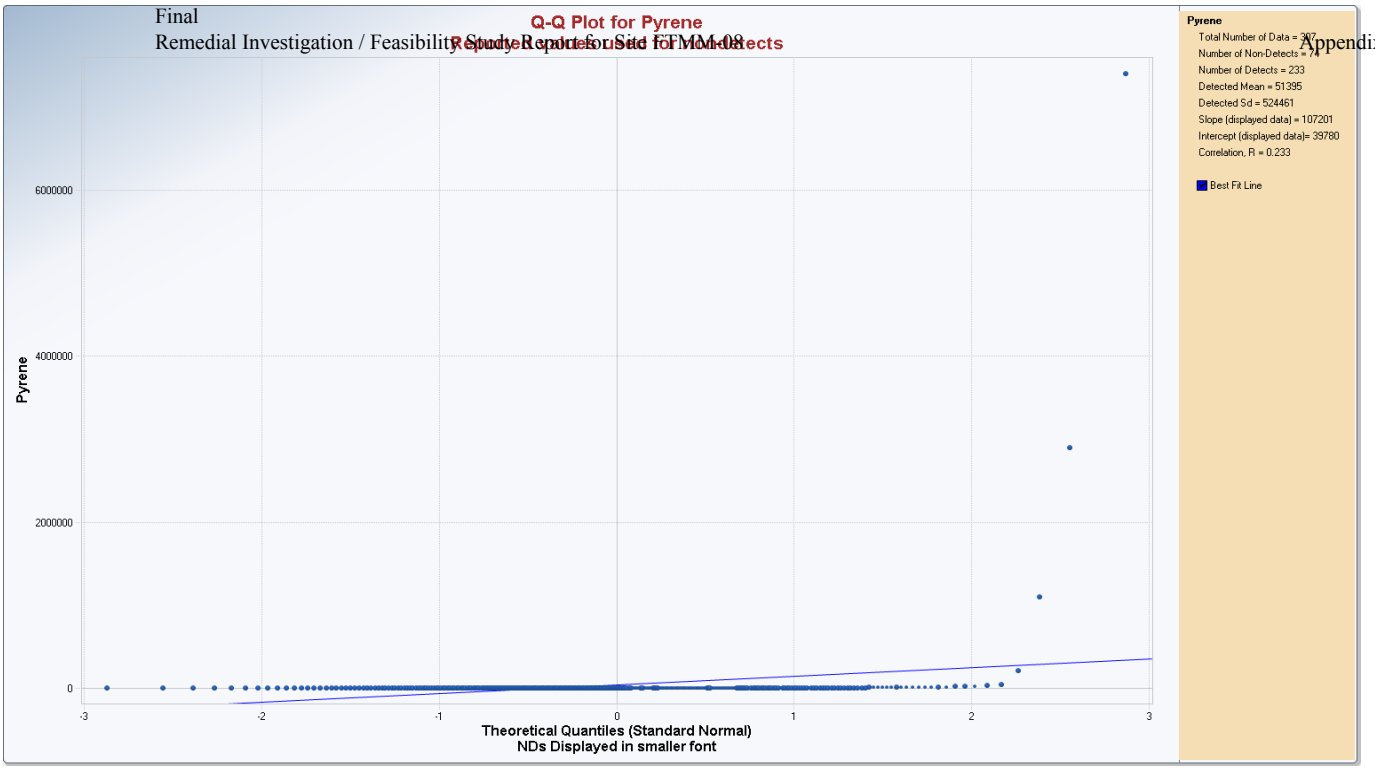

Q-Q Plot for Arsenic
Reported values used for nondetects
Arsenic
Total Number of Data = 307
Number of Non-Detects = 0
Number of Detects = 307
Detected Mean = 41.76
Detected Sd = 546.2
Slope (displayed data) = 96.25
Intercept (displayed data)= 41.76
Correlation, R = 0.175
Best Fit Line
Arsenic
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

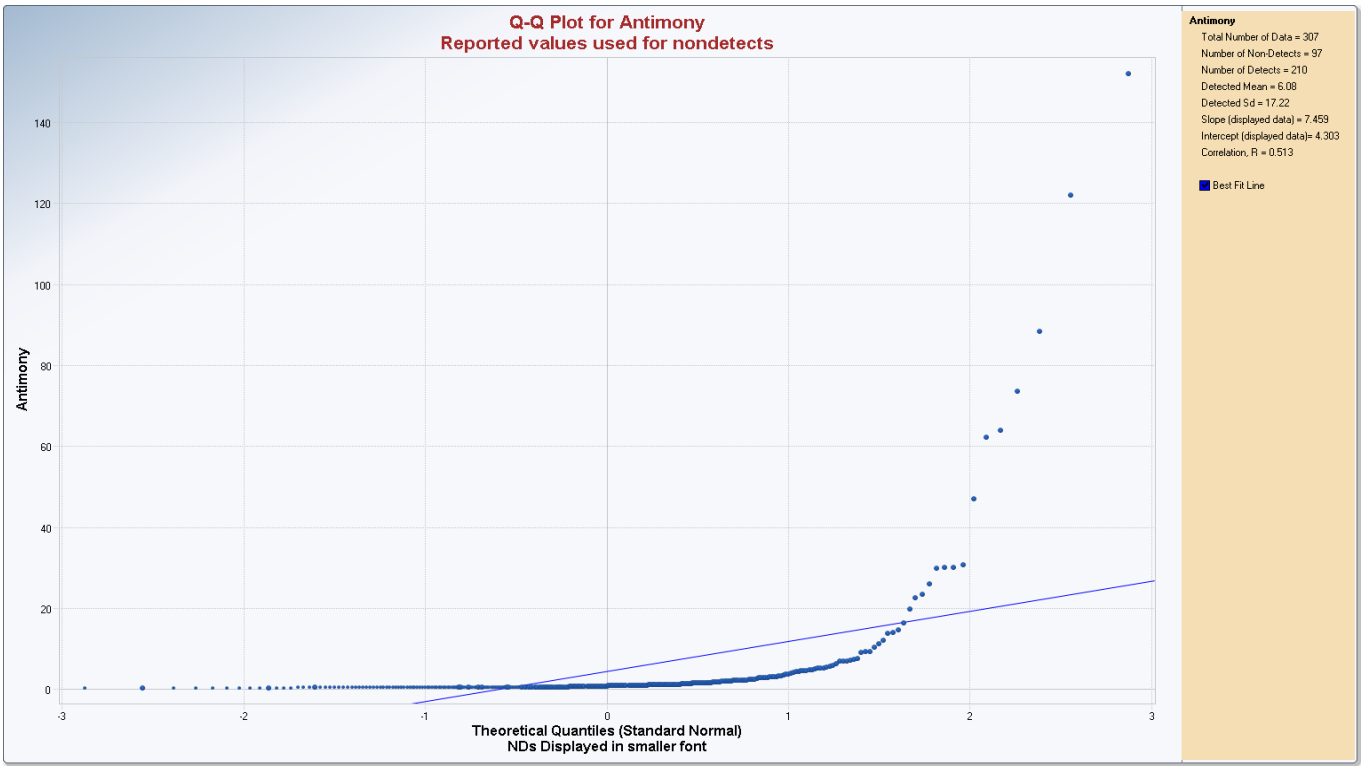

Q-Q Plot for Lead
Reported values used for nondetects
Lead
Total Number of Data = 307
Number of Non-Detects = 0
Number of Detects = 307
Detected Mean = 164.8
Detected Sd = 429.8
Slope (displayed data) = 241
Intercept (displayed data)= 164.8
Correlation, R = 0.558
Best Fit Line
Lead
4800
4000
3200
2400
1600
800
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

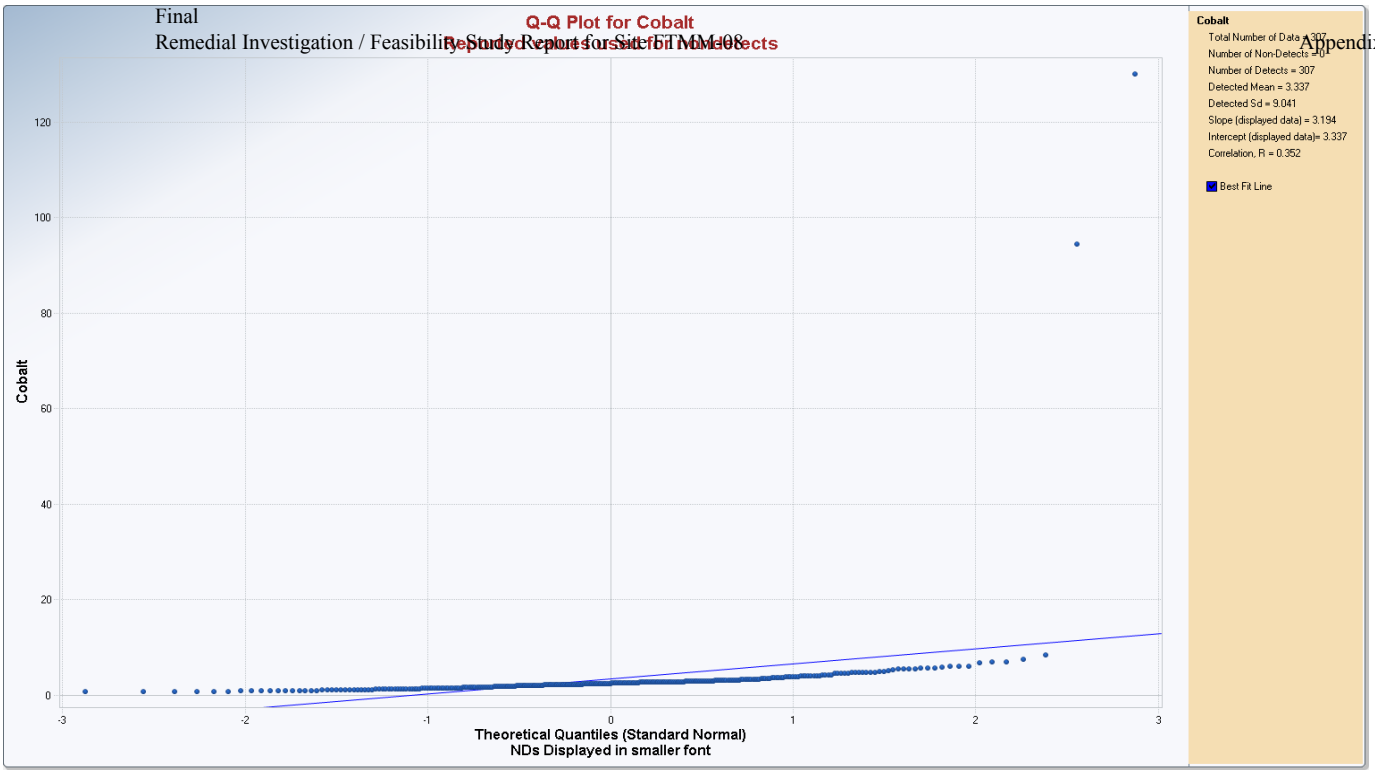

Q-Q Plot for Thallium
Reported values used for nondetects
Thallium
Total Number of Data = 307
Number of Non-Detects = 305
Number of Detects = 2
Detected Mean = 103
Detected Sd = 22.7
Slope (displayed data) = 1.959
Intercept (displayed data)= 1.358
Correlation, R = 0.234
Best Fit Line
Thallium
120
100
80
60
40
20
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

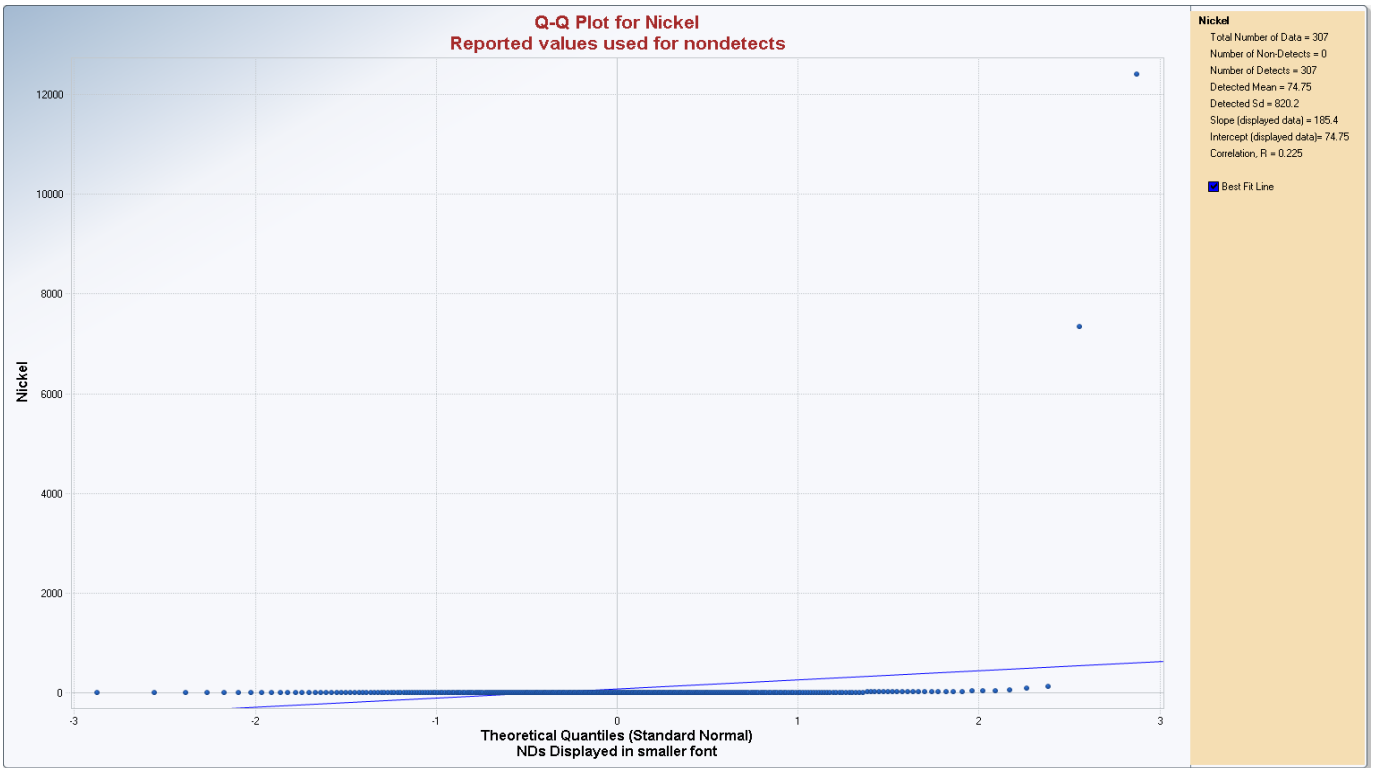

Q-Q Plot for Dibenzofuran
Reported values used for nondetects
Dibenzofuran
Total Number of Data = 307
Number of Non-Detects = 289
Number of Detects = 18
Detected Mean = 91609
Detected Sd = 248719
Slope (displayed data) = 16493
Intercept (displayed data)= 7348
Correlation, R = 0.263
Best Fit Line
Dibenzofuran
750000
500000
250000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font


Q-Q Plot for Fluoranthene
Reported values used for nondetects
Fluoranthene
Total Number of Data = 307
Number of Non-Detects = 81
Number of Detects = 226
Detected Mean = 59113
Detected Sd = 567848
Slope (displayed data) = 118732
Intercept (displayed data)= 44354
Correlation, R = 0.242
Best Fit Line
Fluoranthene
6000000
4000000
2000000
0
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font


Q-Q Plot for Pyrene
Reported values used for nondetects
Pyrene
Total Number of Data = 307
Number of Non-Detects = 74
Number of Detects = 233
Detected Mean = 51395
Detected Sd = 524461
Slope (displayed data) = 107201
Intercept (displayed data)= 39780
Correlation, R = 0.233
Best Fit Line
6000000
4000000
2000000
0
Pyrene
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font


Q-Q Plot for Antimony
Reported values used for nondetects
Antimony
Total Number of Data = 307
Number of Non-Detects = 97
Number of Detects = 210
Detected Mean = 6.08
Detected Sd = 17.22
Slope (displayed data) = 7.459
Intercept (displayed data)= 4.303
Correlation, R = 0.513
Best Fit Line
140
120
100
80
60
40
20
0
Antimony
-3
-2
-1
0
1
2
3
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font


Q-Q Plot for Cobalt
Reported values used for nondetects
Cobalt
Total Number of Data = 307
Number of Non-Detects = 0
Number of Detects = 307
Detected Mean = 3.337
Detected Sd = 9.041
Slope (displayed data) = 3.194
Intercept (displayed data)= 3.337
Correlation, R = 0.352
Best Fit Line
Cobalt
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font


Q-Q Plot for Nickel
Reported values used for nondetects
Nickel
Total Number of Data = 307
Number of Non-Detects = 0
Number of Detects = 307
Detected Mean = 74.75
Detected Sd = 820.2
Slope (displayed data) = 185.4
Intercept (displayed data)= 74.75
Correlation, R = 0.225
Best Fit Line
Nickel
Theoretical Quantiles (Standard Normal)
NDs Displayed in smaller font

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	9/8/2015 11:42:59 AM
From File	ProUCL Input.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene

General Statistics

Total Number of Observations	307	Number of Distinct Observations	42
Number of Detects	24	Number of Non-Detects	283
Number of Distinct Detects	21	Number of Distinct Non-Detects	23
Minimum Detect	130	Minimum Non-Detect	900
Maximum Detect	950000	Maximum Non-Detect	54000
Variance Detects	5.646E+10	Percent Non-Detects	92.18%
Mean Detects	77855	SD Detects	237609
Median Detects	365	CV Detects	3.052
Skewness Detects	3.251	Kurtosis Detects	9.839
Mean of Logged Detects	7.184	SD of Logged Detects	2.68

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.373	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.47	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.181	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	6358	Standard Error of Mean	3981
SD	68289	95% KM (BCA) UCL	14111
95% KM (t) UCL	12927	95% KM (Percentile Bootstrap) UCL	12564
95% KM (z) UCL	12907	95% KM Bootstrap t UCL	50321
90% KM Chebyshev UCL	18302	95% KM Chebyshev UCL	23712
97.5% KM Chebyshev UCL	31222	99% KM Chebyshev UCL	45972

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.195	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.915	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.345	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.199	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.183	k star (bias corrected MLE)	0.188
Theta hat (MLE)	425556	Theta star (bias corrected MLE)	414436
nu hat (MLE)	8.782	nu star (bias corrected)	9.017
MLE Mean (bias corrected)	77855	MLE Sd (bias corrected)	179627

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00867	nu hat (KM)	5.322
Approximate Chi Square Value (5.32, α)	1.304	Adjusted Chi Square Value (5.32, β)	1.295
95% Gamma Approximate KM-UCL (use when n>=50)	25951	95% Gamma Adjusted KM-UCL (use when n<50)	26134

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	11824
Maximum	950000	Median	0.01
SD	71049	CV	6.009
k hat (MLE)	0.0746	k star (bias corrected MLE)	0.076
Theta hat (MLE)	158512	Theta star (bias corrected MLE)	155505
nu hat (MLE)	45.8	nu star (bias corrected)	46.69
MLE Mean (bias corrected)	11824	MLE Sd (bias corrected)	42881
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (46.69, α)	32.01	Adjusted Chi Square Value (46.69, β)	31.95
95% Gamma Approximate UCL (use when n>=50)	17247	95% Gamma Adjusted UCL (use when n<50)	17278

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.764	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.292	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.181	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6889	Mean in Log Scale	5.927
SD in Original Scale	68365	SD in Log Scale	1.641
95% t UCL (assumes normality of ROS data)	13326	95% Percentile Bootstrap UCL	13741
95% BCA Bootstrap UCL	17481	95% Bootstrap t UCL	187740
95% H-UCL (Log ROS)	1857		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	7062	Mean in Log Scale	6.579
SD in Original Scale	68368	SD in Log Scale	0.982
95% t UCL (Assumes normality)	13500	95% H-Stat UCL	1311

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	31222

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	33
Number of Detects	5	Number of Non-Detects	302
Number of Distinct Detects	5	Number of Distinct Non-Detects	28
Minimum Detect	5800	Minimum Non-Detect	900
Maximum Detect	8600	Maximum Non-Detect	58000
Variance Detects	1493000	Percent Non-Detects	98.37%
Mean Detects	7440	SD Detects	1222
Median Detects	8000	CV Detects	0.164
Skewness Detects	-0.655	Kurtosis Detects	-2.128
Mean of Logged Detects	8.903	SD of Logged Detects	0.172

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.882	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.277	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1015	Standard Error of Mean	57.94
SD	872.8	95% KM (BCA) UCL	1170
95% KM (t) UCL	1111	95% KM (Percentile Bootstrap) UCL	1130
95% KM (z) UCL	1111	95% KM Bootstrap t UCL	1045
90% KM Chebyshev UCL	1189	95% KM Chebyshev UCL	1268
97.5% KM Chebyshev UCL	1377	99% KM Chebyshev UCL	1592

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.444	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.678	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.304	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.357	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	43.85	k star (bias corrected MLE)	17.67
Theta hat (MLE)	169.7	Theta star (bias corrected MLE)	421
nu hat (MLE)	438.5	nu star (bias corrected)	176.7
MLE Mean (bias corrected)	7440	MLE Sd (bias corrected)	1770

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.353	nu hat (KM)	831
Approximate Chi Square Value (830.95, α)	765.1	Adjusted Chi Square Value (830.95, β)	764.8
95% Gamma Approximate KM-UCL (use when n>=50)	1103	95% Gamma Adjusted KM-UCL (use when n<50)	1103

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	550.8
Maximum	8600	Median	0.01
SD	1364	CV	2.477
k hat (MLE)	0.101	k star (bias corrected MLE)	0.102
Theta hat (MLE)	5461	Theta star (bias corrected MLE)	5397
nu hat (MLE)	61.93	nu star (bias corrected)	62.66
MLE Mean (bias corrected)	550.8	MLE Sd (bias corrected)	1724
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (62.66, α)	45.45	Adjusted Chi Square Value (62.66, β)	45.38
95% Gamma Approximate UCL (use when n>=50)	759.3	95% Gamma Adjusted UCL (use when n<50)	760.4

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.873	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.288	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1932	Mean in Log Scale	7.406
SD in Original Scale	1214	SD in Log Scale	0.562
95% t UCL (assumes normality of ROS data)	2046	95% Percentile Bootstrap UCL	2046
95% BCA Bootstrap UCL	2053	95% Bootstrap t UCL	2048
95% H-UCL (Log ROS)	2043		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	6.839	95% H-UCL (KM -Log)	997.1
KM SD (logged)	0.277	95% Critical H Value (KM-Log)	1.702
KM Standard Error of Mean (logged)	0.0184		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1346	Mean in Log Scale	6.602
SD in Original Scale	3120	SD in Log Scale	0.773
95% t UCL (Assumes normality)	1640	95% H-Stat UCL	1083

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1111	95% KM (Percentile Bootstrap) UCL	1130

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	96
Number of Detects	192	Number of Non-Detects	115
Number of Distinct Detects	87	Number of Distinct Non-Detects	20
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	2500000	Maximum Non-Detect	23000
Variance Detects	5.176E+10	Percent Non-Detects	37.46%
Mean Detects	26306	SD Detects	227518
Median Detects	305	CV Detects	8.649
Skewness Detects	9.775	Kurtosis Detects	97.34
Mean of Logged Detects	6.148	SD of Logged Detects	1.48

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.117	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.492	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0639	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	16592	Standard Error of Mean	10294
SD	179897	95% KM (BCA) UCL	36949
95% KM (t) UCL	33576	95% KM (Percentile Bootstrap) UCL	35754
95% KM (z) UCL	33524	95% KM Bootstrap t UCL	421291
90% KM Chebyshev UCL	47474	95% KM Chebyshev UCL	61463
97.5% KM Chebyshev UCL	80879	99% KM Chebyshev UCL	119017

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	54.59	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.935	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.42	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.0734	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.185	k star (bias corrected MLE)	0.185
Theta hat (MLE)	142306	Theta star (bias corrected MLE)	141858
nu hat (MLE)	70.98	nu star (bias corrected)	71.21
MLE Mean (bias corrected)	26306	MLE Sd (bias corrected)	61088

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00851	nu hat (KM)	5.223
Approximate Chi Square Value (5.22, α)	1.257	Adjusted Chi Square Value (5.22, β)	1.248
95% Gamma Approximate KM-UCL (use when n>=50)	68965	95% Gamma Adjusted KM-UCL (use when n<50)	69458

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	18187
Maximum	2500000	Median	200
SD	180285	CV	9.913
k hat (MLE)	0.115	k star (bias corrected MLE)	0.116
Theta hat (MLE)	158776	Theta star (bias corrected MLE)	157331
nu hat (MLE)	70.33	nu star (bias corrected)	70.98
MLE Mean (bias corrected)	18187	MLE Sd (bias corrected)	53492
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (70.98, α)	52.58	Adjusted Chi Square Value (70.98, β)	52.51
95% Gamma Approximate UCL (use when n>=50)	24550	95% Gamma Adjusted UCL (use when n<50)	24585

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0639	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	16626	Mean in Log Scale	6.029
SD in Original Scale	180188	SD in Log Scale	1.286
95% t UCL (assumes normality of ROS data)	33593	95% Percentile Bootstrap UCL	35941
95% BCA Bootstrap UCL	43829	95% Bootstrap t UCL	310121
95% H-UCL (Log ROS)	1129		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	16952	Mean in Log Scale	6.34
SD in Original Scale	180163	SD in Log Scale	1.297
95% t UCL (Assumes normality)	33916	95% H-Stat UCL	1566

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	61463

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	110
Number of Detects	231	Number of Non-Detects	76
Number of Distinct Detects	100	Number of Distinct Non-Detects	17
Minimum Detect	100	Minimum Non-Detect	900
Maximum Detect	3800000	Maximum Non-Detect	23000
Variance Detects	8.835E+10	Percent Non-Detects	24.76%
Mean Detects	31176	SD Detects	297237
Median Detects	460	CV Detects	9.534
Skewness Detects	11.19	Kurtosis Detects	130.4
Mean of Logged Detects	6.476	SD of Logged Detects	1.416

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.107	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.493	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0583	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	23579	Standard Error of Mean	14735
SD	257616	95% KM (BCA) UCL	51059
95% KM (t) UCL	47890	95% KM (Percentile Bootstrap) UCL	50921
95% KM (z) UCL	47816	95% KM Bootstrap t UCL	342540
90% KM Chebyshev UCL	67784	95% KM Chebyshev UCL	87807
97.5% KM Chebyshev UCL	115599	99% KM Chebyshev UCL	170189

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	64.76	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.929	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.421	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.067	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.191	k star (bias corrected MLE)	0.192
Theta hat (MLE)	162881	Theta star (bias corrected MLE)	162541
nu hat (MLE)	88.43	nu star (bias corrected)	88.61
MLE Mean (bias corrected)	31176	MLE Sd (bias corrected)	71185

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00838	nu hat (KM)	5.144
Approximate Chi Square Value (5.14, α)	1.219	Adjusted Chi Square Value (5.14, β)	1.21
95% Gamma Approximate KM-UCL (use when n>=50)	99481	95% Gamma Adjusted KM-UCL (use when n<50)	100201

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	23920
Maximum	3800000	Median	350
SD	258036	CV	10.79
k hat (MLE)	0.129	k star (bias corrected MLE)	0.129
Theta hat (MLE)	186036	Theta star (bias corrected MLE)	184722
nu hat (MLE)	78.95	nu star (bias corrected)	79.51
MLE Mean (bias corrected)	23920	MLE Sd (bias corrected)	66472
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (79.51, α)	59.96	Adjusted Chi Square Value (79.51, β)	59.88
95% Gamma Approximate UCL (use when n>=50)	31716	95% Gamma Adjusted UCL (use when n<50)	31758

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.17	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0583	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	23595	Mean in Log Scale	6.377
SD in Original Scale	258035	SD in Log Scale	1.293
95% t UCL (assumes normality of ROS data)	47892	95% Percentile Bootstrap UCL	49781
95% BCA Bootstrap UCL	66085	95% Bootstrap t UCL	529598
95% H-UCL (Log ROS)	1617		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	23882	Mean in Log Scale	6.558
SD in Original Scale	258013	SD in Log Scale	1.327
95% t UCL (Assumes normality)	48177	95% H-Stat UCL	2040

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	87807

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	91
Number of Detects	189	Number of Non-Detects	118
Number of Distinct Detects	79	Number of Distinct Non-Detects	22
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	5400000	Maximum Non-Detect	23000
Variance Detects	1.867E+11	Percent Non-Detects	38.44%
Mean Detects	44215	SD Detects	432097
Median Detects	320	CV Detects	9.773
Skewness Detects	11.22	Kurtosis Detects	132.3
Mean of Logged Detects	6.185	SD of Logged Detects	1.495

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.107	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.506	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0644	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	27367	Standard Error of Mean	19388
SD	338807	95% KM (BCA) UCL	62790
95% KM (t) UCL	59354	95% KM (Percentile Bootstrap) UCL	61650
95% KM (z) UCL	59257	95% KM Bootstrap t UCL	667177
90% KM Chebyshev UCL	85531	95% KM Chebyshev UCL	111878
97.5% KM Chebyshev UCL	148446	99% KM Chebyshev UCL	220276

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	55.88	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.952	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.431	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.0747	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.168	k star (bias corrected MLE)	0.168
Theta hat (MLE)	263828	Theta star (bias corrected MLE)	262470
nu hat (MLE)	63.35	nu star (bias corrected)	63.68
MLE Mean (bias corrected)	44215	MLE Sd (bias corrected)	107727

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00652	nu hat (KM)	4.006
Approximate Chi Square Value (4.01, α)	0.724	Adjusted Chi Square Value (4.01, β)	0.718
95% Gamma Approximate KM-UCL (use when n>=50)	151410	95% Gamma Adjusted KM-UCL (use when n<50)	152711

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	29070
Maximum	5400000	Median	190
SD	339399	CV	11.68
k hat (MLE)	0.105	k star (bias corrected MLE)	0.107
Theta hat (MLE)	275666	Theta star (bias corrected MLE)	272715
nu hat (MLE)	64.75	nu star (bias corrected)	65.45
MLE Mean (bias corrected)	29070	MLE Sd (bias corrected)	89039
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (65.45, α)	47.83	Adjusted Chi Square Value (65.45, β)	47.76
95% Gamma Approximate UCL (use when n>=50)	39776	95% Gamma Adjusted UCL (use when n<50)	39834

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.182	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0644	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	27396	Mean in Log Scale	6.05
SD in Original Scale	339358	SD in Log Scale	1.288
95% t UCL (assumes normality of ROS data)	59351	95% Percentile Bootstrap UCL	63417
95% BCA Bootstrap UCL	95630	95% Bootstrap t UCL	670011
95% H-UCL (Log ROS)	1157		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	27749	Mean in Log Scale	6.379
SD in Original Scale	339332	SD in Log Scale	1.305
95% t UCL (Assumes normality)	59701	95% H-Stat UCL	1648

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	111878

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	91
Number of Detects	187	Number of Non-Detects	120
Number of Distinct Detects	78	Number of Distinct Non-Detects	22
Minimum Detect	100	Minimum Non-Detect	900
Maximum Detect	3100000	Maximum Non-Detect	23000
Variance Detects	7.706E+10	Percent Non-Detects	39.09%
Mean Detects	30769	SD Detects	277605
Median Detects	320	CV Detects	9.022
Skewness Detects	9.939	Kurtosis Detects	100.6
Mean of Logged Detects	6.162	SD of Logged Detects	1.471

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.112	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.497	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0648	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	18890	Standard Error of Mean	12395
SD	216589	95% KM (BCA) UCL	39885
95% KM (t) UCL	39339	95% KM (Percentile Bootstrap) UCL	40856
95% KM (z) UCL	39277	95% KM Bootstrap t UCL	295807
90% KM Chebyshev UCL	56074	95% KM Chebyshev UCL	72917
97.5% KM Chebyshev UCL	96294	99% KM Chebyshev UCL	142214

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	53.75	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.94	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.431	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.075	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.179	k star (bias corrected MLE)	0.18
Theta hat (MLE)	171528	Theta star (bias corrected MLE)	170874
nu hat (MLE)	67.09	nu star (bias corrected)	67.35
MLE Mean (bias corrected)	30769	MLE Sd (bias corrected)	72509

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00761	nu hat (KM)	4.671
Approximate Chi Square Value (4.67, α)	1.003	Adjusted Chi Square Value (4.67, β)	0.995
95% Gamma Approximate KM-UCL (use when n>=50)	87952	95% Gamma Adjusted KM-UCL (use when n<50)	88633

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	20347
Maximum	3100000	Median	200
SD	217002	CV	10.67
k hat (MLE)	0.109	k star (bias corrected MLE)	0.111
Theta hat (MLE)	185940	Theta star (bias corrected MLE)	184085
nu hat (MLE)	67.19	nu star (bias corrected)	67.86
MLE Mean (bias corrected)	20347	MLE Sd (bias corrected)	61201
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (67.86, α)	49.9	Adjusted Chi Square Value (67.86, β)	49.83
95% Gamma Approximate UCL (use when n>=50)	27670	95% Gamma Adjusted UCL (use when n<50)	27710

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.177	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0648	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	18919	Mean in Log Scale	6.029
SD in Original Scale	216940	SD in Log Scale	1.266
95% t UCL (assumes normality of ROS data)	39346	95% Percentile Bootstrap UCL	41277
95% BCA Bootstrap UCL	52249	95% Bootstrap t UCL	294071
95% H-UCL (Log ROS)	1096		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	19274	Mean in Log Scale	6.365
SD in Original Scale	216913	SD in Log Scale	1.284
95% t UCL (Assumes normality)	39699	95% H-Stat UCL	1577

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	72917

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	96
Number of Detects	186	Number of Non-Detects	121
Number of Distinct Detects	83	Number of Distinct Non-Detects	22
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	4500000	Maximum Non-Detect	23000
Variance Detects	1.421E+11	Percent Non-Detects	39.41%
Mean Detects	40569	SD Detects	376968
Median Detects	330	CV Detects	9.292
Skewness Detects	10.56	Kurtosis Detects	116.4
Mean of Logged Detects	6.199	SD of Logged Detects	1.511

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.112	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.502	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.065	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	24731	Standard Error of Mean	16784
SD	293290	95% KM (BCA) UCL	61206
95% KM (t) UCL	52422	95% KM (Percentile Bootstrap) UCL	54935
95% KM (z) UCL	52338	95% KM Bootstrap t UCL	422041
90% KM Chebyshev UCL	75083	95% KM Chebyshev UCL	97891
97.5% KM Chebyshev UCL	129548	99% KM Chebyshev UCL	191731

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	54.38	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.949	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.425	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.0755	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.171	k star (bias corrected MLE)	0.172
Theta hat (MLE)	237422	Theta star (bias corrected MLE)	236277
nu hat (MLE)	63.57	nu star (bias corrected)	63.87
MLE Mean (bias corrected)	40569	MLE Sd (bias corrected)	97906

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00711	nu hat (KM)	4.366
Approximate Chi Square Value (4.37, α)	0.871	Adjusted Chi Square Value (4.37, β)	0.864
95% Gamma Approximate KM-UCL (use when n>=50)	123920	95% Gamma Adjusted KM-UCL (use when n<50)	124925

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	26692
Maximum	4500000	Median	200
SD	293851	CV	11.01
k hat (MLE)	0.106	k star (bias corrected MLE)	0.108
Theta hat (MLE)	250790	Theta star (bias corrected MLE)	248151
nu hat (MLE)	65.35	nu star (bias corrected)	66.04
MLE Mean (bias corrected)	26692	MLE Sd (bias corrected)	81386
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (66.04, α)	48.34	Adjusted Chi Square Value (66.04, β)	48.27
95% Gamma Approximate UCL (use when n>=50)	36466	95% Gamma Adjusted UCL (use when n<50)	36519

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.179	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.065	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	24767	Mean in Log Scale	6.063
SD in Original Scale	293766	SD in Log Scale	1.297
95% t UCL (assumes normality of ROS data)	52428	95% Percentile Bootstrap UCL	54959
95% BCA Bootstrap UCL	73469	95% Bootstrap t UCL	421433
95% H-UCL (Log ROS)	1189		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	25114	Mean in Log Scale	6.389
SD in Original Scale	293740	SD in Log Scale	1.306
95% t UCL (Assumes normality)	52773	95% H-Stat UCL	1669

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	129548

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	72
Number of Detects	116	Number of Non-Detects	191
Number of Distinct Detects	55	Number of Distinct Non-Detects	23
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	1200000	Maximum Non-Detect	23000
Variance Detects	1.640E+10	Percent Non-Detects	62.21%
Mean Detects	18719	SD Detects	128058
Median Detects	240	CV Detects	6.841
Skewness Detects	8.128	Kurtosis Detects	69.41
Mean of Logged Detects	5.992	SD of Logged Detects	1.585

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.158	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.495	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0823	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	7253	Standard Error of Mean	4522
SD	78885	95% KM (BCA) UCL	16009
95% KM (t) UCL	14714	95% KM (Percentile Bootstrap) UCL	15098
95% KM (z) UCL	14691	95% KM Bootstrap t UCL	178466
90% KM Chebyshev UCL	20819	95% KM Chebyshev UCL	26963
97.5% KM Chebyshev UCL	35492	99% KM Chebyshev UCL	52245

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	32.26	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.925	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.408	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.095	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.193	k star (bias corrected MLE)	0.193
Theta hat (MLE)	97227	Theta star (bias corrected MLE)	96841
nu hat (MLE)	44.67	nu star (bias corrected)	44.85
MLE Mean (bias corrected)	18719	MLE Sd (bias corrected)	42577

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00845	nu hat (KM)	5.191
Approximate Chi Square Value (5.19, α)	1.242	Adjusted Chi Square Value (5.19, β)	1.233
95% Gamma Approximate KM-UCL (use when n>=50)	30328	95% Gamma Adjusted KM-UCL (use when n<50)	30546

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	9734
Maximum	1200000	Median	0.01
SD	79461	CV	8.163
k hat (MLE)	0.0976	k star (bias corrected MLE)	0.0989
Theta hat (MLE)	99684	Theta star (bias corrected MLE)	98456
nu hat (MLE)	59.96	nu star (bias corrected)	60.7
MLE Mean (bias corrected)	9734	MLE Sd (bias corrected)	30957
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (60.70, α)	43.79	Adjusted Chi Square Value (60.70, β)	43.72
95% Gamma Approximate UCL (use when n>=50)	13495	95% Gamma Adjusted UCL (use when n<50)	13516

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.221	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0823	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7326	Mean in Log Scale	5.773
SD in Original Scale	79007	SD in Log Scale	1.22
95% t UCL (assumes normality of ROS data)	14766	95% Percentile Bootstrap UCL	15856
95% BCA Bootstrap UCL	20704	95% Bootstrap t UCL	145573
95% H-UCL (Log ROS)	794.2		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	7747	Mean in Log Scale	6.351
SD in Original Scale	78981	SD in Log Scale	1.148
95% t UCL (Assumes normality)	15184	95% H-Stat UCL	1283

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	26963

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	45
Number of Detects	27	Number of Non-Detects	280
Number of Distinct Detects	24	Number of Distinct Non-Detects	26
Minimum Detect	140	Minimum Non-Detect	900
Maximum Detect	850000	Maximum Non-Detect	54000
Variance Detects	3.188E+10	Percent Non-Detects	91.21%
Mean Detects	51612	SD Detects	178553
Median Detects	390	CV Detects	3.46
Skewness Detects	4.028	Kurtosis Detects	16.79
Mean of Logged Detects	7.041	SD of Logged Detects	2.349

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.332	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.472	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	4841	Standard Error of Mean	3138
SD	53954	95% KM (BCA) UCL	11425
95% KM (t) UCL	10018	95% KM (Percentile Bootstrap) UCL	10282
95% KM (z) UCL	10003	95% KM Bootstrap t UCL	44008
90% KM Chebyshev UCL	14255	95% KM Chebyshev UCL	18520
97.5% KM Chebyshev UCL	24439	99% KM Chebyshev UCL	36066

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.16	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.908	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.361	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.187	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.194	k star (bias corrected MLE)	0.197
Theta hat (MLE)	265994	Theta star (bias corrected MLE)	261769
nu hat (MLE)	10.48	nu star (bias corrected)	10.65
MLE Mean (bias corrected)	51612	MLE Sd (bias corrected)	116235

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00805	nu hat (KM)	4.942
Approximate Chi Square Value (4.94, α)	1.125	Adjusted Chi Square Value (4.94, β)	1.117
95% Gamma Approximate KM-UCL (use when n>=50)	21255	95% Gamma Adjusted KM-UCL (use when n<50)	21413

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	7164
Maximum	850000	Median	0.01
SD	54947	CV	7.669
k hat (MLE)	0.0749	k star (bias corrected MLE)	0.0763
Theta hat (MLE)	95706	Theta star (bias corrected MLE)	93899
nu hat (MLE)	45.96	nu star (bias corrected)	46.85
MLE Mean (bias corrected)	7164	MLE Sd (bias corrected)	25937
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (46.85, α)	32.14	Adjusted Chi Square Value (46.85, β)	32.08
95% Gamma Approximate UCL (use when n>=50)	10443	95% Gamma Adjusted UCL (use when n<50)	10461

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.774	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.206	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.171	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5083	Mean in Log Scale	5.841
SD in Original Scale	54026	SD in Log Scale	1.407
95% t UCL (assumes normality of ROS data)	10170	95% Percentile Bootstrap UCL	10790
95% BCA Bootstrap UCL	14272	95% Bootstrap t UCL	182342
95% H-UCL (Log ROS)	1131		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	5473	Mean in Log Scale	6.565
SD in Original Scale	54026	SD in Log Scale	0.921
95% t UCL (Assumes normality)	10560	95% H-Stat UCL	1209

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	24439

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	597	Number of Distinct Observations	262
Number of Detects	10	Number of Non-Detects	587
Number of Distinct Detects	10	Number of Distinct Non-Detects	253
Minimum Detect	0.0197	Minimum Non-Detect	0
Maximum Detect	5654	Maximum Non-Detect	0.661
Variance Detects	3154354	Percent Non-Detects	98.32%
Mean Detects	605.1	SD Detects	1776
Median Detects	16.59	CV Detects	2.935
Skewness Detects	3.15	Kurtosis Detects	9.94

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.394	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.474	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	10.13	Standard Error of Mean	9.986
SD	231.5	95% KM (BCA) UCL	29.58
95% KM (t) UCL	26.59	95% KM (Percentile Bootstrap) UCL	28.99
95% KM (z) UCL	26.56	95% KM Bootstrap t UCL	994.4
90% KM Chebyshev UCL	40.09	95% KM Chebyshev UCL	53.66
97.5% KM Chebyshev UCL	72.5	99% KM Chebyshev UCL	109.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.036	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.857	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.317	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.295	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.197	k star (bias corrected MLE)	0.205
Theta hat (MLE)	3065	Theta star (bias corrected MLE)	2954
nu hat (MLE)	3.948	nu star (bias corrected)	4.097
MLE Mean (bias corrected)	605.1	MLE Sd (bias corrected)	1337

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00192	nu hat (KM)	2.289
		Adjusted Level of Significance (β)	0.0496
Approximate Chi Square Value (2.29, α)	0.197	Adjusted Chi Square Value (2.29, β)	0.196
95% Gamma Approximate KM-UCL (use when n>=50)	117.6	95% Gamma Adjusted KM-UCL (use when n<50)	118.2

Gamma (KM) may not be used when k hat (KM) is < 0.1

DL/2 Statistics

Mean in Original Scale	10.21	SD in Original Scale	231.7
95% t UCL (Assumes normality)	25.83		

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	72.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	597	Number of Distinct Observations	211
Number of Detects	49	Number of Non-Detects	548
Number of Distinct Detects	48	Number of Distinct Non-Detects	164
Minimum Detect	0.083	Minimum Non-Detect	0
Maximum Detect	30.03	Maximum Non-Detect	0.808
Variance Detects	28.73	Percent Non-Detects	91.79%
Mean Detects	2.216	SD Detects	5.36
Median Detects	0.462	CV Detects	2.419
Skewness Detects	3.981	Kurtosis Detects	17.16

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.44	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.373	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.127	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.182	Standard Error of Mean	0.0677
SD	1.637	95% KM (BCA) UCL	0.311
95% KM (t) UCL	0.293	95% KM (Percentile Bootstrap) UCL	0.3
95% KM (z) UCL	0.293	95% KM Bootstrap t UCL	0.417
90% KM Chebyshev UCL	0.385	95% KM Chebyshev UCL	0.477
97.5% KM Chebyshev UCL	0.605	99% KM Chebyshev UCL	0.855

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.613	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.819	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.292	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.134	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.481	k star (bias corrected MLE)	0.465
Theta hat (MLE)	4.609	Theta star (bias corrected MLE)	4.766
nu hat (MLE)	47.12	nu star (bias corrected)	45.57
MLE Mean (bias corrected)	2.216	MLE Sd (bias corrected)	3.25

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0124	nu hat (KM)	14.75
		Adjusted Level of Significance (β)	0.0496
Approximate Chi Square Value (14.75, α)	7.089	Adjusted Chi Square Value (14.75, β)	7.076
95% Gamma Approximate KM-UCL (use when n>=50)	0.379	95% Gamma Adjusted KM-UCL (use when n<50)	0.379

Gamma (KM) may not be used when k hat (KM) is < 0.1

DL/2 Statistics

Mean in Original Scale	0.2	SD in Original Scale	1.636
95% t UCL (Assumes normality)	0.311		

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	0.605

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	229
		Number of Missing Observations	0
Minimum	1.43	Mean	41.76
Maximum	9580	Median	8.83
SD	546.2	Std. Error of Mean	31.18
Coefficient of Variation	13.08	Skewness	17.51

Normal GOF Test

Shapiro Wilk Test Statistic	0.0621	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.499	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0506	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	93.19	95% Adjusted-CLT UCL (Chen-1995)	126.3
		95% Modified-t UCL (Johnson-1978)	98.39

Gamma GOF Test

A-D Test Statistic	3.257E+28	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.837	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.428	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0551	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.436	k star (bias corrected MLE)	0.434
Theta hat (MLE)	95.8	Theta star (bias corrected MLE)	96.26
nu hat (MLE)	267.6	nu star (bias corrected)	266.3
MLE Mean (bias corrected)	41.76	MLE Sd (bias corrected)	63.4
		Approximate Chi Square Value (0.05)	229.5
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	229.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	48.45	95% Adjusted Gamma UCL (use when n<50)	48.48

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.76	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.117	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0506	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.358	Mean of logged Data	2.243
Maximum of Logged Data	9.167	SD of logged Data	0.621

Assuming Lognormal Distribution

95% H-UCL	12.2	90% Chebyshev (MVUE) UCL	12.74
95% Chebyshev (MVUE) UCL	13.34	97.5% Chebyshev (MVUE) UCL	14.17
99% Chebyshev (MVUE) UCL	15.8		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	93.04	95% Jackknife UCL	93.19
95% Standard Bootstrap UCL	92.99	95% Bootstrap-t UCL	3800
95% Hall's Bootstrap UCL	1579	95% Percentile Bootstrap UCL	104
95% BCA Bootstrap UCL	166.2		

90% Chebyshev(Mean, Sd) UCL	135.3	95% Chebyshev(Mean, Sd) UCL	177.6
97.5% Chebyshev(Mean, Sd) UCL	236.4	99% Chebyshev(Mean, Sd) UCL	351.9

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	177.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	278
		Number of Missing Observations	0
Minimum	4.38	Mean	164.8
Maximum	5050	Median	56.6
SD	429.8	Std. Error of Mean	24.53
Coefficient of Variation	2.609	Skewness	7.846

Normal GOF Test

Shapiro Wilk Test Statistic	0.352	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.355	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0506	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	205.2	95% Adjusted-CLT UCL (Chen-1995)	216.9
		95% Modified-t UCL (Johnson-1978)	207.1

Gamma GOF Test

A-D Test Statistic	14.6	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.808	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.169	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.0541	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.641	k star (bias corrected MLE)	0.637
Theta hat (MLE)	256.9	Theta star (bias corrected MLE)	258.5
nu hat (MLE)	393.8	nu star (bias corrected)	391.3
MLE Mean (bias corrected)	164.8	MLE Sd (bias corrected)	206.4
		Approximate Chi Square Value (0.05)	346.5
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	346.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	186.1	95% Adjusted Gamma UCL (use when n<50)	186.2

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.00481	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0559	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0506	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.477	Mean of logged Data	4.151
Maximum of Logged Data	8.527	SD of logged Data	1.255

Assuming Lognormal Distribution

95% H-UCL	164.9	90% Chebyshev (MVUE) UCL	178.2
95% Chebyshev (MVUE) UCL	196.1	97.5% Chebyshev (MVUE) UCL	220.9
99% Chebyshev (MVUE) UCL	269.5		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	205.1	95% Jackknife UCL	205.2
95% Standard Bootstrap UCL	204.2	95% Bootstrap-t UCL	227.9
95% Hall's Bootstrap UCL	254.6	95% Percentile Bootstrap UCL	208.9
95% BCA Bootstrap UCL	222.6		

90% Chebyshev(Mean, Sd) UCL	238.4	95% Chebyshev(Mean, Sd) UCL	271.7
97.5% Chebyshev(Mean, Sd) UCL	318	99% Chebyshev(Mean, Sd) UCL	408.9

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	271.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	194
Number of Detects	2	Number of Non-Detects	305
Number of Distinct Detects	2	Number of Distinct Non-Detects	192
Minimum Detect	86.9	Minimum Non-Detect	0.203
Maximum Detect	119	Maximum Non-Detect	1.671
Variance Detects	515.2	Percent Non-Detects	99.35%
Mean Detects	103	SD Detects	22.7
Median Detects	103	CV Detects	0.22
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	4.622	SD of Logged Detects	0.222

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.872	Standard Error of Mean	0.675
SD	8.367	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.987	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.983	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2.898	95% KM Chebyshev UCL	3.816
97.5% KM Chebyshev UCL	5.09	99% KM Chebyshev UCL	7.592

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	40.81	k star (bias corrected MLE)	N/A
Theta hat (MLE)	2.523	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	163.2	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0109	nu hat (KM)	6.675
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (6.67, α)	1.994	Adjusted Chi Square Value (6.67, β)	1.982
95% Gamma Approximate KM-UCL (use when n>=50)	2.92	95% Gamma Adjusted KM-UCL (use when n<50)	2.938

Gamma (KM) may not be used when k hat (KM) is < 0.1

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.332	Mean in Log Scale	0.858
SD in Original Scale	8.329	SD in Log Scale	0.632
95% t UCL (assumes normality of ROS data)	4.117	95% Percentile Bootstrap UCL	4.186
95% BCA Bootstrap UCL	4.602	95% Bootstrap t UCL	7.219
95% H-UCL (Log ROS)	3.08		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.015	Mean in Log Scale	-1.041
SD in Original Scale	8.369	SD in Log Scale	0.495
95% t UCL (Assumes normality)	1.803	95% H-Stat UCL	0.42

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 1.987 95% KM (% Bootstrap) UCL N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	232
Number of Detects	301	Number of Non-Detects	6
Number of Distinct Detects	229	Number of Distinct Non-Detects	5
Minimum Detect	0.02	Minimum Non-Detect	0.022
Maximum Detect	216	Maximum Non-Detect	0.027
Variance Detects	158.5	Percent Non-Detects	1.954%
Mean Detects	1.372	SD Detects	12.59
Median Detects	0.195	CV Detects	9.18
Skewness Detects	16.65	Kurtosis Detects	284.1
Mean of Logged Detects	-1.471	SD of Logged Detects	1.24

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.0992	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.457	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.345	Standard Error of Mean	0.712
SD	12.45	95% KM (BCA) UCL	2.817
95% KM (t) UCL	2.519	95% KM (Percentile Bootstrap) UCL	2.724
95% KM (z) UCL	2.516	95% KM Bootstrap t UCL	7.915
90% KM Chebyshev UCL	3.48	95% KM Chebyshev UCL	4.447
97.5% KM Chebyshev UCL	5.79	99% KM Chebyshev UCL	8.426

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.322E+28	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.3	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.056	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.373	k star (bias corrected MLE)	0.371
Theta hat (MLE)	3.682	Theta star (bias corrected MLE)	3.697
nu hat (MLE)	224.3	nu star (bias corrected)	223.4
MLE Mean (bias corrected)	1.372	MLE Sd (bias corrected)	2.252

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0117	nu hat (KM)	7.169
Approximate Chi Square Value (7.17, α)	2.264	Adjusted Chi Square Value (7.17, β)	2.251
95% Gamma Approximate KM-UCL (use when n>=50)	4.26	95% Gamma Adjusted KM-UCL (use when n<50)	4.284

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.345
Maximum	216	Median	0.189
SD	12.47	CV	9.271
k hat (MLE)	0.365	k star (bias corrected MLE)	0.364
Theta hat (MLE)	3.683	Theta star (bias corrected MLE)	3.697
nu hat (MLE)	224.2	nu star (bias corrected)	223.4
MLE Mean (bias corrected)	1.345	MLE Sd (bias corrected)	2.23
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (223.38, α)	189.8	Adjusted Chi Square Value (223.38, β)	189.6
95% Gamma Approximate UCL (use when n>=50)	1.583	95% Gamma Adjusted UCL (use when n<50)	1.584

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0925	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0511	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.345	Mean in Log Scale	-1.529
SD in Original Scale	12.47	SD in Log Scale	1.294
95% t UCL (assumes normality of ROS data)	2.519	95% Percentile Bootstrap UCL	2.731
95% BCA Bootstrap UCL	3.596	95% Bootstrap t UCL	8.074
95% H-UCL (Log ROS)	0.597		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.345	Mean in Log Scale	-1.529
SD in Original Scale	12.47	SD in Log Scale	1.295
95% t UCL (Assumes normality)	2.519	95% H-Stat UCL	0.597

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	4.447

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	39
Number of Detects	18	Number of Non-Detects	289
Number of Distinct Detects	15	Number of Distinct Non-Detects	26
Minimum Detect	120	Minimum Non-Detect	900
Maximum Detect	910000	Maximum Non-Detect	54000
Variance Detects	6.186E+10	Percent Non-Detects	94.14%
Mean Detects	91609	SD Detects	248719
Median Detects	335	CV Detects	2.715
Skewness Detects	2.875	Kurtosis Detects	7.699
Mean of Logged Detects	7.014	SD of Logged Detects	2.962

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.431	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.456	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	5631	Standard Error of Mean	3661
SD	62338	95% KM (BCA) UCL	13142
95% KM (t) UCL	11671	95% KM (Percentile Bootstrap) UCL	11586
95% KM (z) UCL	11653	95% KM Bootstrap t UCL	184287
90% KM Chebyshev UCL	16615	95% KM Chebyshev UCL	21590
97.5% KM Chebyshev UCL	28496	99% KM Chebyshev UCL	42060

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.271	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.916	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.387	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.228	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.171	k star (bias corrected MLE)	0.179
Theta hat (MLE)	536070	Theta star (bias corrected MLE)	510512
nu hat (MLE)	6.152	nu star (bias corrected)	6.46
MLE Mean (bias corrected)	91609	MLE Sd (bias corrected)	216259

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00816	nu hat (KM)	5.009
Approximate Chi Square Value (5.01, α)	1.156	Adjusted Chi Square Value (5.01, β)	1.148
95% Gamma Approximate KM-UCL (use when n>=50)	24389	95% Gamma Adjusted KM-UCL (use when n<50)	24569

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	14269
Maximum	910000	Median	0.01
SD	68342	CV	4.789
k hat (MLE)	0.0751	k star (bias corrected MLE)	0.0765
Theta hat (MLE)	190052	Theta star (bias corrected MLE)	186481
nu hat (MLE)	46.1	nu star (bias corrected)	46.98
MLE Mean (bias corrected)	14269	MLE Sd (bias corrected)	51584
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (46.98, α)	32.25	Adjusted Chi Square Value (46.98, β)	32.2
95% Gamma Approximate UCL (use when n>=50)	20786	95% Gamma Adjusted UCL (use when n<50)	20823

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.726	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.308	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.209	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6279	Mean in Log Scale	5.766
SD in Original Scale	62408	SD in Log Scale	1.768
95% t UCL (assumes normality of ROS data)	12156	95% Percentile Bootstrap UCL	13002
95% BCA Bootstrap UCL	16780	95% Bootstrap t UCL	50913
95% H-UCL (Log ROS)	2033		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	6360	Mean in Log Scale	6.56
SD in Original Scale	62410	SD in Log Scale	0.944
95% t UCL (Assumes normality)	12236	95% H-Stat UCL	1233

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	28496

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	113
Number of Detects	226	Number of Non-Detects	81
Number of Distinct Detects	103	Number of Distinct Non-Detects	18
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	7200000	Maximum Non-Detect	23000
Variance Detects	3.225E+11	Percent Non-Detects	26.38%
Mean Detects	59113	SD Detects	567848
Median Detects	485	CV Detects	9.606
Skewness Detects	11.09	Kurtosis Detects	128.2
Mean of Logged Detects	6.556	SD of Logged Detects	1.559

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.107	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.5	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0589	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	43649	Standard Error of Mean	27846
SD	486817	95% KM (BCA) UCL	100289
95% KM (t) UCL	89590	95% KM (Percentile Bootstrap) UCL	93451
95% KM (z) UCL	89451	95% KM Bootstrap t UCL	343383
90% KM Chebyshev UCL	127187	95% KM Chebyshev UCL	165026
97.5% KM Chebyshev UCL	217546	99% KM Chebyshev UCL	320712

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	63.29	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.95	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.414	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.068	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.17	k star (bias corrected MLE)	0.171
Theta hat (MLE)	347235	Theta star (bias corrected MLE)	345834
nu hat (MLE)	76.95	nu star (bias corrected)	77.26
MLE Mean (bias corrected)	59113	MLE Sd (bias corrected)	142980

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00804	nu hat (KM)	4.936
Approximate Chi Square Value (4.94, α)	1.123	Adjusted Chi Square Value (4.94, β)	1.114
95% Gamma Approximate KM-UCL (use when n>=50)	191896	95% Gamma Adjusted KM-UCL (use when n<50)	193324

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	43897
Maximum	7200000	Median	340
SD	487606	CV	11.11
k hat (MLE)	0.116	k star (bias corrected MLE)	0.117
Theta hat (MLE)	379338	Theta star (bias corrected MLE)	375956
nu hat (MLE)	71.05	nu star (bias corrected)	71.69
MLE Mean (bias corrected)	43897	MLE Sd (bias corrected)	128466
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (71.69, α)	53.2	Adjusted Chi Square Value (71.69, β)	53.12
95% Gamma Approximate UCL (use when n>=50)	59159	95% Gamma Adjusted UCL (use when n<50)	59242

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.163	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0589	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	43667	Mean in Log Scale	6.426
SD in Original Scale	487611	SD in Log Scale	1.417
95% t UCL (assumes normality of ROS data)	89581	95% Percentile Bootstrap UCL	92653
95% BCA Bootstrap UCL	119812	95% Bootstrap t UCL	346246
95% H-UCL (Log ROS)	2062		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	43935	Mean in Log Scale	6.61
SD in Original Scale	487588	SD in Log Scale	1.421
95% t UCL (Assumes normality)	89848	95% H-Stat UCL	2495

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	217546

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	111
Number of Detects	233	Number of Non-Detects	74
Number of Distinct Detects	103	Number of Distinct Non-Detects	17
Minimum Detect	110	Minimum Non-Detect	900
Maximum Detect	7400000	Maximum Non-Detect	23000
Variance Detects	2.751E+11	Percent Non-Detects	24.1%
Mean Detects	51395	SD Detects	524461
Median Detects	490	CV Detects	10.2
Skewness Detects	12.69	Kurtosis Detects	171.4
Mean of Logged Detects	6.541	SD of Logged Detects	1.533

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.103	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.497	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.058	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	39126	Standard Error of Mean	26106
SD	456439	95% KM (BCA) UCL	91972
95% KM (t) UCL	82198	95% KM (Percentile Bootstrap) UCL	92209
95% KM (z) UCL	82068	95% KM Bootstrap t UCL	288237
90% KM Chebyshev UCL	117446	95% KM Chebyshev UCL	152922
97.5% KM Chebyshev UCL	202161	99% KM Chebyshev UCL	298882

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	64.44	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.946	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.414	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.067	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.174	k star (bias corrected MLE)	0.175
Theta hat (MLE)	294529	Theta star (bias corrected MLE)	293496
nu hat (MLE)	81.32	nu star (bias corrected)	81.6
MLE Mean (bias corrected)	51395	MLE Sd (bias corrected)	122818

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.00735	nu hat (KM)	4.512
Approximate Chi Square Value (4.51, α)	0.934	Adjusted Chi Square Value (4.51, β)	0.926
95% Gamma Approximate KM-UCL (use when n>=50)	189068	95% Gamma Adjusted KM-UCL (use when n<50)	190567

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	39180
Maximum	7400000	Median	340
SD	457183	CV	11.67
k hat (MLE)	0.12	k star (bias corrected MLE)	0.121
Theta hat (MLE)	325378	Theta star (bias corrected MLE)	322712
nu hat (MLE)	73.93	nu star (bias corrected)	74.54
MLE Mean (bias corrected)	39180	MLE Sd (bias corrected)	112445
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (74.54, α)	55.66	Adjusted Chi Square Value (74.54, β)	55.58
95% Gamma Approximate UCL (use when n>=50)	52473	95% Gamma Adjusted UCL (use when n<50)	52545

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.138	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.058	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	39138	Mean in Log Scale	6.418
SD in Original Scale	457183	SD in Log Scale	1.408
95% t UCL (assumes normality of ROS data)	82187	95% Percentile Bootstrap UCL	86016
95% BCA Bootstrap UCL	128077	95% Bootstrap t UCL	289197
95% H-UCL (Log ROS)	2013		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	39394	Mean in Log Scale	6.593
SD in Original Scale	457163	SD in Log Scale	1.415
95% t UCL (Assumes normality)	82441	95% H-Stat UCL	2427

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	202161

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	251
Number of Detects	210	Number of Non-Detects	97
Number of Distinct Detects	190	Number of Distinct Non-Detects	70
Minimum Detect	0.253	Minimum Non-Detect	0.239
Maximum Detect	152	Maximum Non-Detect	0.924
Variance Detects	296.6	Percent Non-Detects	31.6%
Mean Detects	6.08	SD Detects	17.22
Median Detects	1.275	CV Detects	2.832
Skewness Detects	5.701	Kurtosis Detects	37.62
Mean of Logged Detects	0.633	SD of Logged Detects	1.239

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.355	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.368	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0611	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	4.246	Standard Error of Mean	0.827
SD	14.46	95% KM (BCA) UCL	5.701
95% KM (t) UCL	5.612	95% KM (Percentile Bootstrap) UCL	5.552
95% KM (z) UCL	5.607	95% KM Bootstrap t UCL	6.195
90% KM Chebyshev UCL	6.729	95% KM Chebyshev UCL	7.853
97.5% KM Chebyshev UCL	9.414	99% KM Chebyshev UCL	12.48

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	22.18	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.817	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.234	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.0659	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.536	k star (bias corrected MLE)	0.532
Theta hat (MLE)	11.34	Theta star (bias corrected MLE)	11.44
nu hat (MLE)	225.1	nu star (bias corrected)	223.2
MLE Mean (bias corrected)	6.08	MLE Sd (bias corrected)	8.34

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0862	nu hat (KM)	52.93
Approximate Chi Square Value (52.93, α)	37.22	Adjusted Chi Square Value (52.93, β)	37.15
95% Gamma Approximate KM-UCL (use when n>=50)	6.039	95% Gamma Adjusted KM-UCL (use when n<50)	6.049

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.162
Maximum	152	Median	0.809
SD	14.51	CV	3.486
k hat (MLE)	0.284	k star (bias corrected MLE)	0.284
Theta hat (MLE)	14.65	Theta star (bias corrected MLE)	14.68
nu hat (MLE)	174.5	nu star (bias corrected)	174.1
MLE Mean (bias corrected)	4.162	MLE Sd (bias corrected)	7.817
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (174.10, α)	144.6	Adjusted Chi Square Value (174.10, β)	144.5
95% Gamma Approximate UCL (use when n>=50)	5.012	95% Gamma Adjusted UCL (use when n<50)	5.016

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.132	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0611	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.202	Mean in Log Scale	-0.219
SD in Original Scale	14.5	SD in Log Scale	1.631
95% t UCL (assumes normality of ROS data)	5.567	95% Percentile Bootstrap UCL	5.719
95% BCA Bootstrap UCL	6.138	95% Bootstrap t UCL	6.195
95% H-UCL (Log ROS)	3.91		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.231	Mean in Log Scale	-0.0394
SD in Original Scale	14.49	SD in Log Scale	1.427
95% t UCL (Assumes normality)	5.595	95% H-Stat UCL	3.263

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	7.853

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	226
		Number of Missing Observations	0
Minimum	0.669	Mean	3.337
Maximum	130	Median	2.45
SD	9.041	Std. Error of Mean	0.516
Coefficient of Variation	2.709	Skewness	12.4

Normal GOF Test

Shapiro Wilk Test Statistic	0.164	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.384	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0506	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	4.189	95% Adjusted-CLT UCL (Chen-1995)	4.577
		95% Modified-t UCL (Johnson-1978)	4.25

Gamma GOF Test

A-D Test Statistic	3.257E+28	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.77	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.191	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.0525	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.641	k star (bias corrected MLE)	1.627
Theta hat (MLE)	2.034	Theta star (bias corrected MLE)	2.051
nu hat (MLE)	1008	nu star (bias corrected)	999.1
MLE Mean (bias corrected)	3.337	MLE Sd (bias corrected)	2.616
		Approximate Chi Square Value (0.05)	926.7
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	926.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.598	95% Adjusted Gamma UCL (use when n<50)	3.599

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.904	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0803	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.0506	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.402	Mean of logged Data	0.871
Maximum of Logged Data	4.868	SD of logged Data	0.585

Assuming Lognormal Distribution

95% H-UCL	3.014	90% Chebyshev (MVUE) UCL	3.139
95% Chebyshev (MVUE) UCL	3.277	97.5% Chebyshev (MVUE) UCL	3.47
99% Chebyshev (MVUE) UCL	3.848		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	4.186	95% Jackknife UCL	4.189
95% Standard Bootstrap UCL	4.167	95% Bootstrap-t UCL	8.433
95% Hall's Bootstrap UCL	9.181	95% Percentile Bootstrap UCL	4.282
95% BCA Bootstrap UCL	4.794		

90% Chebyshev(Mean, Sd) UCL	4.885	95% Chebyshev(Mean, Sd) UCL	5.587
97.5% Chebyshev(Mean, Sd) UCL	6.56	99% Chebyshev(Mean, Sd) UCL	8.472

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	5.587

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	307	Number of Distinct Observations	237
		Number of Missing Observations	0
Minimum	3.02	Mean	74.75
Maximum	12400	Median	8.52
SD	820.2	Std. Error of Mean	46.81
Coefficient of Variation	10.97	Skewness	13.44

Normal GOF Test

Shapiro Wilk Test Statistic	0.0819	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.499	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0506	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	152	95% Adjusted-CLT UCL (Chen-1995)	190.1
		95% Modified-t UCL (Johnson-1978)	158

Gamma GOF Test

A-D Test Statistic	3.257E+28	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.864	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.45	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.0559	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.326	k star (bias corrected MLE)	0.325
Theta hat (MLE)	229.3	Theta star (bias corrected MLE)	230
nu hat (MLE)	200.1	nu star (bias corrected)	199.5
MLE Mean (bias corrected)	74.75	MLE Sd (bias corrected)	131.1
		Approximate Chi Square Value (0.05)	167.8
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	167.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	88.86	95% Adjusted Gamma UCL (use when n<50)	88.93

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.661	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.174	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.0506	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.105	Mean of logged Data	2.227
Maximum of Logged Data	9.425	SD of logged Data	0.758

Assuming Lognormal Distribution

95% H-UCL	13.45	90% Chebyshev (MVUE) UCL	14.16
95% Chebyshev (MVUE) UCL	14.98	97.5% Chebyshev (MVUE) UCL	16.12
99% Chebyshev (MVUE) UCL	18.36		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	151.7	95% Jackknife UCL	152
95% Standard Bootstrap UCL	152.5	95% Bootstrap-t UCL	5224
95% Hall's Bootstrap UCL	3689	95% Percentile Bootstrap UCL	162.6
95% BCA Bootstrap UCL	219.7		

90% Chebyshev(Mean, Sd) UCL	215.2	95% Chebyshev(Mean, Sd) UCL	278.8
97.5% Chebyshev(Mean, Sd) UCL	367.1	99% Chebyshev(Mean, Sd) UCL	540.5

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	278.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Site-specific
Outdoor Worker Equation Inputs for Soil
MODIFIED FOR UTILITY WORKER

Variable	Value
TR (target cancer risk) unitless	0.000001
THQ (target hazard quotient) unitless	1
AT_{ow} (averaging time)	365
EF_{ow} (exposure frequency) d/yr	30
ED_{ow} (exposure duration) yr	1
ET_{ow} (exposure time) hr	8
LT (lifetime) yr	70
BW_{ow} (body weight)	80
IR_{ow} (soil ingestion rate) mg/day	330
SA_{ow} (surface area) cm^2/day	3470
AF_{ow} (skin adherence factor) mg/cm^2	0.12
City (Climate Zone) PEF Selection	Philadelphia, P
A_s (acres) PEF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) PEF Selection	87.36898
PEF (particulate emission factor) m^3/kg	3232997857
A (PEF Dispersion Constant)	14.0111
B (PEF Dispersion Constant)	19.6154
C (PEF Dispersion Constant)	225.3397
V (fraction of vegetative cover) unitless	0.5
U_m (mean annual wind speed) m/s	4.29
U_t (equivalent threshold value)	11.32
F(x) (function dependant on U_m/U_t) unitless	0.0993
City (Climate Zone) VF Selection	Philadelphia, P
A_s (acres) VF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) VF Selection	87.36898
foc (fraction organic carbon in soil) g/g	0.006

ρ$_b$ (dry soil bulk density) g/cm^3	1.5
ρ$_s$ (soil particle density) g/cm^3	2.65
θ$_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15
T (exposure interval) s	950000000
A (VF Dispersion Constant)	14.0111
B (VF Dispersion Constant)	19.6154
C (VF Dispersion Constant)	225.3397

Output generated 18MAY2015:09:10:02

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
ALAR	1596-84-5	No	No	1.80E-02	U	5.10E-06	U	1.50E-01	U	-		1	0.1
Acenaphthene	83-32-9	No	Yes	-		-		6.00E-02	U	-		1	0.13
Acenaphthylene	208-96-8	No	Yes	-		-		-		-		1	0.13
Acephate	30560-19-1	No	No	8.70E-03	U	-		4.00E-03	U	-		1	0.1
Acetaldehyde	75-07-0	No	Yes	-		2.20E-06	U	-		9.00E-03	U	1	-
Acetochlor	34256-82-1	No	No	-		-		2.00E-02	U	-		1	0.1
Acetone	67-64-1	No	Yes	-		-		9.00E-01	U	3.09E+01	U	1	-
Acetone Cyanohydrin	75-86-5	No	Yes	-		-		-		2.00E-03	U	1	-
Acetonitrile	75-05-8	No	Yes	-		-		-		6.00E-02	U	1	-
Acetophenone	98-86-2	No	Yes	-		-		1.00E-01	U	-		1	-
Acetylaminofluorene, 2-	53-96-3	No	No	3.80E+00	U	1.30E-03	U	-		-		1	0.1
Acifluorofen	50594-66-6	No	No	-		-		-		-		1	0.1
Acridine	260-94-6	No	No	-		-		-		-		1	0.1
Acrolein	107-02-8	No	Yes	-		-		5.00E-04	U	2.00E-05	U	1	-
Acrylamide	79-06-1	Yes	No	5.00E-01	U	1.00E-04	U	2.00E-03	U	6.00E-03	U	1	0.1
Acrylic Acid	79-10-7	No	Yes	-		-		5.00E-01	U	1.00E-03	U	1	-
Acrylonitrile	107-13-1	No	Yes	5.40E-01	U	6.80E-05	U	4.00E-02	U	2.00E-03	U	1	-
Adiponitrile	111-69-3	No	No	-		-		-		6.00E-03	U	1	0.1
Alachlor	15972-60-8	No	No	5.60E-02	U	-		1.00E-02	U	-		1	0.1
Aldicarb	116-06-3	No	No	-		-		1.00E-03	U	-		1	0.1
Aldicarb Sulfone	1646-88-4	No	No	-		-		1.00E-03	U	-		1	0.1
Aldicarb sulfoxide	1646-87-3	No	No	-		-		-		-		1	0.1
Aldrin	309-00-2	No	Yes	1.70E+01	U	4.90E-03	U	3.00E-05	U	-		1	-
Aliphatic Chlorinated Hydrocarbons (each)	NA	No	No	-		-		-		-		1	0.1
Aliphatic Chlorinated Hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1
Alizarin Red Compounds	NA	No	No	-		-		-		-		1	0.1
Ally	74223-64-6	No	No	-		-		2.50E-01	U	-		1	0.1
Allyl Alcohol	107-18-6	No	Yes	-		-		5.00E-03	U	1.00E-04	U	1	-
Allyl Chloride	107-05-1	No	Yes	2.10E-02	U	6.00E-06	U	-		1.00E-03	U	1	-
Aluminum	7429-90-5	No	No	-		-		1.00E+00	U	5.00E-03	U	1	-
Aluminum Phosphide	20859-73-8	No	No	-		-		4.00E-04	U	-		1	-
Aluminum metaphosphate	13776-88-0	No	No	-		-		4.86E+01	U	-		1	-
Amdro	67485-29-4	No	No	-		-		3.00E-04	U	-		1	0.1
Ametryn	834-12-8	No	No	-		-		9.00E-03	U	-		1	0.1
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	No	Yes	-		-		-		-		1	-
Aminoazobenzene, p-	60-09-3	No	No	-		-		-		-		1	0.1
Aminobiphenyl, 4-	92-67-1	No	No	2.10E+01	U	6.00E-03	U	-		-		1	0.1
Aminophenol, m-	591-27-5	No	No	-		-		8.00E-02	U	-		1	0.1
Aminophenol, o-	95-55-6	No	No	-		-		-		-		1	0.1
Aminophenol, p-	123-30-8	No	No	-		-		2.00E-02	U	-		1	0.1
Aminopyridine, 4-	504-24-5	No	No	-		-		-		-		1	0.1
Amitraz	33089-61-1	No	No	-		-		2.50E-03	U	-		1	0.1
Ammonium Perchlorate	7790-98-9	No	No	-		-		7.00E-04	U	-		1	-
Ammonium Sulfamate	7773-06-0	No	No	-		-		2.00E-01	U	-		1	-
Ammonium polyphosphate	68333-79-9	No	No	-		-		4.86E+01	U	-		1	-
Amyl Alcohol, tert-	75-85-4	No	Yes	-		-		-		3.00E-03	U	1	-
Aniline	62-53-3	No	No	5.70E-03	U	1.60E-06	U	7.00E-03	U	1.00E-03	U	1	0.1
Anilinobenzothiazole	1843-21-6	No	No	-		-		-		-		1	0.1
Anthracene	120-12-7	No	Yes	-		-		3.00E-01	U	-		1	0.13
Anthraquinone, 9,10-	84-65-1	No	No	4.00E-02	U	-		2.00E-03	U	-		1	0.1
Antimony (metallic)	7440-36-0	No	No	-		-		4.00E-04	U	-		0.15	-
Antimony Pentoxide	1314-60-9	No	No	-		-		5.00E-04	U	-		0.15	-
Antimony Potassium Tartrate	11071-15-1	No	No	-		-		9.00E-04	U	-		0.15	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
ALAR	1596-84-5	1	-	-	3.23E+09	1.15E+04	9.09E+04	1.62E+09	1.02E+04	4.42E+05	3.51E+06	-	3.93E+05	1.02E+04 ca*
Acenaphthene	83-32-9	1	1.94E+05	-	3.23E+09	-	-	-	-	1.77E+05	1.08E+06	-	1.52E+05	1.52E+05 max
Acenaphthylene	208-96-8	1	2.61E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Acephate	30560-19-1	1	-	-	3.23E+09	2.37E+04	1.88E+05	-	2.11E+04	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
Acetaldehyde	75-07-0	1	1.20E+04	1.07E+05	3.23E+09	-	-	1.39E+04	1.39E+04	-	-	3.94E+03	3.94E+03	3.94E+03 nc
Acetochlor	34256-82-1	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Acetone	67-64-1	1	1.88E+04	1.14E+05	3.23E+09	-	-	-	-	2.65E+06	-	2.13E+07	2.36E+06	2.36E+06 sat
Acetone Cyanohydrin	75-86-5	1	3.28E+04	1.06E+05	3.23E+09	-	-	-	-	-	-	2.39E+03	2.39E+03	2.39E+03 nc
Acetonitrile	75-05-8	1	1.79E+04	1.28E+05	3.23E+09	-	-	-	-	-	-	3.92E+04	3.92E+04	3.92E+04 nc
Acetophenone	98-86-2	1	8.24E+04	2.52E+03	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 sat
Acetylaminofluorene, 2-	53-96-3	1	-	-	3.23E+09	5.43E+01	4.31E+02	6.35E+06	4.82E+01	-	-	-	-	4.82E+01 ca
Acifluorofen	50594-66-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Acridine	260-94-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Acrolein	107-02-8	1	9.52E+03	2.27E+04	3.23E+09	-	-	-	-	1.47E+03	-	6.95E+00	6.92E+00	6.92E+00 nc
Acrylamide	79-06-1	1	-	-	3.23E+09	4.13E+02	3.27E+03	8.26E+07	3.67E+02	5.90E+03	4.67E+04	7.08E+08	5.24E+03	3.67E+02 ca*
Acrylic Acid	79-10-7	1	1.31E+05	1.09E+05	3.23E+09	-	-	-	-	1.47E+06	-	4.80E+03	4.78E+03	4.78E+03 nc
Acrylonitrile	107-13-1	1	1.06E+04	1.13E+04	3.23E+09	3.82E+02	-	3.98E+02	1.95E+02	1.18E+05	-	7.73E+02	7.68E+02	1.95E+02 ca**
Adiponitrile	111-69-3	1	-	-	3.23E+09	-	-	-	-	-	-	7.08E+08	7.08E+08	7.08E+08 max
Alachlor	15972-60-8	1	-	-	3.23E+09	3.69E+03	2.92E+04	-	3.27E+03	2.95E+04	2.34E+05	-	2.62E+04	3.27E+03 ca**
Aldicarb	116-06-3	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Aldicarb Sulfone	1646-88-4	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Aldicarb sulfoxide	1646-87-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Aldrin	309-00-2	1	2.37E+06	-	3.23E+09	1.21E+01	-	1.23E+03	1.20E+01	8.85E+01	-	-	8.85E+01	1.20E+01 ca**
Aliphatic Chlorinated Hydrocarbons (each)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Aliphatic Chlorinated Hydrocarbons (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Alizarin Red Compounds	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ally	74223-64-6	1	-	-	3.23E+09	-	-	-	-	7.37E+05	5.84E+06	-	6.55E+05	6.55E+05 max
Allyl Alcohol	107-18-6	1	4.71E+04	1.11E+05	3.23E+09	-	-	-	-	1.47E+04	-	1.72E+02	1.70E+02	1.70E+02 nc
Allyl Chloride	107-05-1	1	2.18E+03	1.42E+03	3.23E+09	9.83E+03	-	9.30E+02	8.49E+02	-	-	7.97E+01	7.97E+01	7.97E+01 nc
Aluminum	7429-90-5	1	-	-	3.23E+09	-	-	-	-	2.95E+06	-	5.90E+08	2.93E+06	2.93E+06 max
Aluminum Phosphide	20859-73-8	1	-	-	3.23E+09	-	-	-	-	1.18E+03	-	-	1.18E+03	1.18E+03 nc
Aluminum metaphosphate	13776-88-0	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Amdro	67485-29-4	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Ametryn	834-12-8	1	-	-	3.23E+09	-	-	-	-	2.65E+04	2.10E+05	-	2.36E+04	2.36E+04 nc
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	1	3.69E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Aminoazobenzene, p-	60-09-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Aminobiphenyl, 4-	92-67-1	1	-	-	3.23E+09	9.83E+00	7.79E+01	1.38E+06	8.73E+00	-	-	-	-	8.73E+00 ca
Aminophenol, m-	591-27-5	1	-	-	3.23E+09	-	-	-	-	2.36E+05	1.87E+06	-	2.10E+05	2.10E+05 max
Aminophenol, o-	95-55-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Aminophenol, p-	123-30-8	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Aminopyridine, 4-	504-24-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Amitraz	33089-61-1	1	-	-	3.23E+09	-	-	-	-	7.37E+03	5.84E+04	-	6.55E+03	6.55E+03 nc
Ammonium Perchlorate	7790-98-9	1	-	-	3.23E+09	-	-	-	-	2.06E+03	-	-	2.06E+03	2.06E+03 nc
Ammonium Sulfamate	7773-06-0	1	-	-	3.23E+09	-	-	-	-	5.90E+05	-	-	5.90E+05	5.90E+05 max
Ammonium polyphosphate	68333-79-9	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Amyl Alcohol, tert-	75-85-4	1	3.62E+04	1.37E+04	3.23E+09	-	-	-	-	-	-	3.96E+03	3.96E+03	3.96E+03 nc
Aniline	62-53-3	1	-	-	3.23E+09	3.62E+04	2.87E+05	5.16E+09	3.22E+04	2.06E+04	1.64E+05	1.18E+08	1.83E+04	1.83E+04 nc
Anilinobenzothiazole	1843-21-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Anthracene	120-12-7	1	7.23E+05	-	3.23E+09	-	-	-	-	8.85E+05	5.39E+06	-	7.60E+05	7.60E+05 max
Anthraquinone, 9,10-	84-65-1	1	-	-	3.23E+09	5.16E+03	4.09E+04	-	4.58E+03	5.90E+03	4.67E+04	-	5.24E+03	4.58E+03 ca**
Antimony (metallic)	7440-36-0	1	-	-	3.23E+09	-	-	-	-	1.18E+03	-	-	1.18E+03	1.18E+03 nc
Antimony Pentoxide	1314-60-9	1	-	-	3.23E+09	-	-	-	-	1.47E+03	-	-	1.47E+03	1.47E+03 nc
Antimony Potassium Tartrate	11071-15-1	1	-	-	3.23E+09	-	-	-	-	2.65E+03	-	-	2.65E+03	2.65E+03 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Antimony Tetroxide	1332-81-6	No	No	-		-		4.00E-04	U	-		0.15	-
Antimony Trichloride	10025-91-9	No	No	-		-		-		-		1	-
Antimony Trioxide	1309-64-4	No	No	-		-		-		2.00E-04	U	0.15	-
Apollo	74115-24-5	No	No	-		-		1.30E-02	U	-		1	0.1
Aramite	140-57-8	No	No	2.50E-02	U	7.10E-06	U	5.00E-02	U	-		1	0.1
Aroclor 1016	12674-11-2	No	Yes	7.00E-02	U	2.00E-05	U	7.00E-05	U	-		1	0.14
Aroclor 1221	11104-28-2	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Aroclor 1232	11141-16-5	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Aroclor 1242	53469-21-9	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Aroclor 1248	12672-29-6	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Aroclor 1254	11097-69-1	No	Yes	2.00E+00	U	5.71E-04	U	2.00E-05	U	-		1	0.14
Aroclor 1260	11096-82-5	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Aroclor 5460	11126-42-4	No	Yes	-		-		6.00E-04	U	-		1	0.14
Arsenic Salts	NA	No	No	-		-		-		-		1	0.03
Arsenic, Inorganic	7440-38-2	No	No	1.50E+00	U	4.30E-03	U	3.00E-04	U	1.50E-05	U	1	0.03
Arsine	7784-42-1	No	No	-		-		3.50E-06	U	5.00E-05	U	1	-
Assure	76578-14-8	No	No	-		-		9.00E-03	U	-		1	0.1
Asulam	3337-71-1	No	No	-		-		5.00E-02	U	-		1	0.1
Atrazine	1912-24-9	No	No	2.30E-01	U	-		3.50E-02	U	-		1	0.1
Auramine	492-80-8	No	No	8.80E-01	U	2.50E-04	U	-		-		1	0.1
Avermectin B1	65195-55-3	No	No	-		-		4.00E-04	U	-		1	0.1
Azobenzene	103-33-3	No	Yes	1.10E-01	U	3.10E-05	U	-		-		1	-
Azodicarbonamide	123-77-3	No	No	-		-		1.00E+00	U	7.00E-06	U	1	0.1
Barium	7440-39-3	No	No	-		-		2.00E-01	U	5.00E-04	U	0.07	-
Barium Chromate	10294-40-3	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025	-
Barium Cyanide	542-62-1	No	No	-		-		-		-		0.07	-
Baygon	114-26-1	No	No	-		-		4.00E-03	U	-		1	0.1
Bayleton	43121-43-3	No	No	-		-		3.00E-02	U	-		1	0.1
Baythroid	68359-37-5	No	No	-		-		2.50E-02	U	-		1	0.1
Benefin	1861-40-1	No	Yes	-		-		3.00E-01	U	-		1	-
Benomyl	17804-35-2	No	No	-		-		5.00E-02	U	-		1	0.1
Bentazon	25057-89-0	No	No	-		-		3.00E-02	U	-		1	0.1
Benz[a]anthracene	56-55-3	Yes	Yes	7.30E-01	U	1.10E-04	U	-		-		1	0.13
Benzaldehyde	100-52-7	No	Yes	-		-		1.00E-01	U	-		1	-
Benzene	71-43-2	No	Yes	5.50E-02	U	7.80E-06	U	4.00E-03	U	3.00E-02	U	1	-
Benzene, Ethyldimethyl	29224-55-3	No	Yes	-		-		-		-		1	-
Benzene, Ethylmethyl	25550-14-5	No	Yes	-		-		-		-		1	-
Benzene, Methylpropenyl	768-00-3	No	Yes	-		-		-		-		1	-
Benzene, Methylpropyl	28729-54-6	No	No	-		-		-		-		1	0.1
Benzene, Trimethyl	25551-13-7	No	Yes	-		-		-		-		1	-
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	No	No	1.00E-01	U	-		3.00E-04	U	-		1	0.1
Benzenethiol	108-98-5	No	Yes	-		-		1.00E-03	U	-		1	-
Benzidine	92-87-5	Yes	No	2.30E+02	U	6.70E-02	U	3.00E-03	U	-		1	0.1
Benzo(j)fluoranthene	205-82-3	No	No	1.20E+00	U	1.10E-04	U	-		-		1	0.13
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	U	1.10E-03	U	-		-		1	0.13
Benzo[b]fluoranthene	205-99-2	Yes	No	7.30E-01	U	1.10E-04	U	-		-		1	0.13
Benzo[g,h,i]perylene	191-24-2	No	No	-		-		-		-		1	0.13
Benzo[k]fluoranthene	207-08-9	Yes	No	7.30E-02	U	1.10E-04	U	-		-		1	0.13
Benzofluoranthenes, total	NA	No	No	-		-		-		-		1	0.1
Benzofluorene, 2,3-	243-17-4	No	No	-		-		-		-		1	0.1
Benzoic Acid	65-85-0	No	No	-		-		4.00E+00	U	-		1	0.1
Benzoic acid, 3,5-dichloro-	51-36-5	No	No	-		-		-		-		1	0.1
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3	No	No	-		-		-		-		1	0.1

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Antimony Tetroxide	1332-81-6	1	-	-	3.23E+09	-	-	-	-	1.18E+03	-	-	1.18E+03	1.18E+03 nc
Antimony Trichloride	10025-91-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Antimony Trioxide	1309-64-4	1	-	-	3.23E+09	-	-	-	-	-	-	2.36E+07	2.36E+07	2.36E+07 max
Apollo	74115-24-5	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Aramite	140-57-8	1	-	-	3.23E+09	8.26E+03	6.54E+04	1.16E+09	7.33E+03	1.47E+05	1.17E+06	-	1.31E+05	7.33E+03 ca*
Aroclor 1016	12674-11-2	1	8.07E+05	-	3.23E+09	2.95E+03	1.67E+04	1.03E+05	2.45E+03	2.06E+02	1.17E+03	-	1.75E+02	1.75E+02 nc
Aroclor 1221	11104-28-2	1	1.57E+05	-	3.23E+09	1.03E+02	5.84E+02	7.00E+02	7.80E+01	-	-	-	-	7.80E+01 ca
Aroclor 1232	11141-16-5	1	1.54E+05	-	3.23E+09	1.03E+02	5.84E+02	6.91E+02	7.78E+01	-	-	-	-	7.78E+01 ca
Aroclor 1242	53469-21-9	1	1.09E+06	-	3.23E+09	1.03E+02	5.84E+02	4.89E+03	8.62E+01	-	-	-	-	8.62E+01 ca
Aroclor 1248	12672-29-6	1	7.08E+05	-	3.23E+09	1.03E+02	5.84E+02	3.17E+03	8.54E+01	-	-	-	-	8.54E+01 ca
Aroclor 1254	11097-69-1	1	1.16E+06	-	3.23E+09	1.03E+02	5.84E+02	5.21E+03	8.63E+01	5.90E+01	3.34E+02	-	5.01E+01	5.01E+01 nc
Aroclor 1260	11096-82-5	1	1.82E+06	-	3.23E+09	1.03E+02	5.84E+02	8.13E+03	8.68E+01	-	-	-	-	8.68E+01 ca
Aroclor 5460	11126-42-4	1	9.89E+05	-	3.23E+09	-	-	-	-	1.77E+03	1.00E+04	-	1.50E+03	1.50E+03 nc
Arsenic Salts	NA	0.6	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Arsenic, Inorganic	7440-38-2	0.6	-	-	3.23E+09	2.29E+02	3.64E+03	1.92E+06	2.16E+02	1.47E+03	2.34E+04	1.77E+06	1.39E+03	2.16E+02 ca**
Arsine	7784-42-1	1	-	-	3.23E+09	-	-	-	-	1.03E+01	-	5.90E+06	1.03E+01	1.03E+01 nc
Assure	76578-14-8	1	-	-	3.23E+09	-	-	-	-	2.65E+04	2.10E+05	-	2.36E+04	2.36E+04 nc
Asulam	3337-71-1	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Atrazine	1912-24-9	1	-	-	3.23E+09	8.98E+02	7.11E+03	-	7.97E+02	1.03E+05	8.18E+05	-	9.17E+04	7.97E+02 ca
Auramine	492-80-8	1	-	-	3.23E+09	2.35E+02	1.86E+03	3.30E+07	2.08E+02	-	-	-	-	2.08E+02 ca
Avermectin B1	65195-55-3	1	-	-	3.23E+09	-	-	-	-	1.18E+03	9.35E+03	-	1.05E+03	1.05E+03 nc
Azobenzene	103-33-3	1	7.21E+05	-	3.23E+09	1.88E+03	-	5.94E+04	1.82E+03	-	-	-	-	1.82E+03 ca
Azodicarbonamide	123-77-3	1	-	-	3.23E+09	-	-	-	-	2.95E+06	2.34E+07	8.26E+05	6.28E+05	6.28E+05 max
Barium	7440-39-3	1	-	-	3.23E+09	-	-	-	-	5.90E+05	-	5.90E+07	5.84E+05	5.84E+05 max
Barium Chromate	10294-40-3	1	-	-	3.23E+09	4.13E+02	-	5.51E+04	4.10E+02	5.90E+04	-	2.36E+07	5.88E+04	4.10E+02 ca
Barium Cyanide	542-62-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Baygon	114-26-1	1	-	-	3.23E+09	-	-	-	-	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
Bayleton	43121-43-3	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Baythroid	68359-37-5	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Benefin	1861-40-1	1	4.23E+05	-	3.23E+09	-	-	-	-	8.85E+05	-	-	8.85E+05	8.85E+05 max
Benomyl	17804-35-2	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Bentazon	25057-89-0	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Benz[a]anthracene	56-55-3	1	6.09E+06	-	3.23E+09	2.83E+02	1.72E+03	1.41E+05	2.43E+02	-	-	-	-	2.43E+02 ca
Benzaldehyde	100-52-7	1	3.10E+04	1.16E+03	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 sat
Benzene	71-43-2	1	4.88E+03	1.82E+03	3.23E+09	3.75E+03	-	1.60E+03	1.12E+03	1.18E+04	-	5.34E+03	3.68E+03	1.12E+03 ca**
Benzene, Ethyldimethyl	29224-55-3	1	1.26E+04	1.31E+02	3.23E+09	-	-	-	-	-	-	-	-	
Benzene, Ethylmethyl	25550-14-5	1	1.30E+04	3.30E+02	3.23E+09	-	-	-	-	-	-	-	-	
Benzene, Methylpropenyl	768-00-3	1	1.58E+04	4.90E+02	3.23E+09	-	-	-	-	-	-	-	-	
Benzene, Methylpropyl	28729-54-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzene, Trimethyl	25551-13-7	1	9.03E+03	1.82E+02	3.23E+09	-	-	-	-	-	-	-	-	
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	1	-	-	3.23E+09	2.06E+03	1.64E+04	-	1.83E+03	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Benzenethiol	108-98-5	1	2.67E+04	1.26E+03	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 sat
Benzidine	92-87-5	1	-	-	3.23E+09	8.98E-01	7.11E+00	1.23E+05	7.97E-01	8.85E+03	7.01E+04	-	7.86E+03	7.97E-01 ca
Benzo(j)fluoranthene	205-82-3	1	-	-	3.23E+09	1.72E+02	1.05E+03	7.51E+07	1.48E+02	-	-	-	-	1.48E+02 ca
Benzo[a]pyrene	50-32-8	1	-	-	3.23E+09	2.83E+01	1.72E+02	7.51E+06	2.43E+01	-	-	-	-	2.43E+01 ca
Benzo[b]fluoranthene	205-99-2	1	-	-	3.23E+09	2.83E+02	1.72E+03	7.51E+07	2.43E+02	-	-	-	-	2.43E+02 ca
Benzo[g,h,i]perylene	191-24-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzo[k]fluoranthene	207-08-9	1	-	-	3.23E+09	2.83E+03	1.72E+04	7.51E+07	2.43E+03	-	-	-	-	2.43E+03 ca
Benzofluoranthenes, total	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzofluorene, 2,3-	243-17-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzoic Acid	65-85-0	1	-	-	3.23E+09	-	-	-	-	1.18E+07	9.35E+07	-	1.05E+07	1.05E+07 max
Benzoic acid, 3,5-dichloro-	51-36-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Benzothiazole	95-16-9	No	No	-		-		-		-		1	0.1
Benzotrichloride	98-07-7	No	Yes	1.30E+01	U	-		-		-		1	-
Benzyl Alcohol	100-51-6	No	No	-		-		1.00E-01	U	-		1	0.1
Benzyl Chloride	100-44-7	No	Yes	1.70E-01	U	4.90E-05	U	2.00E-03	U	1.00E-03	U	1	-
Beryllium and compounds	7440-41-7	No	No	-		2.40E-03	U	2.00E-03	U	2.00E-05	U	0.007	-
Bidrin	141-66-2	No	No	-		-		1.00E-04	U	-		1	0.1
Bifenox	42576-02-3	No	No	-		-		9.00E-03	U	-		1	0.1
Biphenthrin	82657-04-3	No	No	-		-		1.50E-02	U	-		1	0.1
Biphenyl, 1,1'-	92-52-4	No	Yes	8.00E-03	U	-		5.00E-01	U	4.00E-04	U	1	-
Bis(2-chloro-1-methylethyl) ether	108-60-1	No	Yes	7.00E-02	U	1.00E-05	U	4.00E-02	U	-		1	-
Bis(2-chloroethoxy)methane	111-91-1	No	No	-		-		3.00E-03	U	-		1	0.1
Bis(2-chloroethyl)ether	111-44-4	No	Yes	1.10E+00	U	3.30E-04	U	-		-		1	-
Bis(2-ethylhexyl)phthalate	117-81-7	No	No	1.40E-02	U	2.40E-06	U	2.00E-02	U	-		1	0.1
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	No	Yes	-		-		-		-		1	-
Bis(chloromethyl)ether	542-88-1	No	Yes	2.20E+02	U	6.20E-02	U	-		-		1	-
Bis(oleoyloxy)dibutyl tin	13323-62-1	No	Yes	-		-		-		-		1	-
Bisphenol A	80-05-7	No	No	-		-		5.00E-02	U	-		1	0.1
Boron And Borates Only	7440-42-8	No	No	-		-		2.00E-01	U	2.00E-02	U	1	-
Boron Trichloride	10294-34-5	No	Yes	-		-		2.00E+00	U	2.00E-02	U	1	-
Boron Trifluoride	7637-07-2	No	Yes	-		-		4.00E-02	U	1.30E-02	U	1	-
Bromacil	314-40-9	No	No	-		-		-		-		1	0.1
Bromate	15541-45-4	No	No	7.00E-01	U	-		4.00E-03	U	-		1	-
Bromine	7726-95-6	No	Yes	-		-		-		-		1	-
Bromo-2-chloroethane, 1-	107-04-0	No	Yes	2.00E+00	U	6.00E-04	U	-		-		1	-
Bromo-3-fluorobenzene, 1-	1073-06-9	No	Yes	-		-		-		-		1	-
Bromo-4-Ethylbenzene, 1-	1585-07-5	No	Yes	-		-		-		-		1	-
Bromoacetic acid	79-08-3	No	No	-		-		-		-		1	0.1
Bromoacetophenone, 3-	2142-63-4	No	No	-		-		-		-		1	0.1
Bromobenzene	108-86-1	No	Yes	-		-		8.00E-03	U	6.00E-02	U	1	-
Bromochloromethane	74-97-5	No	Yes	-		-		-		4.00E-02	U	1	-
Bromodichloromethane	75-27-4	No	Yes	6.20E-02	U	3.70E-05	U	2.00E-02	U	-		1	-
Bromodiphenyl Ether, p-	101-55-3	No	Yes	-		-		-		-		1	-
Bromofluorobenzene, p-	460-00-4	No	Yes	-		-		-		-		1	-
Bromoform	75-25-2	No	Yes	7.90E-03	U	1.10E-06	U	2.00E-02	U	-		1	-
Bromomethane	74-83-9	No	Yes	-		-		1.40E-03	U	5.00E-03	U	1	-
Bromophenol, p-	106-41-2	No	No	-		-		-		-		1	0.1
Bromophenyl-phenyl phthalate, 4-	NA	No	No	-		-		-		-		1	0.1
Bromophos	2104-96-3	No	Yes	-		-		5.00E-03	U	-		1	-
Bromopyridine, 2-	109-04-6	No	No	-		-		-		-		1	0.1
Bromotrichloromethane	75-62-7	No	Yes	-		-		-		-		1	-
Bromoxynil	1689-84-5	No	No	-		-		2.00E-02	U	-		1	0.1
Bromoxynil Octanoate	1689-99-2	No	Yes	-		-		2.00E-02	U	-		1	-
Butadiene, 1,3-	106-99-0	No	Yes	3.40E+00	U	3.00E-05	U	-		2.00E-03	U	1	-
Butanediol, 2,3-	513-85-9	No	No	-		-		-		-		1	0.1
Butanol	35296-72-1	No	Yes	-		-		-		-		1	-
Butanol, N-	71-36-3	No	Yes	-		-		1.00E-01	U	-		1	-
Butanone-2, 4-chloro-4,4-difluoro	NA	No	No	-		-		-		-		1	0.1
Butyl Alcohol, t-	75-65-0	No	Yes	-		-		-		-		1	-
Butyl Benzyl Phthlate	85-68-7	No	No	1.90E-03	U	-		2.00E-01	U	-		1	0.1
Butyl Formate, tert-	762-75-4	No	Yes	-		-		-		-		1	-
Butyl alcohol, sec-	78-92-2	No	Yes	-		-		2.00E+00	U	3.00E+01	U	1	-
Butylacetate	123-86-4	No	Yes	-		-		-		-		1	-
Butylate	2008-41-5	No	Yes	-		-		5.00E-02	U	-		1	-

Site-specific

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Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Benzothiazole	95-16-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Benzotrichloride	98-07-7	1	9.33E+04	3.23E+02	3.23E+09	1.59E+01	-	-	1.59E+01	-	-	-	-	1.59E+01 ca
Benzyl Alcohol	100-51-6	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Benzyl Chloride	100-44-7	1	3.52E+04	1.46E+03	3.23E+09	1.21E+03	-	1.83E+03	7.31E+02	5.90E+03	-	1.28E+03	1.05E+03	7.31E+02 ca**
Beryllium and compounds	7440-41-7	1	-	-	3.23E+09	-	-	3.44E+06	3.44E+06	5.90E+03	-	2.36E+06	5.88E+03	5.88E+03 nc
Bidrin	141-66-2	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Bifenox	42576-02-3	1	-	-	3.23E+09	-	-	-	-	2.65E+04	2.10E+05	-	2.36E+04	2.36E+04 nc
Biphenthrin	82657-04-3	1	-	-	3.23E+09	-	-	-	-	4.42E+04	3.51E+05	-	3.93E+04	3.93E+04 nc
Biphenyl, 1,1'-	92-52-4	1	1.57E+05	-	3.23E+09	2.58E+04	-	-	2.58E+04	1.47E+06	-	2.29E+03	2.29E+03	2.29E+03 nc
Bis(2-chloro-1-methylethyl) ether	108-60-1	1	4.83E+04	1.02E+03	3.23E+09	2.95E+03	-	1.23E+04	2.38E+03	1.18E+05	-	-	1.18E+05	2.38E+03 sat
Bis(2-chloroethoxy)methane	111-91-1	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Bis(2-chloroethyl)ether	111-44-4	1	5.87E+04	5.05E+03	3.23E+09	1.88E+02	-	4.54E+02	1.33E+02	-	-	-	-	1.33E+02 ca
Bis(2-ethylhexyl)phthalate	117-81-7	1	-	-	3.23E+09	1.47E+04	1.17E+05	3.44E+09	1.31E+04	5.90E+04	4.67E+05	-	5.24E+04	1.31E+04 ca**
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	1	8.48E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Bis(chloromethyl)ether	542-88-1	1	2.59E+03	4.22E+03	3.23E+09	9.38E-01	-	1.07E-01	9.58E-02	-	-	-	-	9.58E-02 ca
Bis(oleoyloxy)dibutyl tin	13323-62-1	1	2.64E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Bisphenol A	80-05-7	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Boron And Borates Only	7440-42-8	1	-	-	3.23E+09	-	-	-	-	5.90E+05	-	2.36E+09	5.90E+05	5.90E+05 max
Boron Trichloride	10294-34-5	1	-	-	3.23E+09	-	-	-	-	5.90E+06	-	2.36E+09	5.88E+06	5.88E+06 max
Boron Trifluoride	7637-07-2	1	-	-	3.23E+09	-	-	-	-	1.18E+05	-	1.53E+09	1.18E+05	1.18E+05 max
Bromacil	314-40-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromate	15541-45-4	1	-	-	3.23E+09	2.95E+02	-	-	2.95E+02	1.18E+04	-	-	1.18E+04	2.95E+02 ca*
Bromine	7726-95-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromo-2-chloroethane, 1-	107-04-0	1	8.17E+03	2.38E+03	3.23E+09	1.03E+02	-	3.48E+01	2.60E+01	-	-	-	-	2.60E+01 ca
Bromo-3-fluorobenzene, 1-	1073-06-9	1	9.79E+03	9.07E+02	3.23E+09	-	-	-	-	-	-	-	-	
Bromo-4-Ethylbenzene, 1-	1585-07-5	1	1.96E+04	2.06E+02	3.23E+09	-	-	-	-	-	-	-	-	
Bromoacetic acid	79-08-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromoacetophenone, 3-	2142-63-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromobenzene	108-86-1	1	1.15E+04	6.79E+02	3.23E+09	-	-	-	-	2.36E+04	-	2.53E+04	1.22E+04	1.22E+04 sat
Bromochloromethane	74-97-5	1	4.94E+03	4.03E+03	3.23E+09	-	-	-	-	-	-	7.21E+03	7.21E+03	7.21E+03 sat
Bromodichloromethane	75-27-4	1	5.47E+03	9.31E+02	3.23E+09	3.33E+03	-	3.77E+02	3.39E+02	5.90E+04	-	-	5.90E+04	3.39E+02 ca
Bromodiphenyl Ether, p-	101-55-3	1	2.57E+05	1.06E+02	3.23E+09	-	-	-	-	-	-	-	-	
Bromofluorobenzene, p-	460-00-4	1	9.95E+03	1.06E+03	3.23E+09	-	-	-	-	-	-	-	-	
Bromoform	75-25-2	1	1.34E+04	9.14E+02	3.23E+09	2.61E+04	-	3.11E+04	1.42E+04	5.90E+04	-	-	5.90E+04	1.42E+04 sat
Bromomethane	74-83-9	1	1.93E+03	3.59E+03	3.23E+09	-	-	-	-	4.13E+03	-	3.53E+02	3.25E+02	3.25E+02 nc
Bromophenol, p-	106-41-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromophenyl-phenyl phthalate, 4-	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromophos	2104-96-3	1	1.71E+05	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Bromopyridine, 2-	109-04-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Bromotrichloromethane	75-62-7	1	1.80E+04	4.25E+02	3.23E+09	-	-	-	-	-	-	-	-	
Bromoxynil	1689-84-5	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Bromoxynil Octanoate	1689-99-2	1	6.55E+05	-	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 nc
Butadiene, 1,3-	106-99-0	1	1.20E+03	6.67E+02	3.23E+09	6.07E+01	-	1.02E+02	3.81E+01	-	-	8.73E+01	8.73E+01	3.81E+01 ca**
Butanediol, 2,3-	513-85-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Butanol	35296-72-1	1	4.02E+04	1.47E+04	3.23E+09	-	-	-	-	-	-	-	-	
Butanol, N-	71-36-3	1	4.13E+04	7.64E+03	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 sat
Butanone-2, 4-chloro-4,4-difluoro	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Butyl Alcohol, t-	75-65-0	1	3.96E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Butyl Benzyl Phthlate	85-68-7	1	-	-	3.23E+09	1.09E+05	8.61E+05	-	9.65E+04	5.90E+05	4.67E+06	-	5.24E+05	9.65E+04 ca**
Butyl Formate, tert-	762-75-4	1	6.00E+03	2.99E+03	3.23E+09	-	-	-	-	-	-	-	-	
Butyl alcohol, sec-	78-92-2	1	4.03E+04	2.13E+04	3.23E+09	-	-	-	-	5.90E+06	-	4.41E+07	5.20E+06	5.20E+06 sat
Butylacetate	123-86-4	1	1.18E+04	1.79E+03	3.23E+09	-	-	-	-	-	-	-	-	
Butylate	2008-41-5	1	1.19E+05	-	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 max

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Butylated hydroxyanisole	25013-16-5	No	No	2.00E-04	U	5.70E-08	U	-		-		1	0.1
Butylated hydroxytoluene	128-37-0	No	No	3.60E-03	U	-		3.00E-01	U	-		1	0.1
Butylbenzene, n-	104-51-8	No	Yes	-		-		5.00E-02	U	-		1	-
Butylbenzene, sec-	135-98-8	No	Yes	-		-		1.00E-01	U	-		1	-
Butylbenzene, tert-	98-06-6	No	Yes	-		-		1.00E-01	U	-		1	-
Butylchloride, t-	507-20-0	No	Yes	-		-		-		-		1	-
Butylphthalyl Butylglycolate	85-70-1	No	No	-		-		1.00E+00	U	-		1	0.1
Butyltin	NA	No	No	-		-		-		-		1	0.1
Cacodylic Acid	75-60-5	No	No	-		-		2.00E-02	U	-		1	0.1
Cadmium (Diet)	7440-43-9	No	No	-		1.80E-03	U	1.00E-03	U	1.00E-05	U	0.025	0.001
Calcium	7440-70-2	No	No	-		-		-		-		1	-
Calcium Chlorate	10137-74-3	No	No	-		-		-		-		1	-
Calcium Chromate	13765-19-0	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025	-
Calcium Cyanide	592-01-8	No	No	-		-		1.00E-03	U	-		1	-
Calcium pyrophosphate	7790-76-3	No	No	-		-		4.86E+01	U	-		1	-
Caprolactam	105-60-2	No	No	-		-		5.00E-01	U	2.20E-03	U	1	0.1
Captafol	2425-06-1	No	No	1.50E-01	U	4.30E-05	U	2.00E-03	U	-		1	0.1
Captan	133-06-2	No	No	2.30E-03	U	6.60E-07	U	1.30E-01	U	-		1	0.1
Carbaryl	63-25-2	No	No	-		-		1.00E-01	U	-		1	0.1
Carbazole	86-74-8	No	No	-		-		-		-		1	0.1
Carbofuran	1563-66-2	No	No	-		-		5.00E-03	U	-		1	0.1
Carbon Disulfide	75-15-0	No	Yes	-		-		1.00E-01	U	7.00E-01	U	1	-
Carbon Tetrachloride	56-23-5	No	Yes	7.00E-02	U	6.00E-06	U	4.00E-03	U	1.00E-01	U	1	-
Carbosulfan	55285-14-8	No	No	-		-		1.00E-02	U	-		1	0.1
Carboxin	5234-68-4	No	No	-		-		1.00E-01	U	-		1	0.1
Catechol	120-80-9	No	No	-		-		-		-		1	0.1
Ceric oxide	1306-38-3	No	No	-		-		-		9.00E-04	U	1	-
Cerium, Stable	7440-45-1	No	No	-		-		-		-		1	-
Chloral	75-87-6	No	Yes	-		-		-		-		1	-
Chloral Hydrate	302-17-0	No	Yes	-		-		1.00E-01	U	-		1	-
Chloramben	133-90-4	No	No	-		-		1.50E-02	U	-		1	0.1
Chloramine	127-65-1	No	No	-		-		-		-		1	-
Chloranil	118-75-2	No	No	4.03E-01	U	-		-		-		1	0.1
Chlorate (ClO3) as	14866-68-3	No	No	-		-		-		-		1	-
Chlordane	12789-03-6	No	Yes	3.50E-01	U	1.00E-04	U	5.00E-04	U	7.00E-04	U	1	0.04
Chlordane (alpha)	5103-71-9	No	Yes	-		-		-		-		1	-
Chlordane (gamma)	5103-74-2	No	Yes	-		-		-		-		1	-
Chlordecone (Kepone)	143-50-0	No	No	1.00E+01	U	4.60E-03	U	3.00E-04	U	-		1	0.1
Chlorfenvinphos	470-90-6	No	No	-		-		7.00E-04	U	-		1	0.1
Chloride	16887-00-6	No	No	-		-		-		-		1	-
Chlorimuron, Ethyl-	90982-32-4	No	No	-		-		2.00E-02	U	-		1	0.1
Chlorinated Hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1
Chlorine	7782-50-5	No	Yes	-		-		1.00E-01	U	1.45E-04	U	1	-
Chlorine Dioxide	10049-04-4	No	Yes	-		-		3.00E-02	U	2.00E-04	U	1	-
Chlorite	14998-27-7	No	No	-		-		-		-		1	-
Chlorite (Sodium Salt)	7758-19-2	No	No	-		-		3.00E-02	U	-		1	-
Chloro-1,1-difluoroethane, 1-	75-68-3	No	Yes	-		-		-		5.00E+01	U	1	-
Chloro-1,3-butadiene, 2-	126-99-8	No	Yes	-		3.00E-04	U	2.00E-02	U	2.00E-02	U	1	-
Chloro-2-methylaniline HCl, 4-	3165-93-3	No	No	4.60E-01	U	-		-		-		1	0.1
Chloro-2-methylaniline, 4-	95-69-2	No	No	1.00E-01	U	7.70E-05	U	3.00E-03	U	-		1	0.1
Chloro-2-methylphenol, 4-	1570-64-5	No	No	-		-		-		-		1	0.1
Chloro-4-methylphenol	35421-08-0	No	No	-		-		-		-		1	0.1
Chloro-6-fluorophenol, 2-	2040-90-6	No	No	-		-		-		-		1	0.1

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Butylated hydroxyanisole	25013-16-5	1	-	-	3.23E+09	1.03E+06	8.18E+06	1.45E+11	9.17E+05	-	-	-	-	9.17E+05 max
Butylated hydroxytoluene	128-37-0	1	-	-	3.23E+09	5.74E+04	4.55E+05	-	5.09E+04	8.85E+05	7.01E+06	-	7.86E+05	5.09E+04 ca*
Butylbenzene, n-	104-51-8	1	1.12E+04	1.07E+02	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 sat
Butylbenzene, sec-	135-98-8	1	1.01E+04	1.45E+02	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 sat
Butylbenzene, tert-	98-06-6	1	1.01E+04	1.83E+02	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 sat
Butylchloride, t-	507-20-0	1	2.34E+03	1.33E+03	3.23E+09	-	-	-	-	-	-	-	-	
Butylphthalyl Butylglycolate	85-70-1	1	-	-	3.23E+09	-	-	-	-	2.95E+06	2.34E+07	-	2.62E+06	2.62E+06 max
Butyltin	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Cacodylic Acid	75-60-5	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Cadmium (Diet)	7440-43-9	1	-	-	3.23E+09	-	-	4.59E+06	4.59E+06	2.95E+03	5.84E+04	1.18E+06	2.80E+03	2.80E+03 nc
Calcium	7440-70-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Calcium Chlorate	10137-74-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Calcium Chromate	13765-19-0	1	-	-	3.23E+09	4.13E+02	-	5.51E+04	4.10E+02	5.90E+04	-	2.36E+07	5.88E+04	4.10E+02 ca
Calcium Cyanide	592-01-8	1	-	-	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Calcium pyrophosphate	7790-76-3	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Caprolactam	105-60-2	1	-	-	3.23E+09	-	-	-	-	1.47E+06	1.17E+07	2.60E+08	1.30E+06	1.30E+06 max
Captafol	2425-06-1	1	-	-	3.23E+09	1.38E+03	1.09E+04	1.92E+08	1.22E+03	5.90E+03	4.67E+04	-	5.24E+03	1.22E+03 ca**
Captan	133-06-2	1	-	-	3.23E+09	8.98E+04	7.11E+05	1.25E+10	7.97E+04	3.83E+05	3.04E+06	-	3.40E+05	7.97E+04 ca**
Carbaryl	63-25-2	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Carbazole	86-74-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Carbofuran	1563-66-2	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Carbon Disulfide	75-15-0	1	1.61E+03	7.38E+02	3.23E+09	-	-	-	-	2.95E+05	-	4.12E+04	3.61E+04	3.61E+04 sat
Carbon Tetrachloride	56-23-5	1	2.06E+03	4.58E+02	3.23E+09	2.95E+03	-	8.78E+02	6.76E+02	1.18E+04	-	7.52E+03	4.59E+03	6.76E+02 sat
Carbosulfan	55285-14-8	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Carboxin	5234-68-4	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Catechol	120-80-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ceric oxide	1306-38-3	1	-	-	3.23E+09	-	-	-	-	-	-	1.06E+08	1.06E+08	1.06E+08 max
Cerium, Stable	7440-45-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloral	75-87-6	1	2.14E+05	3.39E+03	3.23E+09	-	-	-	-	-	-	-	-	
Chloral Hydrate	302-17-0	1	2.02E+05	-	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 max
Chloramben	133-90-4	1	-	-	3.23E+09	-	-	-	-	4.42E+04	3.51E+05	-	3.93E+04	3.93E+04 nc
Chloramine	127-65-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloranil	118-75-2	1	-	-	3.23E+09	5.12E+02	4.06E+03	-	4.55E+02	-	-	-	-	4.55E+02 ca
Chlorate (ClO3) as	14866-68-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlordane	12789-03-6	1	1.49E+06	-	3.23E+09	5.90E+02	1.17E+04	3.81E+04	5.53E+02	1.47E+03	2.92E+04	3.81E+04	1.35E+03	5.53E+02 ca**
Chlordane (alpha)	5103-71-9	1	2.05E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlordane (gamma)	5103-74-2	1	2.05E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlordecone (Kepone)	143-50-0	1	-	-	3.23E+09	2.06E+01	1.64E+02	1.80E+06	1.83E+01	8.85E+02	7.01E+03	-	7.86E+02	1.83E+01 ca*
Chlorfenvinphos	470-90-6	1	-	-	3.23E+09	-	-	-	-	2.06E+03	1.64E+04	-	1.83E+03	1.83E+03 nc
Chloride	16887-00-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorimuron, Ethyl-	90982-32-4	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Chlorinated Hydrocarbons (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorine	7782-50-5	1	1.69E+03	2.78E+03	3.23E+09	-	-	-	-	2.95E+05	-	8.92E+00	8.92E+00	8.92E+00 nc
Chlorine Dioxide	10049-04-4	1	-	-	3.23E+09	-	-	-	-	8.85E+04	-	2.36E+07	8.82E+04	8.82E+04 nc
Chlorite	14998-27-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorite (Sodium Salt)	7758-19-2	1	-	-	3.23E+09	-	-	-	-	8.85E+04	-	-	8.85E+04	8.85E+04 nc
Chloro-1,1-difluoroethane, 1-	75-68-3	1	1.42E+03	1.14E+03	3.23E+09	-	-	-	-	-	-	2.59E+06	2.59E+06	2.59E+06 sat
Chloro-1,3-butadiene, 2-	126-99-8	1	1.49E+03	7.51E+02	3.23E+09	-	-	1.27E+01	1.27E+01	5.90E+04	-	1.09E+03	1.07E+03	1.27E+01 ca*
Chloro-2-methylaniline HCl, 4-	3165-93-3	1	-	-	3.23E+09	4.49E+02	3.56E+03	-	3.99E+02	-	-	-	-	3.99E+02 ca
Chloro-2-methylaniline, 4-	95-69-2	1	-	-	3.23E+09	2.06E+03	1.64E+04	1.07E+08	1.83E+03	8.85E+03	7.01E+04	-	7.86E+03	1.83E+03 ca**
Chloro-2-methylphenol, 4-	1570-64-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloro-4-methylphenol	35421-08-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloro-6-fluorophenol, 2-	2040-90-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Chloroacetaldehyde, 2-	107-20-0	No	Yes	2.70E-01	U	-		-		-		1	-
Chloroacetamide	79-07-2	No	No	-		-		-		-		1	0.1
Chloroacetic Acid	79-11-8	No	No	-		-		2.00E-03	U	-		1	0.1
Chloroacetophenone, 2-	532-27-4	No	No	-		-		-		3.00E-05	U	1	0.1
Chloroaniline	27134-26-5	No	No	-		-		-		-		1	0.1
Chloroaniline, 3-	108-42-9	No	No	-		-		-		-		1	0.1
Chloroaniline, p-	106-47-8	No	No	2.00E-01	U	-		4.00E-03	U	-		1	0.1
Chlorobenzene	108-90-7	No	Yes	-		-		2.00E-02	U	5.00E-02	U	1	-
Chlorobenzene sulfonic acid, p-	98-66-8	No	No	-		-		-		-		1	0.1
Chlorobenzenes (total)	NA	No	No	-		-		-		-		1	0.1
Chlorobenzilate	510-15-6	No	No	1.10E-01	U	3.10E-05	U	2.00E-02	U	-		1	0.1
Chlorobenzoic Acid, p-	74-11-3	No	No	-		-		3.00E-02	U	-		1	0.1
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	No	Yes	-		-		-		-		1	-
Chlorobenzotrifluoride, 4-	98-56-6	No	Yes	-		-		3.00E-03	U	3.00E-01	U	1	-
Chlorobiphenyl, p-	2051-62-9	No	Yes	-		-		-		-		1	-
Chlorobutane, 1-	109-69-3	No	Yes	-		-		4.00E-02	U	-		1	-
Chlorobutane, 2-	78-86-4	No	Yes	-		-		-		-		1	-
Chlorocyclopentadiene	41851-50-7	No	Yes	-		-		-		-		1	-
Chlorodibromoethane	73506-94-2	No	No	-		-		-		-		1	0.1
Chlorodifluoromethane	75-45-6	No	Yes	-		-		-		5.00E+01	U	1	-
Chloroethanol, 2-	107-07-3	No	Yes	-		-		2.00E-02	U	-		1	-
Chloroethylvinyl ether, 2-	110-75-8	No	Yes	-		-		-		-		1	-
Chloroform	67-66-3	No	Yes	3.10E-02	U	2.30E-05	U	1.00E-02	U	9.77E-02	U	1	-
Chloromethane	74-87-3	No	Yes	-		-		-		9.00E-02	U	1	-
Chloromethyl Methyl Ether	107-30-2	No	Yes	2.40E+00	U	6.90E-04	U	-		-		1	-
Chloronaphthalene, Beta-	91-58-7	No	Yes	-		-		8.00E-02	U	-		1	0.13
Chloronaphthalene, alpha-	90-13-1	No	Yes	-		-		-		-		1	-
Chloronitrobenzene, o-	88-73-3	No	No	3.00E-01	U	-		3.00E-03	U	1.00E-05	U	1	0.1
Chloronitrobenzene, p-	100-00-5	No	No	6.30E-03	U	-		1.00E-03	U	6.00E-04	U	1	0.1
Chlorophenol, 2-	95-57-8	No	Yes	-		-		5.00E-03	U	-		1	-
Chlorophenol, 3-	108-43-0	No	No	-		-		-		-		1	0.1
Chlorophenol, 4-	106-48-9	No	No	-		-		-		-		1	0.1
Chlorophenols (each)	NA	No	No	-		-		-		-		1	0.1
Chlorophenols (total)	NA	No	No	-		-		-		-		1	0.1
Chlorophenyl Methyl Sulfide, p-	123-09-1	No	Yes	-		-		-		-		1	-
Chlorophenyl Methyl Sulfoxide	934-73-6	No	No	-		-		-		-		1	0.1
Chlorophenyl phenyl ether, 4-	7005-72-3	No	Yes	-		-		-		-		1	-
Chloropicrin	76-06-2	No	Yes	-		-		-		4.00E-04	U	1	-
Chloropropane, 2-	75-29-6	No	Yes	-		-		-		-		1	-
Chlorothalonil	1897-45-6	No	No	3.10E-03	U	8.90E-07	U	1.50E-02	U	-		1	0.1
Chlorotoluene, o-	95-49-8	No	Yes	-		-		2.00E-02	U	-		1	-
Chlorotoluene, p-	106-43-4	No	Yes	-		-		2.00E-02	U	-		1	-
Chlorozotocin	54749-90-5	No	No	2.40E+02	U	6.90E-02	U	-		-		1	0.1
Chlorpropham	101-21-3	No	No	-		-		2.00E-01	U	-		1	0.1
Chlorpyrifos	2921-88-2	No	No	-		-		1.00E-03	U	-		1	0.1
Chlorpyrifos Methyl	5598-13-0	No	No	-		-		1.00E-02	U	-		1	0.1
Chlorsulfuron	64902-72-3	No	No	-		-		5.00E-02	U	-		1	0.1
Chlorthiophos	60238-56-4	No	No	-		-		8.00E-04	U	-		1	0.1
Chromium(III), Insoluble Salts	16065-83-1	No	No	-		-		1.50E+00	U	-		0.013	-
Chromium(VI)	18540-29-9	Yes	No	5.00E-01	U	8.40E-02	U	3.00E-03	U	1.00E-04	U	0.025	-
Chromium, Total	7440-47-3	No	No	-		-		-		-		0.013	-
Chrysene	218-01-9	Yes	No	7.30E-03	U	1.10E-05	U	-		-		1	0.13
Cobalt	7440-48-4	No	No	-		9.00E-03	U	3.00E-04	U	6.00E-06	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Chloroacetaldehyde, 2-	107-20-0	1	2.56E+04	2.83E+04	3.23E+09	7.65E+02	-	-	7.65E+02	-	-	-	-	7.65E+02 ca
Chloroacetamide	79-07-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloroacetic Acid	79-11-8	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Chloroacetophenone, 2-	532-27-4	1	-	-	3.23E+09	-	-	-	-	-	-	3.54E+06	3.54E+06	3.54E+06 max
Chloroaniline	27134-26-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloroaniline, 3-	108-42-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloroaniline, p-	106-47-8	1	-	-	3.23E+09	1.03E+03	8.18E+03	-	9.17E+02	1.18E+04	9.35E+04	-	1.05E+04	9.17E+02 ca*
Chlorobenzene	108-90-7	1	8.90E+03	7.61E+02	3.23E+09	-	-	-	-	5.90E+04	-	1.62E+04	1.27E+04	1.27E+04 sat
Chlorobenzene sulfonic acid, p-	98-66-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorobenzenes (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorobenzilate	510-15-6	1	-	-	3.23E+09	1.88E+03	1.49E+04	2.66E+08	1.67E+03	5.90E+04	4.67E+05	-	5.24E+04	1.67E+03 ca*
Chlorobenzoic Acid, p-	74-11-3	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	1	2.14E+05	9.07E+01	3.23E+09	-	-	-	-	-	-	-	-	
Chlorobenzotrifluoride, 4-	98-56-6	1	9.33E+03	1.17E+02	3.23E+09	-	-	-	-	8.85E+03	-	1.02E+05	8.14E+03	8.14E+03 sat
Chlorobiphenyl, p-	2051-62-9	1	1.78E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorobutane, 1-	109-69-3	1	2.42E+03	7.29E+02	3.23E+09	-	-	-	-	1.18E+05	-	-	1.18E+05	1.18E+05 sat
Chlorobutane, 2-	78-86-4	1	2.01E+03	6.51E+02	3.23E+09	-	-	-	-	-	-	-	-	
Chlorocyclopentadiene	41851-50-7	1	2.60E+03	9.88E+02	3.23E+09	-	-	-	-	-	-	-	-	
Chlorodibromoethane	73506-94-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorodifluoromethane	75-45-6	1	1.30E+03	1.68E+03	3.23E+09	-	-	-	-	-	-	2.37E+06	2.37E+06	2.37E+06 sat
Chloroethanol, 2-	107-07-3	1	1.08E+05	1.11E+05	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 nc
Chloroethylvinyl ether, 2-	110-75-8	1	2.21E+03	1.64E+03	3.23E+09	-	-	-	-	-	-	-	-	
Chloroform	67-66-3	1	3.62E+03	2.54E+03	3.23E+09	6.66E+03	-	4.03E+02	3.80E+02	2.95E+04	-	1.29E+04	8.99E+03	3.80E+02 ca*
Chloromethane	74-87-3	1	1.62E+03	1.32E+03	3.23E+09	-	-	-	-	-	-	5.32E+03	5.32E+03	5.32E+03 sat
Chloromethyl Methyl Ether	107-30-2	1	7.35E+03	2.58E+04	3.23E+09	8.60E+01	-	2.72E+01	2.07E+01	-	-	-	-	2.07E+01 ca
Chloronaphthalene, Beta-	91-58-7	1	1.10E+05	-	3.23E+09	-	-	-	-	2.36E+05	1.44E+06	-	2.03E+05	2.03E+05 max
Chloronaphthalene, alpha-	90-13-1	1	1.05E+05	2.66E+02	3.23E+09	-	-	-	-	-	-	-	-	
Chloronitrobenzene, o-	88-73-3	1	-	-	3.23E+09	6.88E+02	5.45E+03	-	6.11E+02	8.85E+03	7.01E+04	1.18E+06	7.81E+03	6.11E+02 ca*
Chloronitrobenzene, p-	100-00-5	1	-	-	3.23E+09	3.28E+04	2.60E+05	-	2.91E+04	2.95E+03	2.34E+04	7.08E+07	2.62E+03	2.62E+03 nc
Chlorophenol, 2-	95-57-8	1	1.71E+05	2.19E+04	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Chlorophenol, 3-	108-43-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenol, 4-	106-48-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenols (each)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenols (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenyl Methyl Sulfide, p-	123-09-1	1	6.97E+04	2.73E+02	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenyl Methyl Sulfoxide	934-73-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chlorophenyl phenyl ether, 4-	7005-72-3	1	1.83E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Chloropicrin	76-06-2	1	6.46E+03	6.17E+02	3.23E+09	-	-	-	-	-	-	9.43E+01	9.43E+01	9.43E+01 nc
Chloropropane, 2-	75-29-6	1	1.79E+03	1.32E+03	3.23E+09	-	-	-	-	-	-	-	-	
Chlorothalonil	1897-45-6	1	-	-	3.23E+09	6.66E+04	5.28E+05	9.28E+09	5.91E+04	4.42E+04	3.51E+05	-	3.93E+04	3.93E+04 nc
Chlorotoluene, o-	95-49-8	1	1.12E+04	9.07E+02	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 sat
Chlorotoluene, p-	106-43-4	1	1.01E+04	2.53E+02	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 sat
Chlorozotocin	54749-90-5	1	-	-	3.23E+09	8.60E-01	6.82E+00	1.20E+05	7.64E-01	-	-	-	-	7.64E-01 ca
Chlorpropham	101-21-3	1	-	-	3.23E+09	-	-	-	-	5.90E+05	4.67E+06	-	5.24E+05	5.24E+05 max
Chlorpyrifos	2921-88-2	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Chlorpyrifos Methyl	5598-13-0	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Chlorsulfuron	64902-72-3	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Chlorthiophos	60238-56-4	1	-	-	3.23E+09	-	-	-	-	2.36E+03	1.87E+04	-	2.10E+03	2.10E+03 nc
Chromium(III), Insoluble Salts	16065-83-1	1	-	-	3.23E+09	-	-	-	-	4.42E+06	-	-	4.42E+06	4.42E+06 max
Chromium(VI)	18540-29-9	1	-	-	3.23E+09	4.13E+02	-	9.83E+04	4.11E+02	8.85E+03	-	1.18E+07	8.84E+03	4.11E+02 ca*
Chromium, Total	7440-47-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Chrysene	218-01-9	1	-	-	3.23E+09	2.83E+04	1.72E+05	7.51E+08	2.43E+04	-	-	-	-	2.43E+04 ca
Cobalt	7440-48-4	1	-	-	3.23E+09	-	-	9.18E+05	9.18E+05	8.85E+02	-	7.08E+05	8.84E+02	8.84E+02 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	No	No	-		-		-		-		1	0.1
Copper	7440-50-8	No	No	-		-		4.00E-02	U	-		1	-
Copper Cyanide	544-92-3	No	No	-		-		5.00E-03	U	-		1	-
Coronene	191-07-1	No	No	-		-		-		-		1	0.13
Creosote	8001-58-9	No	No	-		-		-		-		1	0.1
Cresol, m-	108-39-4	No	No	-		-		5.00E-02	U	6.00E-01	U	1	0.1
Cresol, o-	95-48-7	No	No	-		-		5.00E-02	U	6.00E-01	U	1	0.1
Cresol, p-	106-44-5	No	No	-		-		1.00E-01	U	6.00E-01	U	1	0.1
Cresol, p-chloro-m-	59-50-7	No	No	-		-		1.00E-01	U	-		1	0.1
Cresols	1319-77-3	No	No	-		-		1.00E-01	U	6.00E-01	U	1	0.1
Crotonaldehyde	4170-30-3	No	Yes	-		-		-		-		1	-
Crotonaldehyde, trans-	123-73-9	No	Yes	1.90E+00	U	-		1.00E-03	U	-		1	-
Cumene	98-82-8	No	Yes	-		-		1.00E-01	U	4.00E-01	U	1	-
Cupferron	135-20-6	No	No	2.20E-01	U	6.30E-05	U	-		-		1	0.1
Cyanazine	21725-46-2	No	No	8.40E-01	U	-		2.00E-03	U	-		1	0.1
Cyanide (CN-)	57-12-5	No	Yes	-		-		6.00E-04	U	8.00E-04	U	1	-
Cyanide (total complex)	NA	No	No	-		-		-		-		1	-
Cyanogen	460-19-5	No	Yes	-		-		1.00E-03	U	-		1	-
Cyanogen Bromide	506-68-3	No	Yes	-		-		9.00E-02	U	-		1	-
Cyanogen Chloride	506-77-4	No	Yes	-		-		5.00E-02	U	-		1	-
Cyclohexane	110-82-7	No	Yes	-		-		-		6.00E+00	U	1	-
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	No	No	2.30E-02	U	-		-		-		1	0.1
Cyclohexanone	108-94-1	No	Yes	-		-		5.00E+00	U	7.00E-01	U	1	-
Cyclohexene	110-83-8	No	Yes	-		-		5.00E-03	U	1.00E+00	U	1	-
Cyclohexylamine	108-91-8	No	Yes	-		-		2.00E-01	U	-		1	-
Cyclopentadiene	542-92-7	No	Yes	-		-		-		-		1	-
Cyhalothrin/karate	68085-85-8	No	No	-		-		5.00E-03	U	-		1	0.1
Cypermethrin	52315-07-8	No	No	-		-		1.00E-02	U	-		1	0.1
Cyromazine	66215-27-8	No	No	-		-		7.50E-03	U	-		1	0.1
DDD	72-54-8	No	No	2.40E-01	U	6.90E-05	U	-		-		1	0.1
DDD, o,p'-	53-19-0	No	No	-		-		-		-		1	0.1
DDE, p,p'-	72-55-9	No	Yes	3.40E-01	U	9.70E-05	U	-		-		1	-
DDT	50-29-3	No	No	3.40E-01	U	9.70E-05	U	5.00E-04	U	-		1	0.03
DDT, o,p'-	789-02-6	No	No	-		-		-		-		1	0.1
DDT/DDE/DDD (total)	NA	No	No	-		-		-		-		1	0.1
Dacthal	1861-32-1	No	No	-		-		1.00E-02	U	-		1	0.1
Dalapon	75-99-0	No	No	-		-		3.00E-02	U	-		1	0.1
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'-(BDE-209)	1163-19-5	No	No	7.00E-04	U	-		7.00E-03	U	-		1	0.1
Decane	124-18-5	No	Yes	-		-		-		-		1	-
Decanol, n-	112-30-1	No	Yes	-		-		-		-		1	-
Deltamethrin	52918-63-5	No	No	-		-		-		-		1	0.1
Demeton	8065-48-3	No	No	-		-		4.00E-05	U	-		1	0.1
Di(2-ethylhexyl)adipate	103-23-1	No	No	1.20E-03	U	-		6.00E-01	U	-		1	0.1
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	No	Yes	-		-		-		-		1	-
Di-n-butyltin bis(methyl maleate)	15546-11-9	No	No	-		-		-		-		1	0.1
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	No	No	-		-		-		-		1	0.1
Di-n-butyltin dilaurate	77-58-7	No	Yes	-		-		-		-		1	-
Di-n-butyltin distearate	5847-55-2	No	Yes	-		-		-		-		1	-
Di-n-hexylphthalate	84-75-3	No	Yes	-		-		-		-		1	-
Diallate	2303-16-4	No	No	6.10E-02	U	-		-		-		1	0.1
Diammonium phosphate	7783-28-0	No	No	-		-		4.86E+01	U	-		1	-
Diazinon	333-41-5	No	No	-		-		7.00E-04	U	-		1	0.1

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Copper	7440-50-8	1	-	-	3.23E+09	-	-	-	-	1.18E+05	-	-	1.18E+05	1.18E+05 max
Copper Cyanide	544-92-3	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Coronene	191-07-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Creosote	8001-58-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Cresol, m-	108-39-4	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	7.08E+10	1.31E+05	1.31E+05 max
Cresol, o-	95-48-7	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	7.08E+10	1.31E+05	1.31E+05 max
Cresol, p-	106-44-5	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	7.08E+10	2.62E+05	2.62E+05 max
Cresol, p-chloro-m-	59-50-7	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Cresols	1319-77-3	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	7.08E+10	2.62E+05	2.62E+05 max
Crotonaldehyde	4170-30-3	1	2.61E+04	2.00E+04	3.23E+09	-	-	-	-	-	-	-	-	
Crotonaldehyde, trans-	123-73-9	1	2.61E+04	1.66E+04	3.23E+09	1.09E+02	-	-	1.09E+02	2.95E+03	-	-	2.95E+03	1.09E+02 ca*
Cumene	98-82-8	1	8.56E+03	2.68E+02	3.23E+09	-	-	-	-	2.95E+05	-	1.25E+05	8.78E+04	8.78E+04 sat
Cupferron	135-20-6	1	-	-	3.23E+09	9.38E+02	7.44E+03	1.31E+08	8.33E+02	-	-	-	-	8.33E+02 ca
Cyanazine	21725-46-2	1	-	-	3.23E+09	2.46E+02	1.95E+03	-	2.18E+02	5.90E+03	4.67E+04	-	5.24E+03	2.18E+02 ca*
Cyanide (CN-)	57-12-5	1	6.42E+04	1.00E+07	3.23E+09	-	-	-	-	1.77E+03	-	1.88E+03	9.11E+02	9.11E+02 nc
Cyanide (total complex)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Cyanogen	460-19-5	1	-	-	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Cyanogen Bromide	506-68-3	1	-	-	3.23E+09	-	-	-	-	2.65E+05	-	-	2.65E+05	2.65E+05 max
Cyanogen Chloride	506-77-4	1	-	-	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 max
Cyclohexane	110-82-7	1	1.44E+03	1.18E+02	3.23E+09	-	-	-	-	-	-	3.15E+05	3.15E+05	3.15E+05 sat
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	1	-	-	3.23E+09	8.98E+03	7.11E+04	-	7.97E+03	-	-	-	-	7.97E+03 ca
Cyclohexanone	108-94-1	1	5.75E+04	5.11E+03	3.23E+09	-	-	-	-	1.47E+07	-	1.47E+06	1.34E+06	1.34E+06 sat
Cyclohexene	110-83-8	1	2.02E+03	2.83E+02	3.23E+09	-	-	-	-	1.47E+04	-	7.37E+04	1.23E+04	1.23E+04 sat
Cyclohexylamine	108-91-8	1	1.03E+05	2.93E+05	3.23E+09	-	-	-	-	5.90E+05	-	-	5.90E+05	5.90E+05 sat
Cyclopentadiene	542-92-7	1	2.05E+03	1.34E+03	3.23E+09	-	-	-	-	-	-	-	-	
Cyhalothrin/karate	68085-85-8	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Cypermethrin	52315-07-8	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Cyromazine	66215-27-8	1	-	-	3.23E+09	-	-	-	-	2.21E+04	1.75E+05	-	1.96E+04	1.96E+04 nc
DDD	72-54-8	1	-	-	3.23E+09	8.60E+02	6.82E+03	1.20E+08	7.64E+02	-	-	-	-	7.64E+02 ca
DDD, o,p'-	53-19-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
DDE, p,p'-	72-55-9	1	2.91E+06	-	3.23E+09	6.07E+02	-	7.65E+04	6.02E+02	-	-	-	-	6.02E+02 ca
DDT	50-29-3	1	-	-	3.23E+09	6.07E+02	1.60E+04	8.52E+07	5.85E+02	1.47E+03	3.90E+04	-	1.42E+03	5.85E+02 ca**
DDT, o,p'-	789-02-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
DDT/DDE/DDD (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dacthal	1861-32-1	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Dalapon	75-99-0	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'-(BDE-209)	1163-19-5	1	-	-	3.23E+09	2.95E+05	2.34E+06	-	2.62E+05	2.06E+04	1.64E+05	-	1.83E+04	1.83E+04 nc
Decane	124-18-5	1	1.56E+03	2.53E+00	3.23E+09	-	-	-	-	-	-	-	-	
Decanol, n-	112-30-1	1	8.71E+04	3.19E+01	3.23E+09	-	-	-	-	-	-	-	-	
Deltamethrin	52918-63-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Demeton	8065-48-3	1	-	-	3.23E+09	-	-	-	-	1.18E+02	9.35E+02	-	1.05E+02	1.05E+02 nc
Di(2-ethylhexyl)adipate	103-23-1	1	-	-	3.23E+09	1.72E+05	1.36E+06	-	1.53E+05	1.77E+06	1.40E+07	-	1.57E+06	1.53E+05 max
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	1	1.29E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Di-n-butyltin bis(methyl maleate)	15546-11-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Di-n-butyltin dilaurate	77-58-7	1	4.40E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Di-n-butyltin distearate	5847-55-2	1	2.33E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Di-n-hexylphthalate	84-75-3	1	1.33E+06	3.85E+00	3.23E+09	-	-	-	-	-	-	-	-	
Diallate	2303-16-4	1	-	-	3.23E+09	3.38E+03	2.68E+04	-	3.01E+03	-	-	-	-	3.01E+03 ca
Diammonium phosphate	7783-28-0	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Diazinon	333-41-5	1	-	-	3.23E+09	-	-	-	-	2.06E+03	1.64E+04	-	1.83E+03	1.83E+03 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Dibenz[a,h]anthracene	53-70-3	Yes	No	7.30E+00	U	1.20E-03	U	-		-		1	0.13
Dibenzo(a,e)pyrene	192-65-4	No	No	1.20E+01	U	1.10E-03	U	-		-		1	0.13
Dibenzofuran	132-64-9	No	Yes	-		-		1.00E-03	U	-		1	0.03
Dibenzothiophene	132-65-0	No	Yes	-		-		1.00E-02	U	-		1	-
Dibromo-3-chloropropane, 1,2-	96-12-8	Yes	Yes	8.00E-01	U	6.00E-03	U	2.00E-04	U	2.00E-04	U	1	-
Dibromoacetic acid	631-64-1	No	No	-		-		-		-		1	0.1
Dibromobenzene, 1,3-	108-36-1	No	Yes	-		-		4.00E-04	U	-		1	-
Dibromobenzene, 1,4-	106-37-6	No	Yes	-		-		1.00E-02	U	-		1	-
Dibromochloromethane	124-48-1	No	Yes	8.40E-02	U	2.70E-05	U	2.00E-02	U	-		1	-
Dibromodichloromethane	594-18-3	No	Yes	-		-		-		-		1	-
Dibromodiphenyl Ether, p,p'-	2050-47-7	No	Yes	-		-		-		-		1	-
Dibromoethane, 1,2-	106-93-4	No	Yes	2.00E+00	U	6.00E-04	U	9.00E-03	U	9.00E-03	U	1	-
Dibromomethane (Methylene Bromide)	74-95-3	No	Yes	-		-		1.00E-02	U	4.00E-03	U	1	-
Dibutoxy di-n-butyltin	3349-36-8	No	Yes	-		-		-		-		1	-
Dibutyl Phthalate	84-74-2	No	No	-		-		1.00E-01	U	-		1	0.1
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	No	No	-		-		-		-		1	0.1
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	No	Yes	-		-		-		-		1	-
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	No	No	-		-		-		-		1	0.1
Dibutylbis(palmitoyloxy)stannane	13323-63-2	No	Yes	-		-		-		-		1	-
Dibutyltin Compounds	NA	No	No	-		-		3.00E-04	U	-		1	0.1
Dibutyltin diacetate	1067-33-0	No	Yes	-		-		-		-		1	-
Dibutyltin dichloride	683-18-1	No	Yes	-		-		-		-		1	-
Dibutyltin oxide	818-08-6	No	Yes	-		-		-		-		1	-
Dicalcium phosphate	7757-93-9	No	No	-		-		4.86E+01	U	-		1	-
Dicamba	1918-00-9	No	No	-		-		3.00E-02	U	-		1	0.1
Dichloro-2-butene, 1,4-	764-41-0	No	Yes	-		4.20E-03	U	-		-		1	-
Dichloro-2-butene, cis-1,4-	1476-11-5	No	Yes	-		4.20E-03	U	-		-		1	-
Dichloro-2-butene, trans-1,4-	110-57-6	No	Yes	-		4.20E-03	U	-		-		1	-
Dichloroacetic Acid	79-43-6	No	No	5.00E-02	U	-		4.00E-03	U	-		1	0.1
Dichloroaniline, 2,4-	554-00-7	No	No	-		-		-		-		1	0.1
Dichloroaniline, 3,4-	95-76-1	No	Yes	-		-		-		-		1	-
Dichlorobenzene	25321-22-6	No	Yes	-		-		-		-		1	-
Dichlorobenzene, 1,2-	95-50-1	No	Yes	-		-		9.00E-02	U	2.00E-01	U	1	-
Dichlorobenzene, 1,3-	541-73-1	No	Yes	-		-		-		-		1	-
Dichlorobenzene, 1,4-	106-46-7	No	Yes	5.40E-03	U	1.10E-05	U	7.00E-02	U	8.00E-01	U	1	-
Dichlorobenzidine, 3,3'-	91-94-1	No	No	4.50E-01	U	3.40E-04	U	-		-		1	0.1
Dichlorobenzoic acid, -3,5	51-36-5	No	No	-		-		-		-		1	0.1
Dichlorobenzophenone, 4,4'-	90-98-2	No	No	-		-		9.00E-03	U	-		1	0.1
Dichlorobenzotrifluoride, 3,4-	328-84-7	No	Yes	-		-		-		-		1	-
Dichlorodifluoromethane	75-71-8	No	Yes	-		-		2.00E-01	U	1.00E-01	U	1	-
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	No	Yes	-		-		-		-		1	-
Dichloroethane, 1,1-	75-34-3	No	Yes	5.70E-03	U	1.60E-06	U	2.00E-01	U	-		1	-
Dichloroethane, 1,2-	107-06-2	No	Yes	9.10E-02	U	2.60E-05	U	6.00E-03	U	7.00E-03	U	1	-
Dichloroethylene, 1,1-	75-35-4	No	Yes	-		-		5.00E-02	U	2.00E-01	U	1	-
Dichloroethylene, 1,2-cis-	156-59-2	No	Yes	-		-		2.00E-03	U	-		1	-
Dichloroethylene, 1,2-trans-	156-60-5	No	Yes	-		-		2.00E-02	U	-		1	-
Dichlorophenol, 2,3-	576-24-9	Yes	No	-		-		-		-		1	0.1
Dichlorophenol, 2,4-	120-83-2	No	No	-		-		3.00E-03	U	-		1	0.1
Dichlorophenol, 2,5-	583-78-8	No	No	-		-		-		-		1	0.1
Dichlorophenol, 2,6-	87-65-0	No	No	-		-		-		-		1	0.1
Dichlorophenol, 3,4-	95-77-2	No	No	-		-		-		-		1	0.1
Dichlorophenols (total)	NA	No	No	-		-		-		-		1	0.1

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Dibenz[a,h]anthracene	53-70-3	1	-	-	3.23E+09	2.83E+01	1.72E+02	6.88E+06	2.43E+01	-	-	-	-	2.43E+01 ca
Dibenzo(a,e)pyrene	192-65-4	1	-	-	3.23E+09	1.72E+01	1.05E+02	7.51E+06	1.48E+01	-	-	-	-	1.48E+01 ca
Dibenzofuran	132-64-9	1	2.70E+05	-	3.23E+09	-	-	-	-	2.95E+03	7.79E+04	-	2.84E+03	2.84E+03 nc
Dibenzothiophene	132-65-0	1	7.24E+05	-	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 nc
Dibromo-3-chloropropane, 1,2-	96-12-8	1	4.42E+04	9.80E+02	3.23E+09	2.58E+02	-	1.88E+01	1.75E+01	5.90E+02	-	3.22E+02	2.08E+02	1.75E+01 ca*
Dibromoacetic acid	631-64-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibromobenzene, 1,3-	108-36-1	1	2.66E+04	1.59E+02	3.23E+09	-	-	-	-	1.18E+03	-	-	1.18E+03	1.18E+03 sat
Dibromobenzene, 1,4-	106-37-6	1	3.03E+04	-	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 nc
Dibromochloromethane	124-48-1	1	1.10E+04	8.02E+02	3.23E+09	2.46E+03	-	1.04E+03	7.30E+02	5.90E+04	-	-	5.90E+04	7.30E+02 ca*
Dibromodichloromethane	594-18-3	1	3.20E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibromodiphenyl Ether, p,p'-	2050-47-7	1	5.22E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibromoethane, 1,2-	106-93-4	1	1.19E+04	1.34E+03	3.23E+09	1.03E+02	-	5.08E+01	3.40E+01	2.65E+04	-	3.92E+03	3.41E+03	3.40E+01 ca
Dibromomethane (Methylene Bromide)	74-95-3	1	7.79E+03	2.82E+03	3.23E+09	-	-	-	-	2.95E+04	-	1.14E+03	1.09E+03	1.09E+03 nc
Dibutoxy di-n-butyltin	3349-36-8	1	8.25E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutyl Phthalate	84-74-2	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	1	3.40E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutylbis(palmitoyloxy)stannane	13323-63-2	1	1.20E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutyltin Compounds	NA	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Dibutyltin diacetate	1067-33-0	1	1.75E+04	1.86E+00	3.23E+09	-	-	-	-	-	-	-	-	
Dibutyltin dichloride	683-18-1	1	3.93E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Dibutyltin oxide	818-08-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dicalcium phosphate	7757-93-9	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Dicamba	1918-00-9	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Dichloro-2-butene, 1,4-	764-41-0	1	1.54E+04	5.20E+02	3.23E+09	-	-	9.35E+00	9.35E+00	-	-	-	-	9.35E+00 ca
Dichloro-2-butene, cis-1,4-	1476-11-5	1	1.54E+04	5.20E+02	3.23E+09	-	-	9.35E+00	9.35E+00	-	-	-	-	9.35E+00 ca
Dichloro-2-butene, trans-1,4-	110-57-6	1	1.54E+04	7.63E+02	3.23E+09	-	-	9.36E+00	9.36E+00	-	-	-	-	9.36E+00 ca
Dichloroacetic Acid	79-43-6	1	-	-	3.23E+09	4.13E+03	3.27E+04	-	3.67E+03	1.18E+04	9.35E+04	-	1.05E+04	3.67E+03 ca**
Dichloroaniline, 2,4-	554-00-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichloroaniline, 3,4-	95-76-1	1	1.39E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorobenzene	25321-22-6	1	1.61E+04	1.93E+02	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorobenzene, 1,2-	95-50-1	1	1.61E+04	3.76E+02	3.23E+09	-	-	-	-	2.65E+05	-	1.18E+05	8.15E+04	8.15E+04 sat
Dichlorobenzene, 1,3-	541-73-1	1	1.37E+04	2.96E+02	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorobenzene, 1,4-	106-46-7	1	1.44E+04	-	3.23E+09	3.82E+04	-	3.35E+03	3.08E+03	2.06E+05	-	4.21E+05	1.38E+05	3.08E+03 ca*
Dichlorobenzidine, 3,3'-	91-94-1	1	-	-	3.23E+09	4.59E+02	3.64E+03	2.43E+07	4.07E+02	-	-	-	-	4.07E+02 ca
Dichlorobenzoic acid, -3,5	51-36-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorobenzophenone, 4,4'-	90-98-2	1	-	-	3.23E+09	-	-	-	-	2.65E+04	2.10E+05	-	2.36E+04	2.36E+04 nc
Dichlorobenzotrifluoride, 3,4-	328-84-7	1	1.59E+04	4.57E+01	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorodifluoromethane	75-71-8	1	1.16E+03	8.44E+02	3.23E+09	-	-	-	-	5.90E+05	-	4.23E+03	4.20E+03	4.20E+03 sat
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	1	1.81E+04	2.35E+02	3.23E+09	-	-	-	-	-	-	-	-	
Dichloroethane, 1,1-	75-34-3	1	2.87E+03	1.69E+03	3.23E+09	3.62E+04	-	4.59E+03	4.07E+03	5.90E+05	-	-	5.90E+05	4.07E+03 sat
Dichloroethane, 1,2-	107-06-2	1	6.31E+03	2.98E+03	3.23E+09	2.27E+03	-	6.20E+02	4.87E+02	1.77E+04	-	1.61E+03	1.48E+03	4.87E+02 ca**
Dichloroethylene, 1,1-	75-35-4	1	1.59E+03	1.19E+03	3.23E+09	-	-	-	-	1.47E+05	-	1.16E+04	1.08E+04	1.08E+04 sat
Dichloroethylene, 1,2-cis-	156-59-2	1	3.45E+03	2.37E+03	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 sat
Dichloroethylene, 1,2-trans-	156-60-5	1	3.46E+03	1.67E+03	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 sat
Dichlorophenol, 2,3-	576-24-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorophenol, 2,4-	120-83-2	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Dichlorophenol, 2,5-	583-78-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorophenol, 2,6-	87-65-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorophenol, 3,4-	95-77-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorophenols (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	No	No	-		-		1.00E-02	U	-		1	0.05
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	No	No	-		-		8.00E-03	U	-		1	0.1
Dichloropropane, 1,2-	78-87-5	No	Yes	3.60E-02	U	1.00E-05	U	9.00E-02	U	4.00E-03	U	1	-
Dichloropropane, 1,3-	142-28-9	No	Yes	-		-		2.00E-02	U	-		1	-
Dichloropropane, 2,2-	594-20-7	Yes	Yes	-		-		-		-		1	-
Dichloropropanol, 2,3-	616-23-9	No	No	-		-		3.00E-03	U	-		1	0.1
Dichloropropene, 1,3-	542-75-6	No	Yes	1.00E-01	U	4.00E-06	U	3.00E-02	U	2.00E-02	U	1	-
Dichloropropene, 2,3-	78-88-6	No	Yes	-		-		-		-		1	-
Dichloropropene, cis-1,3-	10061-01-5	No	Yes	-		-		-		-		1	-
Dichloropropene, trans-1,3-	10061-02-6	No	Yes	-		-		-		-		1	-
Dichlorvos	62-73-7	No	No	2.90E-01	U	8.30E-05	U	5.00E-04	U	5.00E-04	U	1	0.1
Diclofop-methyl	51338-27-3	No	No	-		-		-		-		1	0.1
Dicofol	115-32-2	No	No	-		-		-		-		1	0.1
Dicyclohexylamine	101-83-7	No	Yes	-		-		-		-		1	-
Dicyclopentadiene	77-73-6	No	Yes	-		-		8.00E-02	U	3.00E-04	U	1	-
Didecyl dimethyl ammonium chloride	7173-51-5	No	No	-		-		-		-		1	0.1
Dieldrin	60-57-1	No	No	1.60E+01	U	4.60E-03	U	5.00E-05	U	-		1	0.1
Diepoxybutane	1464-53-5	No	Yes	-		-		-		-		1	-
Diethanolamine	111-42-2	No	No	-		-		2.00E-03	U	2.00E-04	U	1	0.1
Diethyl Phthalate	84-66-2	No	No	-		-		8.00E-01	U	-		1	0.1
Diethyl sulfate	64-67-5	No	No	-		-		-		-		1	0.1
Diethyl-p-nitrophenylphosphate	311-45-5	No	No	-		-		-		-		1	0.1
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	No	No	-		-		-		-		1	0.1
Diethylene Glycol Monobutyl Ether	112-34-5	No	No	-		-		3.00E-02	U	1.00E-04	U	1	0.1
Diethylene Glycol Monoethyl Ether	111-90-0	No	No	-		-		6.00E-02	U	3.00E-04	U	1	0.1
Diethylene-glycol	111-46-6	No	No	-		-		-		-		1	0.1
Diethylformamide	617-84-5	No	Yes	-		-		1.00E-03	U	-		1	-
Diethylphosphorodithioate	298-06-6	No	Yes	-		-		-		-		1	-
Diethylstilbestrol	56-53-1	No	No	3.50E+02	U	1.00E-01	U	-		-		1	0.1
Difenzoquat	43222-48-6	No	No	-		-		8.00E-02	U	-		1	0.1
Diflubenzuron	35367-38-5	No	No	-		-		2.00E-02	U	-		1	0.1
Difluoroethane, 1,1-	75-37-6	No	Yes	-		-		-		4.00E+01	U	1	-
Difluoropropane, 2,2-	420-45-1	No	Yes	-		-		-		-		1	-
Dihydrosafrole	94-58-6	No	Yes	4.40E-02	U	1.30E-05	U	-		-		1	-
Diisopropyl Ether	108-20-3	No	Yes	-		-		-		7.00E-01	U	1	-
Diisopropyl Methylphosphonate	1445-75-6	No	Yes	-		-		8.00E-02	U	-		1	-
Dimagnesium phosphate	7782-75-4	No	No	-		-		4.86E+01	U	-		1	-
Dimethipin	55290-64-7	No	No	-		-		2.00E-02	U	-		1	0.1
Dimethoate	60-51-5	No	No	-		-		2.00E-04	U	-		1	0.1
Dimethoxybenzidine, 3,3'-	119-90-4	No	No	1.60E+00	U	-		-		-		1	0.1
Dimethyl Sulfate	77-78-1	No	No	-		-		-		-		1	0.1
Dimethyl Sulfide	75-18-3	No	Yes	-		-		-		-		1	-
Dimethyl methylphosphonate	756-79-6	No	No	1.70E-03	U	-		6.00E-02	U	-		1	0.1
Dimethylamino azobenzene [p-]	60-11-7	No	No	4.60E+00	U	1.30E-03	U	-		-		1	0.1
Dimethylaniline HCl, 2,4-	21436-96-4	No	No	5.80E-01	U	-		-		-		1	0.1
Dimethylaniline, 2,4-	95-68-1	No	No	2.00E-01	U	-		2.00E-03	U	-		1	0.1
Dimethylaniline, N,N-	121-69-7	No	Yes	-		-		2.00E-03	U	-		1	-
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	2.50E+02	U	7.10E-02	U	-		-		1	0.13
Dimethylbenzidine, 3,3'-	119-93-7	No	No	1.10E+01	U	-		-		-		1	0.1
Dimethylcyclohexylamine, n,n-	98-94-2	No	Yes	-		-		-		-		1	-
Dimethylethyl Lead	107584-40-7	No	No	-		-		-		-		1	0.1
Dimethylformamide	68-12-2	No	Yes	-		-		1.00E-01	U	3.00E-02	U	1	-
Dimethylhydrazine, 1,1-	57-14-7	No	Yes	-		-		1.00E-04	U	2.00E-06	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	1	-	-	3.23E+09	-	-	-	-	2.95E+04	4.67E+05	-	2.77E+04	2.77E+04 nc
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	1	-	-	3.23E+09	-	-	-	-	2.36E+04	1.87E+05	-	2.10E+04	2.10E+04 nc
Dichloropropane, 1,2-	78-87-5	1	5.23E+03	1.36E+03	3.23E+09	5.74E+03	-	1.34E+03	1.08E+03	2.65E+05	-	7.64E+02	7.62E+02	7.62E+02 nc
Dichloropropane, 1,3-	142-28-9	1	9.33E+03	1.49E+03	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 sat
Dichloropropane, 2,2-	594-20-7	1	2.21E+03	5.27E+02	3.23E+09	-	-	-	-	-	-	-	-	
Dichloropropanol, 2,3-	616-23-9	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Dichloropropene, 1,3-	542-75-6	1	4.91E+03	1.57E+03	3.23E+09	2.06E+03	-	3.13E+03	1.24E+03	8.85E+04	-	3.58E+03	3.44E+03	1.24E+03 ca**
Dichloropropene, 2,3-	78-88-6	1	4.27E+03	1.07E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dichloropropene, cis-1,3-	10061-01-5	1	4.90E+03	1.22E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dichloropropene, trans-1,3-	10061-02-6	1	4.91E+03	1.57E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dichlorvos	62-73-7	1	-	-	3.23E+09	7.12E+02	5.64E+03	9.95E+07	6.32E+02	1.47E+03	1.17E+04	5.90E+07	1.31E+03	6.32E+02 ca**
Diclofop-methyl	51338-27-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dicofol	115-32-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dicyclohexylamine	101-83-7	1	8.62E+04	2.16E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dicyclopentadiene	77-73-6	1	5.67E+03	-	3.23E+09	-	-	-	-	2.36E+05	-	6.21E+01	6.20E+01	6.20E+01 nc
Didecyl dimethyl ammonium chloride	7173-51-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dieldrin	60-57-1	1	-	-	3.23E+09	1.29E+01	1.02E+02	1.80E+06	1.15E+01	1.47E+02	1.17E+03	-	1.31E+02	1.15E+01 ca*
Diepoxybutane	1464-53-5	1	2.02E+05	1.15E+05	3.23E+09	-	-	-	-	-	-	-	-	
Diethanolamine	111-42-2	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	2.36E+07	5.24E+03	5.24E+03 nc
Diethyl Phthalate	84-66-2	1	-	-	3.23E+09	-	-	-	-	2.36E+06	1.87E+07	-	2.10E+06	2.10E+06 max
Diethyl sulfate	64-67-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Diethyl-p-nitrophenylphosphate	311-45-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Diethylene Glycol Monobutyl Ether	112-34-5	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	1.18E+07	7.81E+04	7.81E+04 nc
Diethylene Glycol Monoethyl Ether	111-90-0	1	-	-	3.23E+09	-	-	-	-	1.77E+05	1.40E+06	3.54E+07	1.56E+05	1.56E+05 max
Diethylene-glycol	111-46-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Diethylformamide	617-84-5	1	1.91E+05	1.12E+05	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Diethylphosphorodithioate	298-06-6	1	1.79E+04	2.15E-02	3.23E+09	-	-	-	-	-	-	-	-	
Diethylstilbestrol	56-53-1	1	-	-	3.23E+09	5.90E-01	4.67E+00	8.26E+04	5.24E-01	-	-	-	-	5.24E-01 ca
Difenzoquat	43222-48-6	1	-	-	3.23E+09	-	-	-	-	2.36E+05	1.87E+06	-	2.10E+05	2.10E+05 max
Diflubenzuron	35367-38-5	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Difluoroethane, 1,1-	75-37-6	1	1.59E+03	1.43E+03	3.23E+09	-	-	-	-	-	-	2.31E+06	2.31E+06	2.31E+06 sat
Difluoropropane, 2,2-	420-45-1	1	1.01E+03	4.63E+04	3.23E+09	-	-	-	-	-	-	-	-	
Dihydrosafrole	94-58-6	1	2.08E+03	-	3.23E+09	4.69E+03	-	4.09E+02	3.76E+02	-	-	-	-	3.76E+02 ca
Diisopropyl Ether	108-20-3	1	4.21E+03	2.26E+03	3.23E+09	-	-	-	-	-	-	1.08E+05	1.08E+05	1.08E+05 sat
Diisopropyl Methylphosphonate	1445-75-6	1	5.26E+04	5.30E+02	3.23E+09	-	-	-	-	2.36E+05	-	-	2.36E+05	2.36E+05 sat
Dimagnesium phosphate	7782-75-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Dimethipin	55290-64-7	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Dimethoate	60-51-5	1	-	-	3.23E+09	-	-	-	-	5.90E+02	4.67E+03	-	5.24E+02	5.24E+02 nc
Dimethoxybenzidine, 3,3'-	119-90-4	1	-	-	3.23E+09	1.29E+02	1.02E+03	-	1.15E+02	-	-	-	-	1.15E+02 ca
Dimethyl Sulfate	77-78-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dimethyl Sulfide	75-18-3	1	4.10E+03	5.34E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dimethyl methylphosphonate	756-79-6	1	-	-	3.23E+09	1.21E+05	9.62E+05	-	1.08E+05	1.77E+05	1.40E+06	-	1.57E+05	1.08E+05 max
Dimethylamino azobenzene [p-]	60-11-7	1	-	-	3.23E+09	4.49E+01	3.56E+02	6.35E+06	3.99E+01	-	-	-	-	3.99E+01 ca
Dimethylaniline HCl, 2,4-	21436-96-4	1	-	-	3.23E+09	3.56E+02	2.82E+03	-	3.16E+02	-	-	-	-	3.16E+02 ca
Dimethylaniline, 2,4-	95-68-1	1	-	-	3.23E+09	1.03E+03	8.18E+03	-	9.17E+02	5.90E+03	4.67E+04	-	5.24E+03	9.17E+02 ca**
Dimethylaniline, N,N-	121-69-7	1	4.32E+04	8.30E+02	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 sat
Dimethylbenz(a)anthracene, 7,12-	57-97-6	1	-	-	3.23E+09	8.26E-01	5.03E+00	1.16E+05	7.09E-01	-	-	-	-	7.09E-01 ca
Dimethylbenzidine, 3,3'-	119-93-7	1	-	-	3.23E+09	1.88E+01	1.49E+02	-	1.67E+01	-	-	-	-	1.67E+01 ca
Dimethylcyclohexylamine, n,n-	98-94-2	1	5.23E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Dimethylethyl Lead	107584-40-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dimethylformamide	68-12-2	1	1.76E+05	1.06E+05	3.23E+09	-	-	-	-	2.95E+05	-	1.93E+05	1.16E+05	1.16E+05 sat
Dimethylhydrazine, 1,1-	57-14-7	1	2.23E+05	1.72E+05	3.23E+09	-	-	-	-	2.95E+02	-	1.63E+01	1.54E+01	1.54E+01 nc

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Dimethylhydrazine, 1,2-	540-73-8	No	Yes	5.50E+02	U	1.60E-01	U	-		-		1	-
Dimethylmercury	593-74-8	No	Yes	-		-		-		-		1	-
Dimethylphenethylamine	122-09-8	No	No	-		-		-		-		1	0.1
Dimethylphenol, 2,4-	105-67-9	No	No	-		-		2.00E-02	U	-		1	0.1
Dimethylphenol, 2,6-	576-26-1	No	No	-		-		6.00E-04	U	-		1	0.1
Dimethylphenol, 3,4-	95-65-8	No	No	-		-		1.00E-03	U	-		1	0.1
Dimethylphthalate	131-11-3	No	No	-		-		-		-		1	0.1
Dimethylterephthalate	120-61-6	No	Yes	-		-		1.00E-01	U	-		1	-
Dimethylvinylchloride	513-37-1	No	Yes	4.50E-02	U	1.30E-05	U	-		-		1	-
Dinitro-o-cresol, 4,6-	534-52-1	No	No	-		-		8.00E-05	U	-		1	0.1
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	No	No	-		-		2.00E-03	U	-		1	0.1
Dinitroaniline, 3,5-	618-87-1	No	No	-		-		-		-		1	0.1
Dinitrobenzene, 1,2-	528-29-0	No	No	-		-		1.00E-04	U	-		1	0.1
Dinitrobenzene, 1,3-	99-65-0	No	No	-		-		1.00E-04	U	-		1	0.1
Dinitrobenzene, 1,4-	100-25-4	No	No	-		-		1.00E-04	U	-		1	0.1
Dinitrophenol, 2,4-	51-28-5	No	No	-		-		2.00E-03	U	-		1	0.1
Dinitrophenols	25550-58-7	Yes	No	-		-		-		-		1	0.1
Dinitrosopentamethylenetetramine, N,N-	101-25-7	No	No	-		-		-		-		1	0.1
Dinitrotoluene Mixture, 2,4/2,6-	NA	No	No	6.80E-01	U	-		-		-		1	0.1
Dinitrotoluene, 2,4-	121-14-2	No	No	3.10E-01	U	8.90E-05	U	2.00E-03	U	-		1	0.102
Dinitrotoluene, 2,6-	606-20-2	No	No	1.50E+00	U	-		3.00E-04	U	-		1	0.099
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	No	No	-		-		2.00E-03	U	-		1	0.006
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	No	No	-		-		2.00E-03	U	-		1	0.009
Dinitrotoluene, Technical grade	25321-14-6	No	No	4.50E-01	U	-		9.00E-04	U	-		1	0.1
Dinoseb	88-85-7	No	No	-		-		1.00E-03	U	-		1	0.1
Dioxane, 1,4-	123-91-1	No	Yes	1.00E-01	U	5.00E-06	U	3.00E-02	U	3.00E-02	U	1	-
Diphenamid	957-51-7	No	No	-		-		3.00E-02	U	-		1	0.1
Diphenyl Sulfone	127-63-9	No	No	-		-		8.00E-04	U	-		1	0.1
Diphenylamine	122-39-4	No	No	-		-		2.50E-02	U	-		1	0.1
Diphenylhydrazine, 1,2-	122-66-7	No	No	8.00E-01	U	2.20E-04	U	-		-		1	0.1
Dipotassium phosphate	7758-11-4	No	No	-		-		4.86E+01	U	-		1	-
Diquat	85-00-7	No	No	-		-		2.20E-03	U	-		1	0.1
Direct Black 38	1937-37-7	No	No	7.10E+00	U	1.40E-01	U	-		-		1	0.1
Direct Blue 6	2602-46-2	No	No	7.40E+00	U	1.40E-01	U	-		-		1	0.1
Direct Brown 95	16071-86-6	No	No	6.70E+00	U	1.40E-01	U	-		-		1	0.1
Direct Sky Blue	2610-05-1	No	No	-		-		-		-		1	0.1
Disodium phosphate	7558-79-4	No	No	-		-		4.86E+01	U	-		1	-
Disulfoton	298-04-4	No	No	-		-		4.00E-05	U	-		1	0.1
Dithiane, 1,4-	505-29-3	No	Yes	-		-		1.00E-02	U	-		1	-
Diuron	330-54-1	No	No	-		-		2.00E-03	U	-		1	0.1
Dodecyl benzenesulfonic acid	27176-87-0	No	No	-		-		-		-		1	0.1
Dodine	2439-10-3	No	No	-		-		4.00E-03	U	-		1	0.1
EPTC	759-94-4	No	Yes	-		-		2.50E-02	U	-		1	-
Endosulfan	115-29-7	No	Yes	-		-		6.00E-03	U	-		1	-
Endosulfan I	959-98-8	No	Yes	-		-		-		-		1	-
Endosulfan II	33213-65-9	No	Yes	-		-		-		-		1	-
Endosulfan Sulfate	1031-07-8	No	No	-		-		-		-		1	0.1
Endothall	145-73-3	No	No	-		-		2.00E-02	U	-		1	0.1
Endrin	72-20-8	No	No	-		-		3.00E-04	U	-		1	0.1
Endrin aldehyde	7421-93-4	No	No	-		-		-		-		1	0.1
Endrin ketone	53494-70-5	No	No	-		-		-		-		1	0.1
Epichlorohydrin	106-89-8	No	Yes	9.90E-03	U	1.20E-06	U	6.00E-03	U	1.00E-03	U	1	-
Epoxybutane, 1,2-	106-88-7	No	Yes	-		-		-		2.00E-02	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Dimethylhydrazine, 1,2-	540-73-8	1	2.31E+05	1.89E+05	3.23E+09	3.75E-01	-	3.69E+00	3.41E-01	-	-	-	-	3.41E-01 ca
Dimethylmercury	593-74-8	1	5.88E+03	4.14E+03	3.23E+09	-	-	-	-	-	-	-	-	
Dimethylphenethylamine	122-09-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dimethylphenol, 2,4-	105-67-9	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Dimethylphenol, 2,6-	576-26-1	1	-	-	3.23E+09	-	-	-	-	1.77E+03	1.40E+04	-	1.57E+03	1.57E+03 nc
Dimethylphenol, 3,4-	95-65-8	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Dimethylphthalate	131-11-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dimethylterephthalate	120-61-6	1	2.95E+04	-	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 max
Dimethylvinylchloride	513-37-1	1	1.39E+03	1.09E+03	3.23E+09	4.59E+03	-	2.73E+02	2.58E+02	-	-	-	-	2.58E+02 ca
Dinitro-o-cresol, 4,6-	534-52-1	1	-	-	3.23E+09	-	-	-	-	2.36E+02	1.87E+03	-	2.10E+02	2.10E+02 nc
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Dinitroaniline, 3,5-	618-87-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dinitrobenzene, 1,2-	528-29-0	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Dinitrobenzene, 1,3-	99-65-0	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Dinitrobenzene, 1,4-	100-25-4	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Dinitrophenol, 2,4-	51-28-5	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Dinitrophenols	25550-58-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dinitrosopentamethylenetetramine, N,N-	101-25-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dinitrotoluene Mixture, 2,4/2,6-	NA	1	-	-	3.23E+09	3.04E+02	2.41E+03	-	2.70E+02	-	-	-	-	2.70E+02 ca
Dinitrotoluene, 2,4-	121-14-2	1	-	-	3.23E+09	6.66E+02	5.17E+03	9.28E+07	5.90E+02	5.90E+03	4.58E+04	-	5.23E+03	5.90E+02 ca**
Dinitrotoluene, 2,6-	606-20-2	1	-	-	3.23E+09	1.38E+02	1.10E+03	-	1.22E+02	8.85E+02	7.08E+03	-	7.87E+02	1.22E+02 ca**
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1	-	-	3.23E+09	-	-	-	-	5.90E+03	7.79E+05	-	5.85E+03	5.85E+03 nc
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1	-	-	3.23E+09	-	-	-	-	5.90E+03	5.19E+05	-	5.83E+03	5.83E+03 nc
Dinitrotoluene, Technical grade	25321-14-6	1	-	-	3.23E+09	4.59E+02	3.64E+03	-	4.07E+02	2.65E+03	2.10E+04	-	2.36E+03	4.07E+02 ca**
Dinoseb	88-85-7	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Dioxane, 1,4-	123-91-1	1	5.47E+04	1.16E+05	3.23E+09	2.06E+03	-	2.80E+04	1.92E+03	8.85E+04	-	5.99E+04	3.57E+04	1.92E+03 ca*
Diphenamid	957-51-7	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Diphenyl Sulfone	127-63-9	1	-	-	3.23E+09	-	-	-	-	2.36E+03	1.87E+04	-	2.10E+03	2.10E+03 nc
Diphenylamine	122-39-4	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Diphenylhydrazine, 1,2-	122-66-7	1	-	-	3.23E+09	2.58E+02	2.05E+03	3.75E+07	2.29E+02	-	-	-	-	2.29E+02 ca
Dipotassium phosphate	7758-11-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Diquat	85-00-7	1	-	-	3.23E+09	-	-	-	-	6.49E+03	5.14E+04	-	5.76E+03	5.76E+03 nc
Direct Black 38	1937-37-7	1	-	-	3.23E+09	2.91E+01	2.30E+02	5.90E+04	2.58E+01	-	-	-	-	2.58E+01 ca
Direct Blue 6	2602-46-2	1	-	-	3.23E+09	2.79E+01	2.21E+02	5.90E+04	2.48E+01	-	-	-	-	2.48E+01 ca
Direct Brown 95	16071-86-6	1	-	-	3.23E+09	3.08E+01	2.44E+02	5.90E+04	2.74E+01	-	-	-	-	2.74E+01 ca
Direct Sky Blue	2610-05-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Disodium phosphate	7558-79-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Disulfoton	298-04-4	1	-	-	3.23E+09	-	-	-	-	1.18E+02	9.35E+02	-	1.05E+02	1.05E+02 nc
Dithiane, 1,4-	505-29-3	1	6.26E+04	-	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 nc
Diuron	330-54-1	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Dodecyl benzenesulfonic acid	27176-87-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Dodine	2439-10-3	1	-	-	3.23E+09	-	-	-	-	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
EPTC	759-94-4	1	1.62E+05	-	3.23E+09	-	-	-	-	7.37E+04	-	-	7.37E+04	7.37E+04 nc
Endosulfan	115-29-7	1	5.65E+05	-	3.23E+09	-	-	-	-	1.77E+04	-	-	1.77E+04	1.77E+04 nc
Endosulfan I	959-98-8	1	5.65E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Endosulfan II	33213-65-9	1	5.51E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Endosulfan Sulfate	1031-07-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Endothall	145-73-3	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Endrin	72-20-8	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Endrin aldehyde	7421-93-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Endrin ketone	53494-70-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Epichlorohydrin	106-89-8	1	2.61E+04	1.05E+04	3.23E+09	2.09E+04	-	5.55E+04	1.52E+04	1.77E+04	-	9.52E+02	9.03E+02	9.03E+02 nc
Epoxybutane, 1,2-	106-88-7	1	1.06E+04	1.53E+04	3.23E+09	-	-	-	-	-	-	7.71E+03	7.71E+03	7.71E+03 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Ethanol	64-17-5	No	Yes	-		-		-		-		1	-
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	No	No	-		-		-		-		1	0.1
Ethephon	16672-87-0	No	No	-		-		5.00E-03	U	-		1	0.1
Ethion	563-12-2	No	No	-		-		5.00E-04	U	-		1	0.1
Ethoxy Propanol	52125-53-8	No	Yes	-		-		-		-		1	-
Ethoxyethanol Acetate, 2-	111-15-9	No	Yes	-		-		1.00E-01	U	6.00E-02	U	1	-
Ethoxyethanol, 2-	110-80-5	No	Yes	-		-		9.00E-02	U	2.00E-01	U	1	-
Ethyl Acetate	141-78-6	No	Yes	-		-		9.00E-01	U	7.00E-02	U	1	-
Ethyl Acrylate	140-88-5	No	Yes	4.80E-02	U	-		5.00E-03	U	8.00E-03	U	1	-
Ethyl Chloride	75-00-3	No	Yes	-		-		-		1.00E+01	U	1	-
Ethyl Ether	60-29-7	No	Yes	-		-		2.00E-01	U	-		1	-
Ethyl Methacrylate	97-63-2	No	Yes	-		-		9.00E-02	U	3.00E-01	U	1	-
Ethyl methane sulfonate	62-50-0	No	No	-		-		-		-		1	0.1
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	No	No	-		-		1.00E-05	U	-		1	0.1
Ethylbenzene	100-41-4	No	Yes	1.10E-02	U	2.50E-06	U	1.00E-01	U	1.00E+00	U	1	-
Ethylene Cyanohydrin	109-78-4	No	No	-		-		7.00E-02	U	-		1	0.1
Ethylene Diamine	107-15-3	No	Yes	-		-		9.00E-02	U	-		1	-
Ethylene Glycol	107-21-1	No	No	-		-		2.00E+00	U	4.00E-01	U	1	0.1
Ethylene Glycol Monobutyl Ether	111-76-2	No	No	-		-		1.00E-01	U	1.60E+00	U	1	0.1
Ethylene Oxide	75-21-8	No	Yes	3.10E-01	U	8.80E-05	U	-		3.00E-02	U	1	-
Ethylene Thiourea	96-45-7	No	No	4.50E-02	U	1.30E-05	U	8.00E-05	U	-		1	0.1
Ethyleneimine	151-56-4	No	Yes	6.50E+01	U	1.90E-02	U	-		-		1	-
Ethylphenol, 4-	123-07-9	No	No	-		-		-		-		1	0.1
Ethylphthalyl Ethyl Glycolate	84-72-0	No	No	-		-		3.00E+00	U	-		1	0.1
Express	101200-48-0	No	No	-		-		8.00E-03	U	-		1	0.1
Famphur	52-85-7	No	No	-		-		-		-		1	0.1
Fenamiphos	22224-92-6	No	No	-		-		2.50E-04	U	-		1	0.1
Fenpropathrin	39515-41-8	No	No	-		-		2.50E-02	U	-		1	0.1
Fluometuron	2164-17-2	No	No	-		-		1.30E-02	U	-		1	0.1
Fluoranthene	206-44-0	No	No	-		-		4.00E-02	U	-		1	0.13
Fluorene	86-73-7	No	Yes	-		-		4.00E-02	U	-		1	0.13
Fluoride	16984-48-8	No	No	-		-		4.00E-02	U	1.30E-02	U	1	-
Fluorine (Soluble Fluoride)	7782-41-4	No	No	-		-		6.00E-02	U	1.30E-02	U	1	-
Fluorobenzene	462-06-6	No	Yes	-		-		-		-		1	-
Fluorobiphenyl, 2-	321-60-8	No	Yes	-		-		-		-		1	-
Fluorophenol, 2-	367-12-4	No	Yes	-		-		-		-		1	-
Fluridone	59756-60-4	No	No	-		-		8.00E-02	U	-		1	0.1
Flurprimidol	56425-91-3	No	No	-		-		2.00E-02	U	-		1	0.1
Flutolanil	66332-96-5	No	No	-		-		6.00E-02	U	-		1	0.1
Fluvalinate	69409-94-5	No	No	-		-		1.00E-02	U	-		1	0.1
Folpet	133-07-3	No	No	3.50E-03	U	-		1.00E-01	U	-		1	0.1
Fomesafen	72178-02-0	No	No	1.90E-01	U	-		-		-		1	0.1
Fonofos	944-22-9	No	No	-		-		2.00E-03	U	-		1	0.1
Formaldehyde	50-00-0	No	Yes	-		1.30E-05	U	2.00E-01	U	9.83E-03	U	1	-
Formic Acid	64-18-6	No	Yes	-		-		9.00E-01	U	3.00E-04	U	1	-
Fosetyl-AL	39148-24-8	No	No	-		-		3.00E+00	U	-		1	0.1
Fuel Oil Number 2	68476-30-2	No	No	-		-		-		-		1	0.1
Furan	110-00-9	No	Yes	-		-		1.00E-03	U	-		1	0.03
Furazolidone	67-45-8	No	No	3.80E+00	U	-		-		-		1	0.1
Furfural	98-01-1	No	Yes	-		-		3.00E-03	U	5.00E-02	U	1	-
Furium	531-82-8	No	No	1.50E+00	U	4.30E-04	U	-		-		1	0.1
Furmecyclox	60568-05-0	No	No	3.00E-02	U	8.60E-06	U	-		-		1	0.1
Gadolinium	7440-54-2	No	No	-		-		-		-		1	-

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Ethanol	64-17-5	1	4.34E+04	1.06E+05	3.23E+09	-	-	-	-	-	-	-	-	
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ethephon	16672-87-0	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Ethion	563-12-2	1	-	-	3.23E+09	-	-	-	-	1.47E+03	1.17E+04	-	1.31E+03	1.31E+03 nc
Ethoxy Propanol	52125-53-8	1	1.26E+05	8.55E+04	3.23E+09	-	-	-	-	-	-	-	-	
Ethoxyethanol Acetate, 2-	111-15-9	1	8.47E+04	3.14E+04	3.23E+09	-	-	-	-	2.95E+05	-	1.86E+05	1.14E+05	1.14E+05 sat
Ethoxyethanol, 2-	110-80-5	1	1.36E+05	1.06E+05	3.23E+09	-	-	-	-	2.65E+05	-	9.91E+05	2.09E+05	2.09E+05 sat
Ethyl Acetate	141-78-6	1	1.19E+04	1.08E+04	3.23E+09	-	-	-	-	2.65E+06	-	3.04E+04	3.00E+04	3.00E+04 sat
Ethyl Acrylate	140-88-5	1	8.74E+03	2.50E+03	3.23E+09	4.30E+03	-	-	4.30E+03	1.47E+04	-	2.55E+03	2.18E+03	2.18E+03 nc
Ethyl Chloride	75-00-3	1	1.78E+03	2.12E+03	3.23E+09	-	-	-	-	-	-	6.51E+05	6.51E+05	6.51E+05 sat
Ethyl Ether	60-29-7	1	4.31E+03	1.01E+04	3.23E+09	-	-	-	-	5.90E+05	-	-	5.90E+05	5.90E+05 sat
Ethyl Methacrylate	97-63-2	1	7.97E+03	1.11E+03	3.23E+09	-	-	-	-	2.65E+05	-	8.73E+04	6.57E+04	6.57E+04 sat
Ethyl methane sulfonate	62-50-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	1	-	-	3.23E+09	-	-	-	-	2.95E+01	2.34E+02	-	2.62E+01	2.62E+01 nc
Ethylbenzene	100-41-4	1	7.82E+03	4.79E+02	3.23E+09	1.88E+04	-	7.99E+03	5.60E+03	2.95E+05	-	2.85E+05	1.45E+05	5.60E+03 sat
Ethylene Cyanohydrin	109-78-4	1	-	-	3.23E+09	-	-	-	-	2.06E+05	1.64E+06	-	1.83E+05	1.83E+05 max
Ethylene Diamine	107-15-3	1	2.48E+05	1.89E+05	3.23E+09	-	-	-	-	2.65E+05	-	-	2.65E+05	2.65E+05 sat
Ethylene Glycol	107-21-1	1	-	-	3.23E+09	-	-	-	-	5.90E+06	4.67E+07	4.72E+10	5.24E+06	5.24E+06 max
Ethylene Glycol Monobutyl Ether	111-76-2	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	1.89E+11	2.62E+05	2.62E+05 max
Ethylene Oxide	75-21-8	1	8.40E+03	1.21E+05	3.23E+09	6.66E+02	-	2.44E+02	1.78E+02	-	-	9.19E+03	9.19E+03	1.78E+02 ca*
Ethylene Thiourea	96-45-7	1	-	-	3.23E+09	4.59E+03	3.64E+04	6.35E+08	4.07E+03	2.36E+02	1.87E+03	-	2.10E+02	2.10E+02 nc
Ethyleneimine	151-56-4	1	3.29E+04	1.54E+05	3.23E+09	3.18E+00	-	4.43E+00	1.85E+00	-	-	-	-	1.85E+00 ca
Ethylphenol, 4-	123-07-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ethylphthalyl Ethyl Glycolate	84-72-0	1	-	-	3.23E+09	-	-	-	-	8.85E+06	7.01E+07	-	7.86E+06	7.86E+06 max
Express	101200-48-0	1	-	-	3.23E+09	-	-	-	-	2.36E+04	1.87E+05	-	2.10E+04	2.10E+04 nc
Famphur	52-85-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Fenamiphos	22224-92-6	1	-	-	3.23E+09	-	-	-	-	7.37E+02	5.84E+03	-	6.55E+02	6.55E+02 nc
Fenpropathrin	39515-41-8	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Fluometuron	2164-17-2	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Fluoranthene	206-44-0	1	-	-	3.23E+09	-	-	-	-	1.18E+05	7.19E+05	-	1.01E+05	1.01E+05 max
Fluorene	86-73-7	1	3.88E+05	-	3.23E+09	-	-	-	-	1.18E+05	7.19E+05	-	1.01E+05	1.01E+05 max
Fluoride	16984-48-8	1	-	-	3.23E+09	-	-	-	-	1.18E+05	-	1.53E+09	1.18E+05	1.18E+05 max
Fluorine (Soluble Fluoride)	7782-41-4	1	-	-	3.23E+09	-	-	-	-	1.77E+05	-	1.53E+09	1.77E+05	1.77E+05 max
Fluorobenzene	462-06-6	1	6.49E+03	2.39E+03	3.23E+09	-	-	-	-	-	-	-	-	
Fluorobiphenyl, 2-	321-60-8	1	1.08E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Fluorophenol, 2-	367-12-4	1	2.93E+05	9.21E+04	3.23E+09	-	-	-	-	-	-	-	-	
Fluridone	59756-60-4	1	-	-	3.23E+09	-	-	-	-	2.36E+05	1.87E+06	-	2.10E+05	2.10E+05 max
Flurprimidol	56425-91-3	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Flutolanil	66332-96-5	1	-	-	3.23E+09	-	-	-	-	1.77E+05	1.40E+06	-	1.57E+05	1.57E+05 max
Fluvalinate	69409-94-5	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Folpet	133-07-3	1	-	-	3.23E+09	5.90E+04	4.67E+05	-	5.24E+04	2.95E+05	2.34E+06	-	2.62E+05	5.24E+04 ca**
Fomesafen	72178-02-0	1	-	-	3.23E+09	1.09E+03	8.61E+03	-	9.65E+02	-	-	-	-	9.65E+02 ca
Fonofos	944-22-9	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Formaldehyde	50-00-0	1	1.07E+05	4.24E+04	3.23E+09	-	-	2.11E+04	2.11E+04	5.90E+05	-	3.85E+04	3.61E+04	2.11E+04 ca**
Formic Acid	64-18-6	1	1.28E+05	1.06E+05	3.23E+09	-	-	-	-	2.65E+06	-	1.40E+03	1.40E+03	1.40E+03 nc
Fosetyl-AL	39148-24-8	1	-	-	3.23E+09	-	-	-	-	8.85E+06	7.01E+07	-	7.86E+06	7.86E+06 max
Fuel Oil Number 2	68476-30-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Furan	110-00-9	1	3.60E+03	6.22E+03	3.23E+09	-	-	-	-	2.95E+03	7.79E+04	-	2.84E+03	2.84E+03 nc
Furazolidone	67-45-8	1	-	-	3.23E+09	5.43E+01	4.31E+02	-	4.82E+01	-	-	-	-	4.82E+01 ca
Furfural	98-01-1	1	6.71E+04	1.01E+04	3.23E+09	-	-	-	-	8.85E+03	-	1.22E+05	8.25E+03	8.25E+03 nc
Furium	531-82-8	1	-	-	3.23E+09	1.38E+02	1.09E+03	1.92E+07	1.22E+02	-	-	-	-	1.22E+02 ca
Furmecyclox	60568-05-0	1	-	-	3.23E+09	6.88E+03	5.45E+04	9.61E+08	6.11E+03	-	-	-	-	6.11E+03 ca
Gadolinium	7440-54-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Gallium	7440-55-3	No	No	-		-		-		-		1	-
Germanium	7440-56-4	No	No	-		-		-		-		1	-
Glufosinate, Ammonium	77182-82-2	No	No	-		-		4.00E-04	U	-		1	0.1
Glutaraldehyde	111-30-8	No	No	-		-		-		8.00E-05	U	1	0.1
Glycerol	56-81-5	No	No	-		-		-		-		1	0.1
Glycidyl	765-34-4	No	Yes	-		-		4.00E-04	U	1.00E-03	U	1	-
Glyphosate	1071-83-6	No	No	-		-		1.00E-01	U	-		1	0.1
Goal	42874-03-3	No	No	-		-		3.00E-03	U	-		1	0.1
Guanidine	113-00-8	No	Yes	-		-		1.00E-02	U	-		1	-
Guanidine Chloride	50-01-1	No	No	-		-		2.00E-02	U	-		1	0.1
Guanidine Nitrate	506-93-4	No	No	-		-		-		-		1	0.1
Guthion	86-50-0	No	No	-		-		3.00E-03	U	1.00E-02	U	1	0.1
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	No	Yes	1.30E+03	U	3.80E-01	U	1.00E-06	U	4.00E-06	U	1	-
Haloacetic acids	NA	No	No	-		-		-		-		1	0.1
Haloxyfop, Methyl	69806-40-2	No	No	-		-		5.00E-05	U	-		1	0.1
Harmony	79277-27-3	No	No	-		-		1.30E-02	U	-		1	0.1
Heptachlor	76-44-8	No	Yes	4.50E+00	U	1.30E-03	U	5.00E-04	U	-		1	-
Heptachlor Epoxide	1024-57-3	No	Yes	9.10E+00	U	2.60E-03	U	1.30E-05	U	-		1	-
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03
Heptanal, n-	111-71-7	No	Yes	-		-		-		-		1	-
Heptane, N-	142-82-5	No	Yes	-		-		-		-		1	-
Heptanol, n-	111-70-6	No	Yes	-		-		-		-		1	-
Hexabromobenzene	87-82-1	No	Yes	-		-		2.00E-03	U	-		1	-
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	No	No	-		-		2.00E-04	U	-		1	0.1
Hexachlorobenzene	118-74-1	No	Yes	1.60E+00	U	4.60E-04	U	8.00E-04	U	-		1	-
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	No	Yes	3.90E+03	U	1.14E+00	U	2.33E-08	U	1.33E-06	U	1	0.14
Hexachlorobutadiene	87-68-3	No	Yes	7.80E-02	U	2.20E-05	U	1.00E-03	U	-		1	-
Hexachlorocyclohexane, Alpha-	319-84-6	No	No	6.30E+00	U	1.80E-03	U	8.00E-03	U	-		1	0.1
Hexachlorocyclohexane, Beta-	319-85-7	No	No	1.80E+00	U	5.30E-04	U	-		-		1	0.1
Hexachlorocyclohexane, Delta-	319-86-8	No	No	-		-		-		-		1	0.1
Hexachlorocyclohexane, Epsilon	6108-10-7	No	No	-		-		-		-		1	0.1
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	No	No	1.10E+00	U	3.10E-04	U	3.00E-04	U	-		1	0.04
Hexachlorocyclohexane, Technical	608-73-1	No	No	1.80E+00	U	5.10E-04	U	-		-		1	0.1
Hexachlorocyclopentadiene	77-47-4	No	Yes	-		-		6.00E-03	U	2.00E-04	U	1	-
Hexachlorodibenzo-p-dioxin	34465-46-8	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
Hexachlorodibenzo-p-dioxin, Mixture	NA	No	No	6.20E+03	U	1.30E+00	U	-		-		1	0.03
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
Hexachloroethane	67-72-1	No	Yes	4.00E-02	U	1.10E-05	U	7.00E-04	U	3.00E-02	U	1	-
Hexachlorophene	70-30-4	No	No	-		-		3.00E-04	U	-		1	0.1
Hexachloropropene	1888-71-7	No	Yes	-		-		-		-		1	-
Hexadecanoic Acid	57-10-3	No	Yes	-		-		-		-		1	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	No	No	1.10E-01	U	-		3.00E-03	U	-		1	0.015
Hexamethylene Diisocyanate, 1,6-	822-06-0	No	Yes	-		-		-		1.00E-05	U	1	-
Hexamethylphosphoramide	680-31-9	No	No	-		-		4.00E-04	U	-		1	0.1
Hexane, N-	110-54-3	No	Yes	-		-		6.00E-02	U	7.00E-01	U	1	-
Hexanedioic Acid	124-04-9	No	No	-		-		2.00E+00	U	-		1	0.1
Hexanol, n-	111-27-3	No	Yes	-		-		-		-		1	-

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Gallium	7440-55-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Germanium	7440-56-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Glufosinate, Ammonium	77182-82-2	1	-	-	3.23E+09	-	-	-	-	1.18E+03	9.35E+03	-	1.05E+03	1.05E+03 nc
Glutaraldehyde	111-30-8	1	-	-	3.23E+09	-	-	-	-	-	-	9.44E+06	9.44E+06	9.44E+06 max
Glycerol	56-81-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Glycidyl	765-34-4	1	1.01E+05	1.06E+05	3.23E+09	-	-	-	-	1.18E+03	-	3.70E+03	8.94E+02	8.94E+02 nc
Glyphosate	1071-83-6	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Goal	42874-03-3	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Guanidine	113-00-8	1	2.00E+05	-	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 nc
Guanidine Chloride	50-01-1	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Guanidine Nitrate	506-93-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Guthion	86-50-0	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	1.18E+09	7.86E+03	7.86E+03 nc
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	1	4.52E+06	-	3.23E+09	1.59E-01	-	3.04E+01	1.58E-01	2.95E+00	-	6.59E+02	2.94E+00	1.58E-01 ca*
Haloacetic acids	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Haloxyfop, Methyl	69806-40-2	1	-	-	3.23E+09	-	-	-	-	1.47E+02	1.17E+03	-	1.31E+02	1.31E+02 nc
Harmony	79277-27-3	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Heptachlor	76-44-8	1	6.62E+05	-	3.23E+09	4.59E+01	-	1.30E+03	4.43E+01	1.47E+03	-	-	1.47E+03	4.43E+01 ca*
Heptachlor Epoxide	1024-57-3	1	1.16E+06	-	3.23E+09	2.27E+01	-	1.14E+03	2.22E+01	3.83E+01	-	-	3.83E+01	2.22E+01 ca**
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	1	2.81E+06	-	3.23E+09	5.29E+01	3.00E+02	6.29E+03	4.47E+01	6.87E+01	3.89E+02	1.36E+05	5.84E+01	4.47E+01 ca**
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	1	1.15E+07	-	3.23E+09	1.59E-01	4.20E+00	7.74E+01	1.53E-01	2.06E-01	5.45E+00	1.68E+03	1.99E-01	1.53E-01 ca**
Heptanal, n-	111-71-7	1	1.08E+04	2.09E+02	3.23E+09	-	-	-	-	-	-	-	-	
Heptane, N-	142-82-5	1	1.23E+03	5.79E+01	3.23E+09	-	-	-	-	-	-	-	-	
Heptanol, n-	111-70-6	1	4.73E+04	3.78E+02	3.23E+09	-	-	-	-	-	-	-	-	
Hexabromobenzene	87-82-1	1	5.24E+05	-	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 nc
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	1	-	-	3.23E+09	-	-	-	-	5.90E+02	4.67E+03	-	5.24E+02	5.24E+02 nc
Hexachlorobenzene	118-74-1	1	9.37E+04	-	3.23E+09	1.29E+02	-	5.21E+02	1.03E+02	2.36E+03	-	-	2.36E+03	1.03E+02 ca*
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	1	1.98E+06	-	3.23E+09	5.29E+01	3.00E+02	4.43E+03	4.45E+01	6.87E+01	3.89E+02	9.59E+04	5.84E+01	4.45E+01 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	1	2.00E+06	-	3.23E+09	5.29E+01	3.00E+02	4.48E+03	4.45E+01	6.87E+01	3.89E+02	9.71E+04	5.84E+01	4.45E+01 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	1	2.13E+06	-	3.23E+09	5.29E+01	3.00E+02	4.77E+03	4.46E+01	6.87E+01	3.89E+02	1.03E+05	5.84E+01	4.46E+01 ca**
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	1	1.98E+06	-	3.23E+09	5.29E-02	3.00E-01	4.43E+00	4.45E-02	6.87E-02	3.89E-01	9.59E+01	5.84E-02	4.45E-02 ca**
Hexachlorobutadiene	87-68-3	1	1.49E+04	1.68E+01	3.23E+09	2.65E+03	-	1.73E+03	1.05E+03	2.95E+03	-	-	2.95E+03	1.05E+03 sat
Hexachlorocyclohexane, Alpha-	319-84-6	1	-	-	3.23E+09	3.28E+01	2.60E+02	4.59E+06	2.91E+01	2.36E+04	1.87E+05	-	2.10E+04	2.91E+01 ca
Hexachlorocyclohexane, Beta-	319-85-7	1	-	-	3.23E+09	1.15E+02	9.09E+02	1.56E+07	1.02E+02	-	-	-	-	1.02E+02 ca
Hexachlorocyclohexane, Delta-	319-86-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Hexachlorocyclohexane, Epsilon	6108-10-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	1	-	-	3.23E+09	1.88E+02	3.72E+03	2.66E+07	1.79E+02	8.85E+02	1.75E+04	-	8.42E+02	1.79E+02 ca**
Hexachlorocyclohexane, Technical	608-73-1	1	-	-	3.23E+09	1.15E+02	9.09E+02	1.62E+07	1.02E+02	-	-	-	-	1.02E+02 ca
Hexachlorocyclopentadiene	77-47-4	1	1.18E+04	1.57E+01	3.23E+09	-	-	-	-	1.77E+04	-	8.58E+01	8.54E+01	8.54E+01 sat
Hexachlorodibenzo-p-dioxin	34465-46-8	1	-	-	3.23E+09	1.59E-02	4.20E-01	2.17E+03	1.53E-02	2.06E-02	5.45E-01	4.72E+04	1.99E-02	1.53E-02 ca**
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	1	6.59E+06	-	3.23E+09	1.59E-02	4.20E-01	4.42E+00	1.52E-02	2.06E-02	5.45E-01	9.61E+01	1.99E-02	1.52E-02 ca**
Hexachlorodibenzo-p-dioxin, Mixture	NA	1	-	-	3.23E+09	3.33E-02	8.80E-01	6.35E+03	3.21E-02	-	-	-	-	3.21E-02 ca
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	1	5.38E+06	-	3.23E+09	1.59E-02	4.20E-01	3.61E+00	1.52E-02	2.06E-02	5.45E-01	7.85E+01	1.99E-02	1.52E-02 ca**
Hexachloroethane	67-72-1	1	1.10E+04	-	3.23E+09	5.16E+03	-	2.57E+03	1.71E+03	2.06E+03	-	1.21E+04	1.76E+03	1.71E+03 ca**
Hexachlorophene	70-30-4	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Hexachloropropene	1888-71-7	1	1.48E+04	4.37E+01	3.23E+09	-	-	-	-	-	-	-	-	
Hexadecanoic Acid	57-10-3	1	7.66E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	1	-	-	3.23E+09	1.88E+03	9.92E+04	-	1.84E+03	8.85E+03	4.67E+05	-	8.68E+03	1.84E+03 ca**
Hexamethylene Diisocyanate, 1,6-	822-06-0	1	4.15E+05	5.19E+03	3.23E+09	-	-	-	-	-	-	1.51E+02	1.51E+02	1.51E+02 nc
Hexamethylphosphoramide	680-31-9	1	-	-	3.23E+09	-	-	-	-	1.18E+03	9.35E+03	-	1.05E+03	1.05E+03 nc
Hexane, N-	110-54-3	1	1.14E+03	1.41E+02	3.23E+09	-	-	-	-	1.77E+05	-	2.92E+04	2.51E+04	2.51E+04 sat
Hexanedioic Acid	124-04-9	1	-	-	3.23E+09	-	-	-	-	5.90E+06	4.67E+07	-	5.24E+06	5.24E+06 max
Hexanol, n-	111-27-3	1	4.03E+04	9.98E+02	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Hexanone, 2-	591-78-6	No	Yes	-		-		5.00E-03	U	3.00E-02	U	1	-
Hexazinone	51235-04-2	No	No	-		-		3.30E-02	U	-		1	0.1
HpCDD, 2,3,7,8-	37871-00-4	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03
HpCDF, 2,3,7,8-	38998-75-3	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03
HxCDD, 1,2,3,6,7,8-	57653-85-7	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
HxCDD, 1,2,3,7,8,9-	19408-74-3	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
HxCDF, 1,2,3,6,7,8-	57117-44-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
HxCDF, 1,2,3,7,8,9-	72918-21-9	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
HxCDF, 2,3,4,6,7,8-	60851-34-5	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
HxCDF, 2,3,7,8-	55684-94-1	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
Hydrazine	302-01-2	No	Yes	3.00E+00	U	4.90E-03	U	-		3.00E-05	U	1	-
Hydrazine Sulfate	10034-93-2	No	No	3.00E+00	U	4.90E-03	U	-		-		1	-
Hydrogen Chloride	7647-01-0	No	Yes	-		-		-		2.00E-02	U	1	-
Hydrogen Cyanide	74-90-8	No	Yes	-		-		6.00E-04	U	8.00E-04	U	1	-
Hydrogen Fluoride	7664-39-3	No	Yes	-		-		4.00E-02	U	1.40E-02	U	1	-
Hydrogen Selenide	77830-70-5	No	No	-		-		-		-		1	-
Hydrogen Sulfate	12143-45-2	No	No	-		-		-		-		1	-
Hydrogen Sulfide	7783-06-4	No	Yes	-		-		-		2.00E-03	U	1	-
Hydroquinone	123-31-9	No	No	6.00E-02	U	-		4.00E-02	U	-		1	0.1
Imazalil	35554-44-0	No	No	-		-		1.30E-02	U	-		1	0.1
Imazaquin	81335-37-7	No	No	-		-		2.50E-01	U	-		1	0.1
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	7.30E-01	U	1.10E-04	U	-		-		1	0.13
Indium	7440-74-6	No	No	-		-		-		-		1	-
Iodide	20461-54-5	No	No	-		-		-		-		1	-
Iodine	7553-56-2	No	No	-		-		1.00E-02	U	-		1	-
Iodomethane	74-88-4	No	Yes	-		-		-		-		1	-
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	No	No	-		-		-		-		1	0.1
Iprodione	36734-19-7	No	No	-		-		4.00E-02	U	-		1	0.1
Iron	7439-89-6	No	No	-		-		7.00E-01	U	-		1	-
Iron Sulfide	11126-12-8	No	No	-		-		-		-		1	-
Isobutyl Alcohol	78-83-1	No	Yes	-		-		3.00E-01	U	-		1	-
Isodrin	465-73-6	No	Yes	-		-		-		-		1	-
Isophorone	78-59-1	No	No	9.50E-04	U	-		2.00E-01	U	2.00E+00	U	1	0.1
Isopropalin	33820-53-0	No	Yes	-		-		1.50E-02	U	-		1	-
Isopropanol	67-63-0	No	Yes	-		-		2.00E+00	U	2.00E-01	U	1	-
Isopropyl Methyl Phosphonic Acid	1832-54-8	No	No	-		-		1.00E-01	U	-		1	0.1
Isopropyltoluene, p-	99-87-6	No	Yes	-		-		-		-		1	-
Isosafrole	120-58-1	No	Yes	-		-		-		-		1	-
Isoxaben	82558-50-7	No	No	-		-		5.00E-02	U	-		1	0.1
JP-4	50815-00-4	No	Yes	-		-		-		-		1	-
JP-5/JP-8	8002-20-6	No	Yes	-		-		-		-		1	-
JP-7	NA	No	Yes	-		-		-		3.00E-01	U	1	-
Kerb	23950-58-5	No	No	-		-		7.50E-02	U	-		1	0.1
Kerosene	8008-20-6	No	Yes	-		-		-		-		1	-
Lactofen	77501-63-4	No	No	-		-		2.00E-03	U	-		1	0.1
Lactonitrile	78-97-7	No	No	-		-		-		-		1	0.1
Lanthanum	7439-91-0	No	No	-		-		-		-		1	-
Lead Alkyls	NA	No	No	-		-		-		-		1	0.1
Lead Chromate	7758-97-6	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025	-
Lead Phosphate	7446-27-7	No	No	8.50E-03	U	1.20E-05	U	-		-		1	-
Lead acetate	301-04-2	No	No	2.80E-01	U	8.00E-05	U	-		-		1	0.1
Lead and Compounds	7439-92-1	No	No	-		-		-		-		1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Hexanone, 2-	591-78-6	1	1.83E+04	3.28E+03	3.23E+09	-	-	-	-	1.47E+04	-	2.01E+04	8.50E+03	8.50E+03 sat
Hexazinone	51235-04-2	1	-	-	3.23E+09	-	-	-	-	9.73E+04	7.71E+05	-	8.64E+04	8.64E+04 nc
HpCDD, 2,3,7,8-	37871-00-4	1	3.36E+06	-	3.23E+09	1.59E-01	4.20E+00	2.26E+01	1.52E-01	2.06E-01	5.45E+00	4.90E+02	1.99E-01	1.52E-01 ca**
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	1	1.15E+07	-	3.23E+09	1.59E-01	4.20E+00	7.74E+01	1.53E-01	2.06E-01	5.45E+00	1.68E+03	1.99E-01	1.53E-01 ca**
HpCDF, 2,3,7,8-	38998-75-3	1	1.15E+07	-	3.23E+09	1.59E-01	4.20E+00	7.74E+01	1.53E-01	2.06E-01	5.45E+00	1.68E+03	1.99E-01	1.53E-01 ca**
HxCDD, 1,2,3,6,7,8-	57653-85-7	1	6.59E+06	-	3.23E+09	1.59E-02	4.20E-01	4.42E+00	1.52E-02	2.06E-02	5.45E-01	9.61E+01	1.99E-02	1.52E-02 ca**
HxCDD, 1,2,3,7,8,9-	19408-74-3	1	6.59E+06	-	3.23E+09	1.59E-02	4.20E-01	4.42E+00	1.52E-02	2.06E-02	5.45E-01	9.61E+01	1.99E-02	1.52E-02 ca**
HxCDF, 1,2,3,6,7,8-	57117-44-9	1	5.38E+06	-	3.23E+09	1.59E-02	4.20E-01	3.61E+00	1.52E-02	2.06E-02	5.45E-01	7.85E+01	1.99E-02	1.52E-02 ca**
HxCDF, 1,2,3,7,8,9-	72918-21-9	1	-	-	3.23E+09	1.59E-02	4.20E-01	2.17E+03	1.53E-02	2.06E-02	5.45E-01	4.72E+04	1.99E-02	1.53E-02 ca**
HxCDF, 2,3,4,6,7,8-	60851-34-5	1	5.38E+06	-	3.23E+09	1.59E-02	4.20E-01	3.61E+00	1.52E-02	2.06E-02	5.45E-01	7.85E+01	1.99E-02	1.52E-02 ca**
HxCDF, 2,3,7,8-	55684-94-1	1	-	-	3.23E+09	1.59E-02	4.20E-01	2.17E+03	1.53E-02	2.06E-02	5.45E-01	4.72E+04	1.99E-02	1.53E-02 ca**
Hydrazine	302-01-2	1	-	-	3.23E+09	6.88E+01	-	1.69E+06	6.88E+01	-	-	3.54E+06	3.54E+06	6.88E+01 ca
Hydrazine Sulfate	10034-93-2	1	-	-	3.23E+09	6.88E+01	-	1.69E+06	6.88E+01	-	-	-	-	6.88E+01 ca
Hydrogen Chloride	7647-01-0	1	-	-	3.23E+09	-	-	-	-	-	-	2.36E+09	2.36E+09	2.36E+09 max
Hydrogen Cyanide	74-90-8	1	7.20E+04	1.00E+07	3.23E+09	-	-	-	-	1.77E+03	-	2.10E+03	9.61E+02	9.61E+02 nc
Hydrogen Fluoride	7664-39-3	1	-	-	3.23E+09	-	-	-	-	1.18E+05	-	1.65E+09	1.18E+05	1.18E+05 max
Hydrogen Selenide	77830-70-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Hydrogen Sulfate	12143-45-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Hydrogen Sulfide	7783-06-4	1	-	-	3.23E+09	-	-	-	-	-	-	2.36E+08	2.36E+08	2.36E+08 max
Hydroquinone	123-31-9	1	-	-	3.23E+09	3.44E+03	2.73E+04	-	3.06E+03	1.18E+05	9.35E+05	-	1.05E+05	3.06E+03 ca*
Imazalil	35554-44-0	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Imazaquin	81335-37-7	1	-	-	3.23E+09	-	-	-	-	7.37E+05	5.84E+06	-	6.55E+05	6.55E+05 max
Indeno[1,2,3-cd]pyrene	193-39-5	1	-	-	3.23E+09	2.83E+02	1.72E+03	7.51E+07	2.43E+02	-	-	-	-	2.43E+02 ca
Indium	7440-74-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Iodide	20461-54-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Iodine	7553-56-2	1	-	-	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 nc
Iodomethane	74-88-4	1	2.55E+03	3.03E+03	3.23E+09	-	-	-	-	-	-	-	-	
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Iprodione	36734-19-7	1	-	-	3.23E+09	-	-	-	-	1.18E+05	9.35E+05	-	1.05E+05	1.05E+05 max
Iron	7439-89-6	1	-	-	3.23E+09	-	-	-	-	2.06E+06	-	-	2.06E+06	2.06E+06 max
Iron Sulfide	11126-12-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Isobutyl Alcohol	78-83-1	1	3.88E+04	1.00E+04	3.23E+09	-	-	-	-	8.85E+05	-	-	8.85E+05	8.85E+05 sat
Isodrin	465-73-6	1	2.32E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Isophorone	78-59-1	1	-	-	3.23E+09	2.17E+05	1.72E+06	-	1.93E+05	5.90E+05	4.67E+06	2.36E+11	5.24E+05	1.93E+05 max
Isopropalin	33820-53-0	1	5.78E+05	-	3.23E+09	-	-	-	-	4.42E+04	-	-	4.42E+04	4.42E+04 nc
Isopropanol	67-63-0	1	3.83E+04	1.09E+05	3.23E+09	-	-	-	-	5.90E+06	-	2.79E+05	2.67E+05	2.67E+05 sat
Isopropyl Methyl Phosphonic Acid	1832-54-8	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Isopropyltoluene, p-	99-87-6	1	1.18E+04	1.62E+02	3.23E+09	-	-	-	-	-	-	-	-	
Isosafrole	120-58-1	1	3.42E+03	2.04E+01	3.23E+09	-	-	-	-	-	-	-	-	
Isoxaben	82558-50-7	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
JP-4	50815-00-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
JP-5/JP-8	8002-20-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
JP-7	NA	1	-	-	3.23E+09	-	-	-	-	-	-	3.54E+10	3.54E+10	3.54E+10 max
Kerb	23950-58-5	1	-	-	3.23E+09	-	-	-	-	2.21E+05	1.75E+06	-	1.96E+05	1.96E+05 max
Kerosene	8008-20-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Lactofen	77501-63-4	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Lactonitrile	78-97-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Lanthanum	7439-91-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Lead Alkyls	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Lead Chromate	7758-97-6	1	-	-	3.23E+09	4.13E+02	-	5.51E+04	4.10E+02	5.90E+04	-	2.36E+07	5.88E+04	4.10E+02 ca
Lead Phosphate	7446-27-7	1	-	-	3.23E+09	2.43E+04	-	6.88E+08	2.43E+04	-	-	-	-	2.43E+04 ca
Lead acetate	301-04-2	1	-	-	3.23E+09	7.37E+02	5.84E+03	1.03E+08	6.55E+02	-	-	-	-	6.55E+02 ca
Lead and Compounds	7439-92-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	8.00E+02	8.00E+02 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Lead subacetate	1335-32-6	No	No	8.50E-03	U	1.20E-05	U	-		-		1	0.1
Linuron	330-55-2	No	No	-		-		2.00E-03	U	-		1	0.1
Lithium	7439-93-2	No	No	-		-		2.00E-03	U	-		1	-
Lithium Perchlorate	7791-03-9	No	No	-		-		7.00E-04	U	-		1	-
Londax	83055-99-6	No	No	-		-		2.00E-01	U	-		1	0.1
Lutetium	7439-94-3	No	No	-		-		-		-		1	-
MCPA	94-74-6	No	No	-		-		5.00E-04	U	-		1	0.1
MCPB	94-81-5	No	No	-		-		1.00E-02	U	-		1	0.1
MCPP	93-65-2	No	No	-		-		1.00E-03	U	-		1	0.1
Magnesium	7439-95-4	No	No	-		-		-		-		1	-
Magnesium Chlorate	10326-21-3	No	No	-		-		-		-		1	-
Malathion	121-75-5	No	No	-		-		2.00E-02	U	-		1	0.1
Maleic Anhydride	108-31-6	No	No	-		-		1.00E-01	U	7.00E-04	U	1	0.1
Maleic Hydrazide	123-33-1	No	No	-		-		5.00E-01	U	-		1	0.1
Malononitrile	109-77-3	No	No	-		-		1.00E-04	U	-		1	0.1
Mancozeb	8018-01-7	No	No	-		-		3.00E-02	U	-		1	0.1
Maneb	12427-38-2	No	No	-		-		5.00E-03	U	-		1	0.1
Manganese (Non-diet)	7439-96-5	No	No	-		-		2.40E-02	U	5.00E-05	U	0.04	-
Mechlorethamine	51-75-2	No	No	-		-		-		-		1	0.1
Mephosfolan	950-10-7	No	No	-		-		9.00E-05	U	-		1	0.1
Mepiquat Chloride	24307-26-4	No	No	-		-		3.00E-02	U	-		1	0.1
Mercuric Chloride	7487-94-7	No	No	-		-		3.00E-04	U	3.00E-04	U	0.07	-
Mercury (elemental)	7439-97-6	No	Yes	-		-		-		3.00E-04	U	1	-
Merphos	150-50-5	No	Yes	-		-		3.00E-05	U	-		1	-
Merphos Oxide	78-48-8	No	No	-		-		3.00E-05	U	-		1	0.1
Metalaxyl	57837-19-1	No	No	-		-		6.00E-02	U	-		1	0.1
Methacrylonitrile	126-98-7	No	Yes	-		-		1.00E-04	U	3.00E-02	U	1	-
Methamidophos	10265-92-6	No	No	-		-		5.00E-05	U	-		1	0.1
Methanol	67-56-1	No	Yes	-		-		2.00E+00	U	2.00E+01	U	1	-
Methapyrilene	91-80-5	No	No	-		-		-		-		1	0.1
Methidathion	950-37-8	No	No	-		-		1.00E-03	U	-		1	0.1
Methomyl	16752-77-5	No	No	-		-		2.50E-02	U	-		1	0.1
Methoxy-5-nitroaniline, 2-	99-59-2	No	No	4.90E-02	U	1.40E-05	U	-		-		1	0.1
Methoxychlor	72-43-5	No	No	-		-		5.00E-03	U	-		1	0.1
Methoxyethanol Acetate, 2-	110-49-6	No	Yes	-		-		8.00E-03	U	1.00E-03	U	1	-
Methoxyethanol, 2-	109-86-4	No	Yes	-		-		5.00E-03	U	2.00E-02	U	1	-
Methyl Acetate	79-20-9	No	Yes	-		-		1.00E+00	U	-		1	-
Methyl Acrylate	96-33-3	No	Yes	-		-		3.00E-02	U	2.00E-02	U	1	-
Methyl Ethyl Ketone (2-Butanone)	78-93-3	No	Yes	-		-		6.00E-01	U	5.00E+00	U	1	-
Methyl Hydrazine	60-34-4	No	Yes	-		1.00E-03	U	1.00E-03	U	2.00E-05	U	1	-
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	No	Yes	-		-		8.00E-02	U	3.00E+00	U	1	-
Methyl Isocyanate	624-83-9	No	Yes	-		-		-		1.00E-03	U	1	-
Methyl Mercaptan	74-93-1	No	Yes	-		-		-		-		1	-
Methyl Mercury	22967-92-6	No	No	-		-		1.00E-04	U	-		1	-
Methyl Methacrylate	80-62-6	No	Yes	-		-		1.40E+00	U	7.00E-01	U	1	-
Methyl Parathion	298-00-0	No	No	-		-		2.50E-04	U	-		1	0.1
Methyl Phosphonic Acid	993-13-5	No	No	-		-		6.00E-02	U	-		1	0.1
Methyl Styrene (Mixed Isomers)	25013-15-4	No	Yes	-		-		6.00E-03	U	4.00E-02	U	1	-
Methyl dicyclohexylamine, n-	7560-83-0	No	Yes	-		-		-		-		1	-
Methyl methanesulfonate	66-27-3	No	No	9.90E-02	U	2.80E-05	U	-		-		1	0.1
Methyl tert-Butyl Ether (MTBE)	1634-04-4	No	Yes	1.80E-03	U	2.60E-07	U	-		3.00E+00	U	1	-
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	No	No	-		-		3.00E-04	U	-		1	0.1

Site-specific

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Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Lead subacetate	1335-32-6	1	-	-	3.23E+09	2.43E+04	1.92E+05	6.88E+08	2.16E+04	-	-	-	-	2.16E+04 ca
Linuron	330-55-2	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Lithium	7439-93-2	1	-	-	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 nc
Lithium Perchlorate	7791-03-9	1	-	-	3.23E+09	-	-	-	-	2.06E+03	-	-	2.06E+03	2.06E+03 nc
Londax	83055-99-6	1	-	-	3.23E+09	-	-	-	-	5.90E+05	4.67E+06	-	5.24E+05	5.24E+05 max
Lutetium	7439-94-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
MCPA	94-74-6	1	-	-	3.23E+09	-	-	-	-	1.47E+03	1.17E+04	-	1.31E+03	1.31E+03 nc
MCPB	94-81-5	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
MCPP	93-65-2	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Magnesium	7439-95-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Magnesium Chlorate	10326-21-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Malathion	121-75-5	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Maleic Anhydride	108-31-6	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	8.26E+07	2.61E+05	2.61E+05 max
Maleic Hydrazide	123-33-1	1	-	-	3.23E+09	-	-	-	-	1.47E+06	1.17E+07	-	1.31E+06	1.31E+06 max
Malononitrile	109-77-3	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Mancozeb	8018-01-7	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Maneb	12427-38-2	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Manganese (Non-diet)	7439-96-5	1	-	-	3.23E+09	-	-	-	-	7.08E+04	-	5.90E+06	6.99E+04	6.99E+04 nc
Mechlorethamine	51-75-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Mephosfolan	950-10-7	1	-	-	3.23E+09	-	-	-	-	2.65E+02	2.10E+03	-	2.36E+02	2.36E+02 nc
Mepiquat Chloride	24307-26-4	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Mercuric Chloride	7487-94-7	1	-	-	3.23E+09	-	-	-	-	8.85E+02	-	3.54E+07	8.85E+02	8.85E+02 nc
Mercury (elemental)	7439-97-6	1	4.16E+04	3.13E+00	3.23E+09	-	-	-	-	-	-	4.55E+02	4.55E+02	4.55E+02 sat
Merphos	150-50-5	1	2.67E+06	-	3.23E+09	-	-	-	-	8.85E+01	-	-	8.85E+01	8.85E+01 nc
Merphos Oxide	78-48-8	1	-	-	3.23E+09	-	-	-	-	8.85E+01	7.01E+02	-	7.86E+01	7.86E+01 nc
Metalaxyl	57837-19-1	1	-	-	3.23E+09	-	-	-	-	1.77E+05	1.40E+06	-	1.57E+05	1.57E+05 max
Methacrylonitrile	126-98-7	1	9.38E+03	4.59E+03	3.23E+09	-	-	-	-	2.95E+02	-	1.03E+04	2.87E+02	2.87E+02 nc
Methamidophos	10265-92-6	1	-	-	3.23E+09	-	-	-	-	1.47E+02	1.17E+03	-	1.31E+02	1.31E+02 nc
Methanol	67-56-1	1	4.01E+04	1.06E+05	3.23E+09	-	-	-	-	5.90E+06	-	2.93E+07	4.91E+06	4.91E+06 sat
Methapyrilene	91-80-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Methidathion	950-37-8	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Methomyl	16752-77-5	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Methoxy-5-nitroaniline, 2-	99-59-2	1	-	-	3.23E+09	4.21E+03	3.34E+04	5.90E+08	3.74E+03	-	-	-	-	3.74E+03 ca
Methoxychlor	72-43-5	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Methoxyethanol Acetate, 2-	110-49-6	1	1.71E+05	1.15E+05	3.23E+09	-	-	-	-	2.36E+04	-	6.23E+03	4.93E+03	4.93E+03 nc
Methoxyethanol, 2-	109-86-4	1	1.39E+05	1.06E+05	3.23E+09	-	-	-	-	1.47E+04	-	1.02E+05	1.29E+04	1.29E+04 nc
Methyl Acetate	79-20-9	1	1.12E+04	2.90E+04	3.23E+09	-	-	-	-	2.95E+06	-	-	2.95E+06	2.95E+06 sat
Methyl Acrylate	96-33-3	1	9.62E+03	6.75E+03	3.23E+09	-	-	-	-	8.85E+04	-	7.02E+03	6.50E+03	6.50E+03 nc
Methyl Ethyl Ketone (2-Butanone)	78-93-3	1	1.68E+04	2.84E+04	3.23E+09	-	-	-	-	1.77E+06	-	3.07E+06	1.12E+06	1.12E+06 sat
Methyl Hydrazine	60-34-4	1	2.16E+05	1.80E+05	3.23E+09	-	-	5.51E+02	5.51E+02	2.95E+03	-	1.57E+02	1.49E+02	1.49E+02 nc
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	1	1.46E+04	3.36E+03	3.23E+09	-	-	-	-	2.36E+05	-	1.60E+06	2.06E+05	2.06E+05 sat
Methyl Isocyanate	624-83-9	1	6.08E+03	1.67E+04	3.23E+09	-	-	-	-	-	-	2.22E+02	2.22E+02	2.22E+02 nc
Methyl Mercaptan	74-93-1	1	2.46E+03	3.13E+03	3.23E+09	-	-	-	-	-	-	-	-	
Methyl Mercury	22967-92-6	1	-	-	3.23E+09	-	-	-	-	2.95E+02	-	-	2.95E+02	2.95E+02 nc
Methyl Methacrylate	80-62-6	1	8.75E+03	2.36E+03	3.23E+09	-	-	-	-	4.13E+06	-	2.24E+05	2.12E+05	2.12E+05 sat
Methyl Parathion	298-00-0	1	-	-	3.23E+09	-	-	-	-	7.37E+02	5.84E+03	-	6.55E+02	6.55E+02 nc
Methyl Phosphonic Acid	993-13-5	1	-	-	3.23E+09	-	-	-	-	1.77E+05	1.40E+06	-	1.57E+05	1.57E+05 max
Methyl Styrene (Mixed Isomers)	25013-15-4	1	1.65E+04	3.93E+02	3.23E+09	-	-	-	-	1.77E+04	-	2.42E+04	1.02E+04	1.02E+04 sat
Methyl dicyclohexylamine, n-	7560-83-0	1	6.54E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Methyl methanesulfonate	66-27-3	1	-	-	3.23E+09	2.09E+03	1.65E+04	2.95E+08	1.85E+03	-	-	-	-	1.85E+03 ca
Methyl tert-Butyl Ether (MTBE)	1634-04-4	1	6.76E+03	8.88E+03	3.23E+09	1.15E+05	-	6.65E+04	4.21E+04	-	-	7.41E+05	7.41E+05	4.21E+04 sat
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Methyl-2-Pentanol, 4-	108-11-2	No	Yes	-		-		-		-		1	-
Methyl-5-Nitroaniline, 2-	99-55-8	No	No	9.00E-03	U	-		2.00E-02	U	-		1	0.1
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	No	No	8.30E+00	U	2.40E-03	U	-		-		1	0.1
Methylaniline Hydrochloride, 2-	636-21-5	No	No	1.30E-01	U	3.70E-05	U	-		-		1	0.1
Methylarsonic acid	124-58-3	No	No	-		-		1.00E-02	U	-		1	0.1
Methylaziridine, 2-	75-55-8	No	Yes	-		-		-		-		1	-
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	No	No	-		-		2.00E-04	U	-		1	0.1
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	No	No	1.00E-01	U	-		3.00E-04	U	-		1	0.1
Methylcholanthrene, 3-	56-49-5	Yes	No	2.20E+01	U	6.30E-03	U	-		-		1	0.1
Methylcyclohexane	108-87-2	No	Yes	-		-		-		-		1	-
Methylcyclohexylamine, n-	100-60-7	No	Yes	-		-		-		-		1	-
Methylcyclopentane	96-37-7	No	Yes	-		-		-		-		1	-
Methylene Chloride	75-09-2	Yes	Yes	2.00E-03	U	1.00E-08	U	6.00E-03	U	6.00E-01	U	1	-
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	Yes	No	1.00E-01	U	4.30E-04	U	2.00E-03	U	-		1	0.1
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	No	No	4.60E-02	U	1.30E-05	U	-		-		1	0.1
Methylenebisbenzenamine, 4,4'-	101-77-9	No	No	1.60E+00	U	4.60E-04	U	-		2.00E-02	U	1	0.1
Methylenediphenyl Diisocyanate	101-68-8	No	No	-		-		-		6.00E-04	U	1	0.1
Methylisothiocyanate	556-61-6	No	Yes	-		-		-		-		1	-
Methylnaphthalene	1321-94-4	No	Yes	-		-		-		-		1	-
Methylnaphthalene, 1-	90-12-0	No	Yes	2.90E-02	U	-		7.00E-02	U	-		1	0.13
Methylnaphthalene, 2-	91-57-6	No	Yes	-		-		4.00E-03	U	-		1	0.13
Methylstyrene, Alpha-	98-83-9	No	Yes	-		-		7.00E-02	U	-		1	-
Methyltriethyl Lead	1762-28-3	No	Yes	-		-		-		-		1	-
Metolachlor	51218-45-2	No	No	-		-		1.50E-01	U	-		1	0.1
Metribuzin	21087-64-9	No	No	-		-		2.50E-02	U	-		1	0.1
Mineral oils	8012-95-1	No	Yes	-		-		3.00E+00	U	-		1	-
Mirex	2385-85-5	No	Yes	1.80E+01	U	5.10E-03	U	2.00E-04	U	-		1	-
Molinate	2212-67-1	No	No	-		-		2.00E-03	U	-		1	0.1
Molybdenum	7439-98-7	No	No	-		-		5.00E-03	U	-		1	-
Monoaluminum phosphate	13530-50-2	No	No	-		-		4.86E+01	U	-		1	-
Monoammonium phosphate	7722-76-1	No	No	-		-		4.86E+01	U	-		1	-
Monobutyltin Compounds	NA	No	No	-		-		-		-		1	0.1
Monocalcium phosphate	7758-23-8	No	No	-		-		4.86E+01	U	-		1	-
Monochloramine	10599-90-3	No	No	-		-		1.00E-01	U	-		1	-
Monochlorobutanes	25154-42-1	No	No	-		-		-		-		1	0.1
Monochlorophenols (total)	NA	No	No	-		-		-		-		1	0.1
Monocyclic aromatic hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1
Monomagnesium phosphate	7757-86-0	No	No	-		-		4.86E+01	U	-		1	-
Monomethylaniline	100-61-8	No	No	-		-		2.00E-03	U	-		1	0.1
Monopotassium phosphate	7778-77-0	No	No	-		-		4.86E+01	U	-		1	-
Monosodium phosphate	7558-80-7	No	No	-		-		4.86E+01	U	-		1	-
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	No	No	-		-		3.00E-04	U	-		1	0.1
N-Methyl dithiocarbamate	137-42-8	No	No	-		-		-		-		1	0.1
Naled	300-76-5	No	Yes	-		-		2.00E-03	U	-		1	-
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	No	Yes	-		-		3.00E-02	U	1.00E-01	U	1	-
Naphthalene	91-20-3	No	Yes	-		3.40E-05	U	2.00E-02	U	3.00E-03	U	1	0.13
Naphthol, 2-	135-19-3	No	No	-		-		-		-		1	0.1
Naphthoquinone, 1,4-	130-15-4	No	No	-		-		-		-		1	0.1
Naphthylamine, 1-	134-32-7	No	No	-		-		-		-		1	0.1
Naphthylamine, 2-	91-59-8	No	No	1.80E+00	U	0.00E+00	U	-		-		1	0.1
Napropamide	15299-99-7	No	No	-		-		1.00E-01	U	-		1	0.1
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	No	No	-		-		-		-		1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Methyl-2-Pentanol, 4-	108-11-2	1	2.37E+04	2.45E+03	3.23E+09	-	-	-	-	-	-	-	-	
Methyl-5-Nitroaniline, 2-	99-55-8	1	-	-	3.23E+09	2.29E+04	1.82E+05	-	2.04E+04	5.90E+04	4.67E+05	-	5.24E+04	2.04E+04 ca**
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	1	-	-	3.23E+09	2.49E+01	1.97E+02	3.44E+06	2.21E+01	-	-	-	-	2.21E+01 ca
Methylaniline Hydrochloride, 2-	636-21-5	1	-	-	3.23E+09	1.59E+03	1.26E+04	2.23E+08	1.41E+03	-	-	-	-	1.41E+03 ca
Methylarsonic acid	124-58-3	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Methylaziridine, 2-	75-55-8	1	4.41E+04	1.87E+05	3.23E+09	-	-	-	-	-	-	-	-	
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	1	-	-	3.23E+09	-	-	-	-	5.90E+02	4.67E+03	-	5.24E+02	5.24E+02 nc
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	1	-	-	3.23E+09	2.06E+03	1.64E+04	-	1.83E+03	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Methylcholanthrene, 3-	56-49-5	1	-	-	3.23E+09	9.38E+00	7.44E+01	1.31E+06	8.33E+00	-	-	-	-	8.33E+00 ca
Methylcyclohexane	108-87-2	1	1.37E+03	6.77E+01	3.23E+09	-	-	-	-	-	-	-	-	
Methylcyclohexylamine, n-	100-60-7	1	4.39E+04	2.81E+04	3.23E+09	-	-	-	-	-	-	-	-	
Methylcyclopentane	96-37-7	1	1.22E+03	1.54E+02	3.23E+09	-	-	-	-	-	-	-	-	
Methylene Chloride	75-09-2	1	3.02E+03	3.32E+03	3.23E+09	1.03E+05	-	7.72E+05	9.11E+04	1.77E+04	-	6.62E+04	1.40E+04	1.40E+04 sat
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	1	-	-	3.23E+09	2.06E+03	1.64E+04	1.92E+07	1.83E+03	5.90E+03	4.67E+04	-	5.24E+03	1.83E+03 ca**
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	1	-	-	3.23E+09	4.49E+03	3.56E+04	6.35E+08	3.99E+03	-	-	-	-	3.99E+03 ca
Methylenebisbenzenamine, 4,4'-	101-77-9	1	-	-	3.23E+09	1.29E+02	1.02E+03	1.80E+07	1.15E+02	-	-	2.36E+09	2.36E+09	1.15E+02 ca
Methylenediphenyl Diisocyanate	101-68-8	1	-	-	3.23E+09	-	-	-	-	-	-	7.08E+07	7.08E+07	7.08E+07 max
Methylisothiocyanate	556-61-6	1	2.04E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Methylnaphthalene	1321-94-4	1	8.08E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Methylnaphthalene, 1-	90-12-0	1	8.09E+04	-	3.23E+09	7.12E+03	4.34E+04	-	6.12E+03	2.06E+05	1.26E+06	-	1.77E+05	6.12E+03 ca*
Methylnaphthalene, 2-	91-57-6	1	8.00E+04	-	3.23E+09	-	-	-	-	1.18E+04	7.19E+04	-	1.01E+04	1.01E+04 nc
Methylstyrene, Alpha-	98-83-9	1	1.77E+04	5.00E+02	3.23E+09	-	-	-	-	2.06E+05	-	-	2.06E+05	2.06E+05 sat
Methyltriethyl Lead	1762-28-3	1	2.24E+03	4.81E+03	3.23E+09	-	-	-	-	-	-	-	-	
Metolachlor	51218-45-2	1	-	-	3.23E+09	-	-	-	-	4.42E+05	3.51E+06	-	3.93E+05	3.93E+05 max
Metribuzin	21087-64-9	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Mineral oils	8012-95-1	1	1.90E+03	3.41E-01	3.23E+09	-	-	-	-	8.85E+06	-	-	8.85E+06	8.85E+06 sat
Mirex	2385-85-5	1	1.18E+06	-	3.23E+09	1.15E+01	-	5.92E+02	1.13E+01	5.90E+02	-	-	5.90E+02	1.13E+01 ca*
Molinate	2212-67-1	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Molybdenum	7439-98-7	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Monoaluminum phosphate	13530-50-2	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Monoammonium phosphate	7722-76-1	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Monobutyltin Compounds	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Monocalcium phosphate	7758-23-8	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Monochloramine	10599-90-3	1	-	-	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 max
Monochlorobutanes	25154-42-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Monochlorophenols (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Monocyclic aromatic hydrocarbons (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Monomagnesium phosphate	7757-86-0	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Monomethylaniline	100-61-8	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Monopotassium phosphate	7778-77-0	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Monosodium phosphate	7558-80-7	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
N-Methyl dithiocarbamate	137-42-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Naled	300-76-5	1	7.87E+04	-	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 nc
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	1	-	-	3.23E+09	-	-	-	-	8.85E+04	-	1.18E+10	8.85E+04	8.85E+04 nc
Naphthalene	91-20-3	1	6.38E+04	-	3.23E+09	-	-	4.79E+03	4.79E+03	5.90E+04	3.60E+05	6.99E+03	6.14E+03	4.79E+03 ca**
Naphthol, 2-	135-19-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Naphthoquinone, 1,4-	130-15-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Naphthylamine, 1-	134-32-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Naphthylamine, 2-	91-59-8	1	-	-	3.23E+09	1.15E+02	9.09E+02	-	1.02E+02	-	-	-	-	1.02E+02 ca
Napropamide	15299-99-7	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Niagara Blue 4B	2429-74-5	No	No	-		-		-		-		1	0.1
Nickel Acetate	373-02-4	No	No	-		2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1
Nickel Carbonate	3333-67-3	No	No	-		2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1
Nickel Carbonyl	13463-39-3	No	Yes	-		2.60E-04	U	1.10E-02	U	1.40E-05	U	1	-
Nickel Hydroxide	12054-48-7	No	No	-		2.60E-04	U	1.10E-02	U	1.40E-05	U	0.04	-
Nickel Oxide	1313-99-1	No	No	-		2.60E-04	U	1.10E-02	U	2.00E-05	U	0.04	-
Nickel Refinery Dust	NA	No	No	-		2.40E-04	U	1.10E-02	U	1.40E-05	U	0.04	-
Nickel Soluble Salts	7440-02-0	No	No	-		2.60E-04	U	2.00E-02	U	9.00E-05	U	0.04	-
Nickel Subsulfide	12035-72-2	No	No	1.70E+00	U	4.80E-04	U	1.10E-02	U	1.40E-05	U	0.04	-
Nickelocene	1271-28-9	No	No	-		2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1
Nicotinonitrile	100-54-9	No	No	-		-		-		-		1	0.1
Niobium	7440-03-1	No	No	-		-		-		-		1	-
Nitrapyrin	1929-82-4	No	Yes	-		-		-		-		1	-
Nitrate	14797-55-8	No	No	-		-		1.60E+00	U	-		1	-
Nitrate + Nitrite (as N)	NA	No	No	-		-		-		-		1	-
Nitric Acid	7697-37-2	No	No	-		-		-		-		1	0.1
Nitric Oxide	10102-43-9	No	Yes	-		-		-		-		1	-
Nitrite	14797-65-0	No	No	-		-		1.00E-01	U	-		1	-
Nitroaniline, 2-	88-74-4	No	No	-		-		1.00E-02	U	5.00E-05	U	1	0.1
Nitroaniline, 3-	99-09-2	No	No	-		-		-		-		1	0.1
Nitroaniline, 4-	100-01-6	No	No	2.00E-02	U	-		4.00E-03	U	6.00E-03	U	1	0.1
Nitrobenzene	98-95-3	No	Yes	-		4.00E-05	U	2.00E-03	U	9.00E-03	U	1	-
Nitrobiphenyl, 4-	92-93-3	No	No	-		-		-		-		1	0.1
Nitrocellulose	9004-70-0	No	No	-		-		3.00E+03	U	-		1	0.1
Nitrodiphenylamine, 2-	119-75-5	No	No	-		-		-		-		1	0.1
Nitrofurantoin	67-20-9	No	No	-		-		7.00E-02	U	-		1	0.1
Nitrofurazone	59-87-0	No	No	1.30E+00	U	3.70E-04	U	-		-		1	0.1
Nitrogen Dioxide	10102-44-0	No	Yes	-		-		-		-		1	-
Nitroglycerin	55-63-0	No	No	1.70E-02	U	-		1.00E-04	U	-		1	0.1
Nitroguanidine	556-88-7	No	No	-		-		1.00E-01	U	-		1	0.1
Nitromethane	75-52-5	No	Yes	-		8.80E-06	U	-		5.00E-03	U	1	-
Nitrophenol, 2-	88-75-5	No	Yes	-		-		-		-		1	-
Nitrophenol, 2-amino-4-	99-57-0	No	No	-		-		-		-		1	0.1
Nitrophenol, 3-	554-84-7	No	No	-		-		-		-		1	0.1
Nitrophenol, 4-	100-02-7	No	No	-		-		-		-		1	0.1
Nitrophenol, 4-amino-2-	119-34-6	No	No	-		-		-		-		1	0.1
Nitropropane, 2-	79-46-9	No	Yes	-		2.70E-03	U	-		2.00E-02	U	1	-
Nitropyrene, 4-	57835-92-4	No	No	1.20E+00	U	1.10E-04	U	-		-		1	0.13
Nitroquinoline-1-oxide. 4-	56-57-5	No	No	-		-		-		-		1	0.1
Nitroso-N-ethylurea, N-	759-73-9	Yes	No	2.70E+01	U	7.70E-03	U	-		-		1	0.1
Nitroso-N-methylurea, N-	684-93-5	Yes	No	1.20E+02	U	3.40E-02	U	-		-		1	0.1
Nitroso-di-N-butylamine, N-	924-16-3	No	Yes	5.40E+00	U	1.60E-03	U	-		-		1	-
Nitroso-di-N-propylamine, N-	621-64-7	No	No	7.00E+00	U	2.00E-03	U	-		-		1	0.1
Nitrosodiethanolamine, N-	1116-54-7	No	No	2.80E+00	U	8.00E-04	U	-		-		1	0.1
Nitrosodiethylamine, N-	55-18-5	Yes	No	1.50E+02	U	4.30E-02	U	-		-		1	0.1
Nitrosodimethylamine, N-	62-75-9	Yes	Yes	5.10E+01	U	1.40E-02	U	8.00E-06	U	4.00E-05	U	1	-
Nitrosodiphenylamine, N-	86-30-6	No	No	4.90E-03	U	2.60E-06	U	-		-		1	0.1
Nitrosomethylethylamine, N-	10595-95-6	No	Yes	2.20E+01	U	6.30E-03	U	-		-		1	-
Nitrosomethylvinylamine, N-	4549-40-0	No	Yes	-		-		-		-		1	-
Nitrosomorpholine [N-]	59-89-2	No	No	6.70E+00	U	1.90E-03	U	-		-		1	0.1
Nitrosopiperidine [N-]	100-75-4	No	No	9.40E+00	U	2.70E-03	U	-		-		1	0.1
Nitrosopyrrolidine, N-	930-55-2	No	No	2.10E+00	U	6.10E-04	U	-		-		1	0.1
Nitrotoluene, 4-Amino-2-	119-32-4	No	No	-		-		-		-		1	0.1

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Niagara Blue 4B	2429-74-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nickel Acetate	373-02-4	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	2.57E+05	1.65E+06	2.83E+04	2.83E+04 nc
Nickel Carbonate	3333-67-3	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	2.57E+05	1.65E+06	2.83E+04	2.83E+04 nc
Nickel Carbonyl	13463-39-3	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	-	1.65E+06	3.18E+04	3.18E+04 nc
Nickel Hydroxide	12054-48-7	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	-	1.65E+06	3.18E+04	3.18E+04 nc
Nickel Oxide	1313-99-1	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	-	2.36E+06	3.20E+04	3.20E+04 nc
Nickel Refinery Dust	NA	1	-	-	3.23E+09	-	-	3.44E+07	3.44E+07	3.24E+04	-	1.65E+06	3.18E+04	3.18E+04 nc
Nickel Soluble Salts	7440-02-0	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	5.90E+04	-	1.06E+07	5.87E+04	5.87E+04 nc
Nickel Subsulfide	12035-72-2	1	-	-	3.23E+09	1.21E+02	-	1.72E+07	1.21E+02	3.24E+04	-	1.65E+06	3.18E+04	1.21E+02 ca
Nickelocene	1271-28-9	1	-	-	3.23E+09	-	-	3.18E+07	3.18E+07	3.24E+04	2.57E+05	1.65E+06	2.83E+04	2.83E+04 nc
Nicotinonitrile	100-54-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Niobium	7440-03-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrapyrin	1929-82-4	1	3.05E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrate	14797-55-8	1	-	-	3.23E+09	-	-	-	-	4.72E+06	-	-	4.72E+06	4.72E+06 max
Nitrate + Nitrite (as N)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitric Acid	7697-37-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitric Oxide	10102-43-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrite	14797-65-0	1	-	-	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 max
Nitroaniline, 2-	88-74-4	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	5.90E+06	2.61E+04	2.61E+04 nc
Nitroaniline, 3-	99-09-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitroaniline, 4-	100-01-6	1	-	-	3.23E+09	1.03E+04	8.18E+04	-	9.17E+03	1.18E+04	9.35E+04	7.08E+08	1.05E+04	9.17E+03 ca**
Nitrobenzene	98-95-3	1	1.01E+05	3.04E+03	3.23E+09	-	-	6.44E+03	6.44E+03	5.90E+03	-	3.31E+04	5.01E+03	5.01E+03 sat
Nitrobiphenyl, 4-	92-93-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrocellulose	9004-70-0	1	-	-	3.23E+09	-	-	-	-	8.85E+09	7.01E+10	-	7.86E+09	7.86E+09 max
Nitrodiphenylamine, 2-	119-75-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrofurantoin	67-20-9	1	-	-	3.23E+09	-	-	-	-	2.06E+05	1.64E+06	-	1.83E+05	1.83E+05 max
Nitrofurazone	59-87-0	1	-	-	3.23E+09	1.59E+02	1.26E+03	2.23E+07	1.41E+02	-	-	-	-	1.41E+02 ca
Nitrogen Dioxide	10102-44-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitroglycerin	55-63-0	1	-	-	3.23E+09	1.21E+04	9.62E+04	-	1.08E+04	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Nitroguanidine	556-88-7	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Nitromethane	75-52-5	1	2.34E+04	1.80E+04	3.23E+09	-	-	6.78E+03	6.78E+03	-	-	4.26E+03	4.26E+03	4.26E+03 nc
Nitrophenol, 2-	88-75-5	1	1.65E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrophenol, 2-amino-4-	99-57-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrophenol, 3-	554-84-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrophenol, 4-	100-02-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitrophenol, 4-amino-2-	119-34-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitropropane, 2-	79-46-9	1	1.81E+04	4.86E+03	3.23E+09	-	-	1.71E+01	1.71E+01	-	-	1.32E+04	1.32E+04	1.71E+01 ca
Nitropyrene, 4-	57835-92-4	1	-	-	3.23E+09	1.72E+02	1.05E+03	7.51E+07	1.48E+02	-	-	-	-	1.48E+02 ca
Nitroquinoline-1-oxide. 4-	56-57-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Nitroso-N-ethylurea, N-	759-73-9	1	-	-	3.23E+09	7.65E+00	6.06E+01	1.07E+06	6.79E+00	-	-	-	-	6.79E+00 ca
Nitroso-N-methylurea, N-	684-93-5	1	-	-	3.23E+09	1.72E+00	1.36E+01	2.43E+05	1.53E+00	-	-	-	-	1.53E+00 ca
Nitroso-di-N-butylamine, N-	924-16-3	1	3.35E+05	-	3.23E+09	3.82E+01	-	5.35E+02	3.57E+01	-	-	-	-	3.57E+01 ca
Nitroso-di-N-propylamine, N-	621-64-7	1	-	-	3.23E+09	2.95E+01	2.34E+02	4.13E+06	2.62E+01	-	-	-	-	2.62E+01 ca
Nitrosodiethanolamine, N-	1116-54-7	1	-	-	3.23E+09	7.37E+01	5.84E+02	1.03E+07	6.55E+01	-	-	-	-	6.55E+01 ca
Nitrosodiethylamine, N-	55-18-5	1	-	-	3.23E+09	1.38E+00	1.09E+01	1.92E+05	1.22E+00	-	-	-	-	1.22E+00 ca
Nitrosodimethylamine, N-	62-75-9	1	1.14E+05	2.37E+05	3.23E+09	4.05E+00	-	2.07E+01	3.39E+00	2.36E+01	-	1.66E+02	2.07E+01	3.39E+00 ca**
Nitrosodiphenylamine, N-	86-30-6	1	-	-	3.23E+09	4.21E+04	3.34E+05	3.18E+09	3.74E+04	-	-	-	-	3.74E+04 ca
Nitrosomethylethylamine, N-	10595-95-6	1	1.67E+05	1.08E+05	3.23E+09	9.38E+00	-	6.77E+01	8.24E+00	-	-	-	-	8.24E+00 ca
Nitrosomethylvinylamine, N-	4549-40-0	1	1.12E+05	1.08E+04	3.23E+09	-	-	-	-	-	-	-	-	
Nitrosomorpholine [N-]	59-89-2	1	-	-	3.23E+09	3.08E+01	2.44E+02	4.35E+06	2.74E+01	-	-	-	-	2.74E+01 ca
Nitrosopiperidine [N-]	100-75-4	1	-	-	3.23E+09	2.20E+01	1.74E+02	3.06E+06	1.95E+01	-	-	-	-	1.95E+01 ca
Nitrosopyrrolidine, N-	930-55-2	1	-	-	3.23E+09	9.83E+01	7.79E+02	1.35E+07	8.73E+01	-	-	-	-	8.73E+01 ca
Nitrotoluene, 4-Amino-2-	119-32-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Nitrotoluene, m-	99-08-1	No	No	-		-		1.00E-04	U	-		1	0.1
Nitrotoluene, o-	88-72-2	No	Yes	2.20E-01	U	-		9.00E-04	U	-		1	-
Nitrotoluene, p-	99-99-0	No	No	1.60E-02	U	-		4.00E-03	U	-		1	0.1
Nonachlor, trans-	39765-80-5	No	Yes	-		-		-		-		1	-
Nonane, n-	111-84-2	No	Yes	-		-		3.00E-04	U	2.00E-02	U	1	-
Nonanol, n-	143-08-8	No	Yes	-		-		-		-		1	-
Norflurazon	27314-13-2	No	No	-		-		4.00E-02	U	-		1	0.1
Nustar	85509-19-9	No	No	-		-		7.00E-04	U	-		1	0.1
OCDD	3268-87-9	No	No	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.03
OCDF	39001-02-0	No	No	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.03
Octabromodiphenyl Ether	32536-52-0	No	No	-		-		3.00E-03	U	-		1	0.1
Octachlorostyrene	29082-74-4	No	Yes	-		-		-		-		1	-
Octadecanoic Acid	57-11-4	No	No	-		-		-		-		1	0.1
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	No	No	-		-		5.00E-02	U	-		1	0.006
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	No	No	-		-		-		-		1	0.1
Octamethylpyrophosphoramide	152-16-9	No	No	-		-		2.00E-03	U	-		1	0.1
Octanol, n-	111-87-5	No	Yes	-		-		-		-		1	-
Octanone, 2-	111-13-7	No	Yes	-		-		-		-		1	-
Octanone, 3-	106-68-3	No	Yes	-		-		-		-		1	-
Octyl Phthalate, di-N-	117-84-0	No	No	-		-		1.00E-02	U	-		1	0.1
Oleic acid	112-80-1	No	Yes	-		-		-		-		1	-
Oleum	8014-95-7	Yes	No	-		-		-		-		1	-
Oryzalin	19044-88-3	No	No	-		-		5.00E-02	U	-		1	0.1
Oxadiazon	19666-30-9	No	No	-		-		5.00E-03	U	-		1	0.1
Oxamyl	23135-22-0	No	No	-		-		2.50E-02	U	-		1	0.1
Oxychlordane	27304-13-8	No	No	-		-		-		-		1	0.1
Ozone	10028-15-6	No	No	-		-		-		-		1	-
Paclobutrazol	76738-62-0	No	No	-		-		1.30E-02	U	-		1	0.1
Paraquat Dichloride	1910-42-5	No	No	-		-		4.50E-03	U	-		1	0.1
Parathion	56-38-2	No	No	-		-		6.00E-03	U	-		1	0.1
PeCDD, 2,3,7,8-	36088-22-9	No	No	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03
PeCDF, 1,2,3,7,8-	57117-41-6	No	No	3.90E+03	U	1.14E+00	U	2.33E-08	U	1.33E-06	U	1	0.03
PeCDF, 2,3,4,7,8-	57117-31-4	No	No	3.90E+04	U	1.14E+01	U	2.33E-09	U	1.33E-07	U	1	0.03
Pebulate	1114-71-2	No	Yes	-		-		5.00E-02	U	-		1	-
Pendimethalin	40487-42-1	No	No	-		-		4.00E-02	U	-		1	0.1
Pentabromodiphenyl Ether	32534-81-9	No	No	-		-		2.00E-03	U	-		1	0.1
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	No	No	-		-		1.00E-04	U	-		1	0.1
Pentachloroaniline	527-20-8	No	No	-		-		-		-		1	0.1
Pentachlorobenzene	608-93-5	No	Yes	-		-		8.00E-04	U	-		1	-
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.14
Pentachlorocyclopentadiene	25329-35-5	No	Yes	-		-		-		-		1	-
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	No	Yes	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03
Pentachloroethane	76-01-7	No	Yes	9.00E-02	U	-		-		-		1	-
Pentachloronitrobenzene	82-68-8	No	Yes	2.60E-01	U	-		3.00E-03	U	-		1	-
Pentachlorophenol	87-86-5	No	No	4.00E-01	U	5.10E-06	U	5.00E-03	U	-		1	0.25
Pentaerythritol tetranitrate (PETN)	78-11-5	No	No	4.00E-03	U	-		2.00E-03	U	-		1	0.1
Pentamethyl dipropylenetriamine	3855-32-1	No	No	-		-		-		-		1	0.1
Pentane, n-	109-66-0	No	Yes	-		-		-		1.00E+00	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Nitrotoluene, m-	99-08-1	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Nitrotoluene, o-	88-72-2	1	1.89E+05	1.51E+03	3.23E+09	9.38E+02	-	-	9.38E+02	2.65E+03	-	-	2.65E+03	9.38E+02 ca**
Nitrotoluene, p-	99-99-0	1	-	-	3.23E+09	1.29E+04	1.02E+05	-	1.15E+04	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
Nonachlor, trans-	39765-80-5	1	3.73E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Nonane, n-	111-84-2	1	1.44E+03	6.86E+00	3.23E+09	-	-	-	-	8.85E+02	-	1.05E+03	4.80E+02	4.80E+02 sat
Nonanol, n-	143-08-8	1	6.41E+04	7.27E+01	3.23E+09	-	-	-	-	-	-	-	-	
Norflurazon	27314-13-2	1	-	-	3.23E+09	-	-	-	-	1.18E+05	9.35E+05	-	1.05E+05	1.05E+05 max
Nustar	85509-19-9	1	-	-	3.23E+09	-	-	-	-	2.06E+03	1.64E+04	-	1.83E+03	1.83E+03 nc
OCDD	3268-87-9	1	-	-	3.23E+09	5.29E+00	1.40E+02	7.25E+05	5.10E+00	6.87E+00	1.82E+02	1.57E+07	6.62E+00	5.10E+00 ca**
OCDF	39001-02-0	1	-	-	3.23E+09	5.29E+00	1.40E+02	7.25E+05	5.10E+00	6.87E+00	1.82E+02	1.57E+07	6.62E+00	5.10E+00 ca**
Octabromodiphenyl Ether	32536-52-0	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Octachlorostyrene	29082-74-4	1	8.40E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Octadecanoic Acid	57-11-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.95E+07	-	1.46E+05	1.46E+05 max
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Octamethylpyrophosphoramide	152-16-9	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Octanol, n-	111-87-5	1	5.35E+04	1.78E+02	3.23E+09	-	-	-	-	-	-	-	-	
Octanone, 2-	111-13-7	1	2.12E+04	3.60E+02	3.23E+09	-	-	-	-	-	-	-	-	
Octanone, 3-	106-68-3	1	2.60E+04	1.08E+03	3.23E+09	-	-	-	-	-	-	-	-	
Octyl Phthalate, di-N-	117-84-0	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Oleic acid	112-80-1	1	1.43E+06	1.44E+00	3.23E+09	-	-	-	-	-	-	-	-	
Oleum	8014-95-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Oryzalin	19044-88-3	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Oxadiazon	19666-30-9	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Oxamyl	23135-22-0	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Oxychlordane	27304-13-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ozone	10028-15-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Paclobutrazol	76738-62-0	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Paraquat Dichloride	1910-42-5	1	-	-	3.23E+09	-	-	-	-	1.33E+04	1.05E+05	-	1.18E+04	1.18E+04 nc
Parathion	56-38-2	1	-	-	3.23E+09	-	-	-	-	1.77E+04	1.40E+05	-	1.57E+04	1.57E+04 nc
PeCDD, 2,3,7,8-	36088-22-9	1	-	-	3.23E+09	1.59E-03	4.20E-02	2.17E+02	1.53E-03	2.06E-03	5.45E-02	4.72E+03	1.99E-03	1.53E-03 ca**
PeCDF, 1,2,3,7,8-	57117-41-6	1	-	-	3.23E+09	5.29E-02	1.40E+00	7.25E+03	5.10E-02	6.87E-02	1.82E+00	1.57E+05	6.62E-02	5.10E-02 ca**
PeCDF, 2,3,4,7,8-	57117-31-4	1	-	-	3.23E+09	5.29E-03	1.40E-01	7.25E+02	5.10E-03	6.87E-03	1.82E-01	1.57E+04	6.62E-03	5.10E-03 ca**
Pebulate	1114-71-2	1	6.20E+04	-	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 max
Pendimethalin	40487-42-1	1	-	-	3.23E+09	-	-	-	-	1.18E+05	9.35E+05	-	1.05E+05	1.05E+05 max
Pentabromodiphenyl Ether	32534-81-9	1	-	-	3.23E+09	-	-	-	-	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Pentachloroaniline	527-20-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pentachlorobenzene	608-93-5	1	1.12E+05	-	3.23E+09	-	-	-	-	2.36E+03	-	-	2.36E+03	2.36E+03 nc
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	1	1.42E+06	-	3.23E+09	5.29E+01	3.00E+02	3.19E+03	4.44E+01	6.87E+01	3.89E+02	6.91E+04	5.84E+01	4.44E+01 ca**
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	1	1.14E+06	-	3.23E+09	5.29E+01	3.00E+02	2.56E+03	4.42E+01	6.87E+01	3.89E+02	5.55E+04	5.83E+01	4.42E+01 ca**
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	1	1.17E+06	-	3.23E+09	5.29E+01	3.00E+02	2.61E+03	4.42E+01	6.87E+01	3.89E+02	5.66E+04	5.83E+01	4.42E+01 ca**
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	1	1.42E+06	-	3.23E+09	5.29E+01	3.00E+02	3.19E+03	4.44E+01	6.87E+01	3.89E+02	6.91E+04	5.84E+01	4.44E+01 ca**
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	1	1.41E+06	-	3.23E+09	1.59E-02	8.99E-02	9.46E-01	1.33E-02	2.06E-02	1.17E-01	2.05E+01	1.75E-02	1.33E-02 ca**
Pentachlorocyclopentadiene	25329-35-5	1	1.95E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	1	4.61E+06	-	3.23E+09	1.59E-03	4.20E-02	3.10E-01	1.52E-03	2.06E-03	5.45E-02	6.72E+00	1.99E-03	1.52E-03 ca**
Pentachloroethane	76-01-7	1	1.33E+04	4.47E+02	3.23E+09	2.29E+03	-	-	2.29E+03	-	-	-	-	2.29E+03 sat
Pentachloronitrobenzene	82-68-8	1	5.95E+05	-	3.23E+09	7.94E+02	-	-	7.94E+02	8.85E+03	-	-	8.85E+03	7.94E+02 ca*
Pentachlorophenol	87-86-5	1	-	-	3.23E+09	5.16E+02	1.64E+03	1.62E+09	3.92E+02	1.47E+04	4.67E+04	-	1.12E+04	3.92E+02 ca*
Pentaerythritol tetranitrate (PETN)	78-11-5	1	-	-	3.23E+09	5.16E+04	4.09E+05	-	4.58E+04	5.90E+03	4.67E+04	-	5.24E+03	5.24E+03 nc
Pentamethyl dipropylenetriamine	3855-32-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pentane, n-	109-66-0	1	1.07E+03	3.88E+02	3.23E+09	-	-	-	-	-	-	3.92E+04	3.92E+04	3.92E+04 sat

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Pentyl Alcohol, N-	71-41-0	No	Yes	-		-		-		-		1	-
Perchlorate and Perchlorate Salts	14797-73-0	No	No	-		-		7.00E-04	U	-		1	-
Perfluorobutane Sulfonate	375-73-5	No	Yes	-		-		2.00E-02	U	-		1	-
Perfluorooctane Sulphonic Acid	1763-23-1	No	Yes	-		-		-		-		1	-
Perfluorooctanoic acid	335-67-1	No	Yes	-		-		-		-		1	-
Permethrin	52645-53-1	No	No	-		-		5.00E-02	U	-		1	0.1
Perylene	198-55-0	No	No	-		-		-		-		1	0.13
Pesticides (total)	NA	No	No	-		-		-		-		1	0.1
Pesticides, organochlorinated (each)	NA	No	No	-		-		-		-		1	0.1
Pesticides, organochlorinated (total)	NA	No	No	-		-		-		-		1	0.1
Phenacetin	62-44-2	No	No	2.20E-03	U	6.30E-07	U	-		-		1	0.1
Phenanthrene	85-01-8	No	Yes	-		-		-		-		1	0.13
Phenmedipham	13684-63-4	No	No	-		-		2.50E-01	U	-		1	0.1
Phenol	108-95-2	No	No	-		-		3.00E-01	U	2.00E-01	U	1	0.1
Phenothiazine	92-84-2	No	No	-		-		5.00E-04	U	-		1	0.1
Phenyl Isothiocyanate	103-72-0	No	Yes	-		-		-		-		1	-
Phenylenediamine, m-	108-45-2	No	No	-		-		6.00E-03	U	-		1	0.1
Phenylenediamine, o-	95-54-5	No	No	4.70E-02	U	-		-		-		1	0.1
Phenylenediamine, p-	106-50-3	No	No	-		-		1.90E-01	U	-		1	0.1
Phenylmercuric Acetate	62-38-4	No	No	-		-		8.00E-05	U	-		1	0.1
Phenylphenol, 2-	90-43-7	No	No	1.94E-03	U	-		-		-		1	0.1
Phorate	298-02-2	No	No	-		-		2.00E-04	U	-		1	0.1
Phosgene	75-44-5	No	Yes	-		-		-		3.00E-04	U	1	-
Phosmet	732-11-6	No	No	-		-		2.00E-02	U	-		1	0.1
Phosphine	7803-51-2	No	Yes	-		-		3.00E-04	U	3.00E-04	U	1	-
Phosphoric Acid	7664-38-2	No	No	-		-		4.86E+01	U	1.00E-02	U	1	-
Phosphorus (total)	NA	No	No	-		-		-		-		1	-
Phosphorus pentoxide	1314-56-3	No	No	-		-		-		-		1	-
Phosphorus, White	7723-14-0	No	Yes	-		-		2.00E-05	U	-		1	-
Phthalates (total)	NA	No	No	-		-		-		-		1	0.1
Phthalic Acid, P-	100-21-0	No	No	-		-		1.00E+00	U	-		1	0.1
Phthalic Acid, m-	121-91-5	No	No	-		-		-		-		1	0.1
Phthalic Acid, o-	88-99-3	No	No	-		-		-		-		1	0.1
Phthalic Anhydride	85-44-9	No	No	-		-		2.00E+00	U	2.00E-02	U	1	0.1
Picloram	1918-02-1	No	No	-		-		7.00E-02	U	-		1	0.1
Picoline, 2-	109-06-8	No	Yes	-		-		-		-		1	-
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	No	No	-		-		1.00E-04	U	-		1	0.1
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	No	No	-		-		-		-		1	0.1
Piperidine	110-89-4	No	Yes	-		-		-		-		1	-
Pirimiphos, Methyl	29232-93-7	No	No	-		-		1.00E-02	U	-		1	0.1
Polybrominated Biphenyls	59536-65-1	No	No	3.00E+01	U	8.60E-03	U	7.00E-06	U	-		1	0.1
Polychlorinated Biphenyls (high risk)	1336-36-3	No	Yes	2.00E+00	U	5.71E-04	U	-		-		1	0.14
Polycyclic aromatic hydrocarbons (PAH), Total	NA	No	No	-		-		-		-		1	0.13
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	No	No	-		-		-		-		1	0.13
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	No	No	-		-		-		-		1	0.13
Polycyclic chlorinated hydrocarbons (total)	NA	No	No	-		-		-		-		1	0.1
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	No	No	-		-		-		6.00E-04	U	1	0.1
Polyphosphoric acid	8017-16-1	No	No	-		-		4.86E+01	U	-		1	-
Potassium	7440-09-7	No	No	-		-		-		-		1	-
Potassium Cyanide	151-50-8	No	No	-		-		2.00E-03	U	-		1	-

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Pentyl Alcohol, N-	71-41-0	1	3.91E+04	3.04E+03	3.23E+09	-	-	-	-	-	-	-	-	
Perchlorate and Perchlorate Salts	14797-73-0	1	-	-	3.23E+09	-	-	-	-	2.06E+03	-	-	2.06E+03	2.06E+03 nc
Perfluorobutane Sulfonate	375-73-5	1	1.82E+05	-	3.23E+09	-	-	-	-	5.90E+04	-	-	5.90E+04	5.90E+04 nc
Perfluorooctane Sulphonic Acid	1763-23-1	1	1.48E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Perfluorooctanoic acid	335-67-1	1	3.00E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Permethrin	52645-53-1	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Perylene	198-55-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pesticides (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pesticides, organochlorinated (each)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pesticides, organochlorinated (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phenacetin	62-44-2	1	-	-	3.23E+09	9.38E+04	7.44E+05	1.31E+10	8.33E+04	-	-	-	-	8.33E+04 ca
Phenanthrene	85-01-8	1	8.87E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Phenmedipham	13684-63-4	1	-	-	3.23E+09	-	-	-	-	7.37E+05	5.84E+06	-	6.55E+05	6.55E+05 max
Phenol	108-95-2	1	-	-	3.23E+09	-	-	-	-	8.85E+05	7.01E+06	2.36E+10	7.86E+05	7.86E+05 max
Phenothiazine	92-84-2	1	-	-	3.23E+09	-	-	-	-	1.47E+03	1.17E+04	-	1.31E+03	1.31E+03 nc
Phenyl Isothiocyanate	103-72-0	1	9.76E+03	1.29E+02	3.23E+09	-	-	-	-	-	-	-	-	
Phenylenediamine, m-	108-45-2	1	-	-	3.23E+09	-	-	-	-	1.77E+04	1.40E+05	-	1.57E+04	1.57E+04 nc
Phenylenediamine, o-	95-54-5	1	-	-	3.23E+09	4.39E+03	3.48E+04	-	3.90E+03	-	-	-	-	3.90E+03 ca
Phenylenediamine, p-	106-50-3	1	-	-	3.23E+09	-	-	-	-	5.60E+05	4.44E+06	-	4.98E+05	4.98E+05 max
Phenylmercuric Acetate	62-38-4	1	-	-	3.23E+09	-	-	-	-	2.36E+02	1.87E+03	-	2.10E+02	2.10E+02 nc
Phenylphenol, 2-	90-43-7	1	-	-	3.23E+09	1.06E+05	8.43E+05	-	9.45E+04	-	-	-	-	9.45E+04 ca
Phorate	298-02-2	1	-	-	3.23E+09	-	-	-	-	5.90E+02	4.67E+03	-	5.24E+02	5.24E+02 nc
Phosgene	75-44-5	1	1.35E+03	1.61E+03	3.23E+09	-	-	-	-	-	-	1.48E+01	1.48E+01	1.48E+01 nc
Phosmet	732-11-6	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Phosphine	7803-51-2	1	-	-	3.23E+09	-	-	-	-	8.85E+02	-	3.54E+07	8.85E+02	8.85E+02 nc
Phosphoric Acid	7664-38-2	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	1.18E+09	1.28E+08	1.28E+08 max
Phosphorus (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phosphorus pentoxide	1314-56-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phosphorus, White	7723-14-0	1	9.55E+03	-	3.23E+09	-	-	-	-	5.90E+01	-	-	5.90E+01	5.90E+01 nc
Phthalates (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phthalic Acid, P-	100-21-0	1	-	-	3.23E+09	-	-	-	-	2.95E+06	2.34E+07	-	2.62E+06	2.62E+06 max
Phthalic Acid, m-	121-91-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phthalic Acid, o-	88-99-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Phthalic Anhydride	85-44-9	1	-	-	3.23E+09	-	-	-	-	5.90E+06	4.67E+07	2.36E+09	5.23E+06	5.23E+06 max
Picloram	1918-02-1	1	-	-	3.23E+09	-	-	-	-	2.06E+05	1.64E+06	-	1.83E+05	1.83E+05 max
Picoline, 2-	109-06-8	1	1.05E+05	7.90E+05	3.23E+09	-	-	-	-	-	-	-	-	
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	1	-	-	3.23E+09	-	-	-	-	2.95E+02	2.34E+03	-	2.62E+02	2.62E+02 nc
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Piperidine	110-89-4	1	1.12E+05	1.96E+05	3.23E+09	-	-	-	-	-	-	-	-	
Pirimiphos, Methyl	29232-93-7	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Polybrominated Biphenyls	59536-65-1	1	-	-	3.23E+09	6.88E+00	5.45E+01	9.61E+05	6.11E+00	2.06E+01	1.64E+02	-	1.83E+01	6.11E+00 ca**
Polychlorinated Biphenyls (high risk)	1336-36-3	1	1.08E+06	-	3.23E+09	1.03E+02	5.84E+02	4.85E+03	8.62E+01	-	-	-	-	8.62E+01 ca
Polycyclic aromatic hydrocarbons (PAH), Total	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Polycyclic chlorinated hydrocarbons (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	1	-	-	3.23E+09	-	-	-	-	-	-	7.08E+07	7.08E+07	7.08E+07 max
Polyphosphoric acid	8017-16-1	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Potassium	7440-09-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Potassium Cyanide	151-50-8	1	-	-	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 nc

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Potassium Perchlorate	7778-74-7	No	No	-		-		7.00E-04	U	-		1	-
Potassium Perfluorobutane Sulfonate	29420-49-3	No	No	-		-		2.00E-02	U	-		1	0.1
Potassium Silver Cyanide	506-61-6	No	No	-		-		5.00E-03	U	-		0.04	-
Potassium chlorate	3811-04-9	No	No	-		-		-		-		1	-
Potassium tripolyphosphate	13845-36-8	No	No	-		-		4.86E+01	U	-		1	-
Praseodymium	7440-10-0	No	No	-		-		-		-		1	-
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	No	No	-		-		-		-		1	-
Prochloraz	67747-09-5	No	No	1.50E-01	U	-		9.00E-03	U	-		1	0.1
Profluralin	26399-36-0	No	Yes	-		-		6.00E-03	U	-		1	-
Promethium	7440-12-2	No	No	-		-		-		-		1	-
Prometon	1610-18-0	No	No	-		-		1.50E-02	U	-		1	0.1
Prometryn	7287-19-6	No	No	-		-		4.00E-03	U	-		1	0.1
Propachlor	1918-16-7	No	No	-		-		1.30E-02	U	-		1	0.1
Propanil	709-98-8	No	No	-		-		5.00E-03	U	-		1	0.1
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	No	No	-		-		-		-		1	0.1
Propargite	2312-35-8	No	No	-		-		2.00E-02	U	-		1	0.1
Propargyl Alcohol	107-19-7	No	Yes	-		-		2.00E-03	U	-		1	-
Propazine	139-40-2	No	No	-		-		2.00E-02	U	-		1	0.1
Propham	122-42-9	No	No	-		-		2.00E-02	U	-		1	0.1
Propiconazole	60207-90-1	No	No	-		-		1.30E-02	U	-		1	0.1
Propionaldehyde	123-38-6	No	Yes	-		-		-		8.00E-03	U	1	-
Propionitrile	107-12-0	No	Yes	-		-		-		-		1	-
Propionitrile, 3-(NN-dimethylamino)	1738-25-6	No	Yes	-		-		-		-		1	-
Propyl Alcohol, n-	71-23-8	No	Yes	-		-		-		-		1	-
Propyl benzene	103-65-1	No	Yes	-		-		1.00E-01	U	1.00E+00	U	1	-
Propylene	115-07-1	No	Yes	-		-		-		3.00E+00	U	1	-
Propylene Glycol	57-55-6	No	No	-		-		2.00E+01	U	-		1	0.1
Propylene Glycol Dinitrate	6423-43-4	No	No	-		-		-		2.72E-04	U	1	0.1
Propylene Glycol Monoethyl Ether	1569-02-4	No	Yes	-		-		7.00E-01	U	-		1	-
Propylene Glycol Monomethyl Ether	107-98-2	No	Yes	-		-		7.00E-01	U	2.00E+00	U	1	-
Propylene Oxide	75-56-9	No	Yes	2.40E-01	U	3.70E-06	U	-		3.00E-02	U	1	-
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	No	No	-		-		-		-		1	0.1
Pursuit	81335-77-5	No	No	-		-		2.50E-01	U	-		1	0.1
Pydrin	51630-58-1	No	No	-		-		2.50E-02	U	-		1	0.1
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	No	No	-		-		-		-		1	0.1
Pyrene	129-00-0	No	Yes	-		-		3.00E-02	U	-		1	0.13
Pyridine	110-86-1	No	Yes	-		-		1.00E-03	U	-		1	-
Quinalphos	13593-03-8	No	No	-		-		5.00E-04	U	-		1	0.1
Quinoline	91-22-5	No	No	3.00E+00	U	-		-		-		1	0.1
Refractory Ceramic Fibers	NA	No	No	-		-		-		3.00E-02	U	1	-
Resmethrin	10453-86-8	No	No	-		-		3.00E-02	U	-		1	0.1
Resorcinol	108-46-3	No	No	-		-		-		-		1	0.1
Ronnel	299-84-3	No	Yes	-		-		5.00E-02	U	-		1	-
Rotenone	83-79-4	No	No	-		-		4.00E-03	U	-		1	0.1
Safrole	94-59-7	Yes	No	2.20E-01	U	6.30E-05	U	-		-		1	0.1
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	No	No	-		-		-		-		1	-
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	No	No	-		-		-		-		1	-
Savey	78587-05-0	No	No	-		-		2.50E-02	U	-		1	0.1
Scandium	7440-20-2	No	No	-		-		-		-		1	-
Selenious Acid	7783-00-8	No	No	-		-		5.00E-03	U	-		1	-
Selenite	14124-67-5	No	No	-		-		-		-		1	-
Selenium	7782-49-2	No	No	-		-		5.00E-03	U	2.00E-02	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Potassium Perchlorate	7778-74-7	1	-	-	3.23E+09	-	-	-	-	2.06E+03	-	-	2.06E+03	2.06E+03 nc
Potassium Perfluorobutane Sulfonate	29420-49-3	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Potassium Silver Cyanide	506-61-6	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Potassium chlorate	3811-04-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Potassium tripolyphosphate	13845-36-8	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Praseodymium	7440-10-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Prochloraz	67747-09-5	1	-	-	3.23E+09	1.38E+03	1.09E+04	-	1.22E+03	2.65E+04	2.10E+05	-	2.36E+04	1.22E+03 ca*
Profluralin	26399-36-0	1	5.78E+05	-	3.23E+09	-	-	-	-	1.77E+04	-	-	1.77E+04	1.77E+04 nc
Promethium	7440-12-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Prometon	1610-18-0	1	-	-	3.23E+09	-	-	-	-	4.42E+04	3.51E+05	-	3.93E+04	3.93E+04 nc
Prometryn	7287-19-6	1	-	-	3.23E+09	-	-	-	-	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
Propachlor	1918-16-7	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Propanil	709-98-8	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Propargite	2312-35-8	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Propargyl Alcohol	107-19-7	1	8.66E+04	1.11E+05	3.23E+09	-	-	-	-	5.90E+03	-	-	5.90E+03	5.90E+03 nc
Propazine	139-40-2	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Propham	122-42-9	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Propiconazole	60207-90-1	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Propionaldehyde	123-38-6	1	1.24E+04	3.26E+04	3.23E+09	-	-	-	-	-	-	3.61E+03	3.61E+03	3.61E+03 nc
Propionitrile	107-12-0	1	2.07E+04	1.56E+04	3.23E+09	-	-	-	-	-	-	-	-	
Propionitrile, 3-(NN-dimethylamino)	1738-25-6	1	2.62E+05	1.60E+05	3.23E+09	-	-	-	-	-	-	-	-	
Propyl Alcohol, n-	71-23-8	1	4.01E+04	1.11E+05	3.23E+09	-	-	-	-	-	-	-	-	
Propyl benzene	103-65-1	1	9.64E+03	2.64E+02	3.23E+09	-	-	-	-	2.95E+05	-	3.52E+05	1.60E+05	1.60E+05 sat
Propylene	115-07-1	1	9.70E+02	3.49E+02	3.23E+09	-	-	-	-	-	-	1.06E+05	1.06E+05	1.06E+05 sat
Propylene Glycol	57-55-6	1	-	-	3.23E+09	-	-	-	-	5.90E+07	4.67E+08	-	5.24E+07	5.24E+07 max
Propylene Glycol Dinitrate	6423-43-4	1	-	-	3.23E+09	-	-	-	-	-	-	3.21E+07	3.21E+07	3.21E+07 max
Propylene Glycol Monoethyl Ether	1569-02-4	1	2.14E+05	8.52E+04	3.23E+09	-	-	-	-	2.06E+06	-	-	2.06E+06	2.06E+06 sat
Propylene Glycol Monomethyl Ether	107-98-2	1	1.08E+05	1.06E+05	3.23E+09	-	-	-	-	2.06E+06	-	7.89E+06	1.64E+06	1.64E+06 sat
Propylene Oxide	75-56-9	1	1.42E+04	7.77E+04	3.23E+09	8.60E+02	-	9.77E+03	7.91E+02	-	-	1.55E+04	1.55E+04	7.91E+02 ca*
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pursuit	81335-77-5	1	-	-	3.23E+09	-	-	-	-	7.37E+05	5.84E+06	-	6.55E+05	6.55E+05 max
Pydrin	51630-58-1	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Pyrene	129-00-0	1	3.28E+06	-	3.23E+09	-	-	-	-	8.85E+04	5.39E+05	-	7.60E+04	7.60E+04 nc
Pyridine	110-86-1	1	7.64E+04	5.30E+05	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Quinalphos	13593-03-8	1	-	-	3.23E+09	-	-	-	-	1.47E+03	1.17E+04	-	1.31E+03	1.31E+03 nc
Quinoline	91-22-5	1	-	-	3.23E+09	6.88E+01	5.45E+02	-	6.11E+01	-	-	-	-	6.11E+01 ca
Refractory Ceramic Fibers	NA	1	-	-	3.23E+09	-	-	-	-	-	-	3.54E+09	3.54E+09	3.54E+09 max
Resmethrin	10453-86-8	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Resorcinol	108-46-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Ronnel	299-84-3	1	6.40E+05	-	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 max
Rotenone	83-79-4	1	-	-	3.23E+09	-	-	-	-	1.18E+04	9.35E+04	-	1.05E+04	1.05E+04 nc
Safrole	94-59-7	1	-	-	3.23E+09	9.38E+02	7.44E+03	1.31E+08	8.33E+02	-	-	-	-	8.33E+02 ca
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Savey	78587-05-0	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Scandium	7440-20-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Selenious Acid	7783-00-8	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Selenite	14124-67-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Selenium	7782-49-2	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	2.36E+09	1.47E+04	1.47E+04 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Selenium Sulfide	7446-34-6	No	No	-		-		5.00E-03	U	2.00E-02	U	1	-
Selenourea	630-10-4	No	No	-		-		-		-		1	0.1
Sethoxydim	74051-80-2	No	No	-		-		9.00E-02	U	-		1	0.1
Silica (crystalline, respirable)	7631-86-9	No	No	-		-		-		3.00E-03	U	1	-
Silicon	7440-21-3	No	No	-		-		-		-		1	-
Silver	7440-22-4	No	No	-		-		5.00E-03	U	-		0.04	-
Silver Cyanide	506-64-9	No	No	-		-		1.00E-01	U	-		0.04	-
Simazine	122-34-9	No	No	1.20E-01	U	-		5.00E-03	U	-		1	0.1
Sodium	7440-23-5	No	No	-		-		-		-		1	-
Sodium Acifluorfen	62476-59-9	No	No	-		-		1.30E-02	U	-		1	0.1
Sodium Azide	26628-22-8	No	No	-		-		4.00E-03	U	-		1	-
Sodium Chlorate	7775-09-9	No	No	-		-		-		-		1	-
Sodium Cyanide	143-33-9	No	No	-		-		1.00E-03	U	-		1	-
Sodium Dichromate	10588-01-9	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025	-
Sodium Diethyldithiocarbamate	148-18-5	No	No	2.70E-01	U	-		3.00E-02	U	-		1	0.1
Sodium Fluoride	7681-49-4	No	No	-		-		5.00E-02	U	1.30E-02	U	1	-
Sodium Fluoroacetate	62-74-8	No	No	-		-		2.00E-05	U	-		1	0.1
Sodium Hydroxide	1310-73-2	No	No	-		-		-		-		1	-
Sodium Metavanadate	13718-26-8	No	No	-		-		1.00E-03	U	-		1	-
Sodium Perchlorate	7601-89-0	No	No	-		-		7.00E-04	U	-		1	-
Sodium acid pyrophosphate	7758-16-9	No	No	-		-		4.86E+01	U	-		1	-
Sodium aluminum phosphate (acidic)	7785-88-8	No	No	-		-		4.86E+01	U	-		1	-
Sodium aluminum phosphate (anhydrous)	10279-59-1	No	No	-		-		4.86E+01	U	-		1	-
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	No	No	-		-		4.86E+01	U	-		1	-
Sodium hexametaphosphate	10124-56-8	No	No	-		-		4.86E+01	U	-		1	-
Sodium polyphosphate	68915-31-1	No	No	-		-		4.86E+01	U	-		1	-
Sodium trimetaphosphate	7785-84-4	No	No	-		-		4.86E+01	U	-		1	-
Sodium tripolyphosphate	7758-29-4	No	No	-		-		4.86E+01	U	-		1	-
Stearyl Acetate	822-23-1	No	Yes	-		-		-		-		1	-
Stirofos (Tetrachlorovinphos)	961-11-5	No	No	2.40E-02	U	-		3.00E-02	U	-		1	0.1
Strontium Chromate	7789-06-2	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025	-
Strontium, Stable	7440-24-6	No	No	-		-		6.00E-01	U	-		1	-
Strychnine	57-24-9	No	No	-		-		3.00E-04	U	-		1	0.1
Styrene	100-42-5	No	Yes	-		-		2.00E-01	U	1.00E+00	U	1	-
Styrene-Acrylonitrile (SAN) Trimer	NA	No	No	-		-		3.00E-03	U	-		1	0.1
Sulfate	14808-79-8	No	No	-		-		-		-		1	-
Sulfide	18496-25-8	No	No	-		-		-		-		1	-
Sulfolane	126-33-0	No	No	-		-		1.00E-03	U	2.00E-03	U	1	0.1
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	No	No	-		-		8.00E-04	U	-		1	0.1
Sulfur	7704-34-9	No	No	-		-		-		-		1	-
Sulfur Dioxide	7446-09-5	No	Yes	-		-		-		-		1	-
Sulfur Mustard	505-60-2	No	Yes	-		-		-		-		1	-
Sulfur Trioxide	7446-11-9	No	Yes	-		-		-		1.00E-03	U	1	-
Sulfuric Acid	7664-93-9	No	No	-		-		-		1.00E-03	U	1	-
Systhane	88671-89-0	No	No	-		-		2.50E-02	U	-		1	0.1
TCDD, 2,3,7,8-	1746-01-6	No	Yes	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03
TCDF, 2,3,7,8-	51207-31-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03
TCMTB	21564-17-0	No	No	-		-		3.00E-02	U	-		1	0.1
Tebuthiuron	34014-18-1	No	No	-		-		7.00E-02	U	-		1	0.1
Technetium	7440-26-8	No	No	-		-		-		-		1	-
Tellurium	13494-80-9	No	No	-		-		-		-		1	-
Temephos	3383-96-8	No	No	-		-		2.00E-02	U	-		1	0.1
Terbacil	5902-51-2	No	No	-		-		1.30E-02	U	-		1	0.1

Site-specific

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Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Selenium Sulfide	7446-34-6	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	2.36E+09	1.47E+04	1.47E+04 nc
Selenourea	630-10-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sethoxydim	74051-80-2	1	-	-	3.23E+09	-	-	-	-	2.65E+05	2.10E+06	-	2.36E+05	2.36E+05 max
Silica (crystalline, respirable)	7631-86-9	1	-	-	3.23E+09	-	-	-	-	-	-	3.54E+08	3.54E+08	3.54E+08 max
Silicon	7440-21-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Silver	7440-22-4	1	-	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Silver Cyanide	506-64-9	1	-	-	3.23E+09	-	-	-	-	2.95E+05	-	-	2.95E+05	2.95E+05 max
Simazine	122-34-9	1	-	-	3.23E+09	1.72E+03	1.36E+04	-	1.53E+03	1.47E+04	1.17E+05	-	1.31E+04	1.53E+03 ca**
Sodium	7440-23-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sodium Acifluorfen	62476-59-9	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc
Sodium Azide	26628-22-8	1	-	-	3.23E+09	-	-	-	-	1.18E+04	-	-	1.18E+04	1.18E+04 nc
Sodium Chlorate	7775-09-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sodium Cyanide	143-33-9	1	-	-	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Sodium Dichromate	10588-01-9	1	-	-	3.23E+09	4.13E+02	-	5.51E+04	4.10E+02	5.90E+04	-	2.36E+07	5.88E+04	4.10E+02 ca
Sodium Diethyldithiocarbamate	148-18-5	1	-	-	3.23E+09	7.65E+02	6.06E+03	-	6.79E+02	8.85E+04	7.01E+05	-	7.86E+04	6.79E+02 ca
Sodium Fluoride	7681-49-4	1	-	-	3.23E+09	-	-	-	-	1.47E+05	-	1.53E+09	1.47E+05	1.47E+05 max
Sodium Fluoroacetate	62-74-8	1	-	-	3.23E+09	-	-	-	-	5.90E+01	4.67E+02	-	5.24E+01	5.24E+01 nc
Sodium Hydroxide	1310-73-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sodium Metavanadate	13718-26-8	1	-	-	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Sodium Perchlorate	7601-89-0	1	-	-	3.23E+09	-	-	-	-	2.06E+03	-	-	2.06E+03	2.06E+03 nc
Sodium acid pyrophosphate	7758-16-9	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium aluminum phosphate (acidic)	7785-88-8	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium aluminum phosphate (anhydrous)	10279-59-1	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium hexametaphosphate	10124-56-8	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium polyphosphate	68915-31-1	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium trimetaphosphate	7785-84-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Sodium tripolyphosphate	7758-29-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Stearyl Acetate	822-23-1	1	8.92E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Stirofos (Tetrachlorovinphos)	961-11-5	1	-	-	3.23E+09	8.60E+03	6.82E+04	-	7.64E+03	8.85E+04	7.01E+05	-	7.86E+04	7.64E+03 ca*
Strontium Chromate	7789-06-2	1	-	-	3.23E+09	4.13E+02	-	5.51E+04	4.10E+02	5.90E+04	-	2.36E+07	5.88E+04	4.10E+02 ca
Strontium, Stable	7440-24-6	1	-	-	3.23E+09	-	-	-	-	1.77E+06	-	-	1.77E+06	1.77E+06 max
Strychnine	57-24-9	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Styrene	100-42-5	1	1.29E+04	8.67E+02	3.23E+09	-	-	-	-	5.90E+05	-	4.71E+05	2.62E+05	2.62E+05 sat
Styrene-Acrylonitrile (SAN) Trimer	NA	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Sulfate	14808-79-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sulfide	18496-25-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sulfolane	126-33-0	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	2.36E+08	2.62E+03	2.62E+03 nc
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	1	-	-	3.23E+09	-	-	-	-	2.36E+03	1.87E+04	-	2.10E+03	2.10E+03 nc
Sulfur	7704-34-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sulfur Dioxide	7446-09-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Sulfur Mustard	505-60-2	1	1.21E+05	1.08E+03	3.23E+09	-	-	-	-	-	-	-	-	
Sulfur Trioxide	7446-11-9	1	-	-	3.23E+09	-	-	-	-	-	-	1.18E+08	1.18E+08	1.18E+08 max
Sulfuric Acid	7664-93-9	1	-	-	3.23E+09	-	-	-	-	-	-	1.18E+08	1.18E+08	1.18E+08 max
Systhane	88671-89-0	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
TCDD, 2,3,7,8-	1746-01-6	1	2.71E+06	-	3.23E+09	1.59E-03	4.20E-02	1.82E-01	1.52E-03	2.06E-03	5.45E-02	3.95E+00	1.99E-03	1.52E-03 ca**
TCDF, 2,3,7,8-	51207-31-9	1	4.72E+06	-	3.23E+09	1.59E-02	4.20E-01	3.17E+00	1.52E-02	2.06E-02	5.45E-01	6.88E+01	1.99E-02	1.52E-02 ca**
TCMTB	21564-17-0	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Tebuthiuron	34014-18-1	1	-	-	3.23E+09	-	-	-	-	2.06E+05	1.64E+06	-	1.83E+05	1.83E+05 max
Technetium	7440-26-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tellurium	13494-80-9	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Temephos	3383-96-8	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Terbacil	5902-51-2	1	-	-	3.23E+09	-	-	-	-	3.83E+04	3.04E+05	-	3.40E+04	3.40E+04 nc

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Terbufos	13071-79-9	No	Yes	-		-		2.50E-05	U	-		1	-
Terbutryn	886-50-0	No	No	-		-		1.00E-03	U	-		1	0.1
Tetrabutyl Lead	1920-90-7	No	Yes	-		-		-		-		1	-
Tetrachloroaniline, 2,3,5,6-	3481-20-7	No	No	-		-		-		-		1	0.1
Tetrachlorobenzene, 1,2,3,4-	634-66-2	No	Yes	-		-		-		-		1	-
Tetrachlorobenzene, 1,2,4,5-	95-94-3	No	Yes	-		-		3.00E-04	U	-		1	-
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	No	No	1.30E+01	U	3.80E-03	U	7.00E-06	U	4.00E-04	U	1	0.14
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	No	Yes	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.14
Tetrachloroethane, 1,1,1,2-	630-20-6	No	Yes	2.60E-02	U	7.40E-06	U	3.00E-02	U	-		1	-
Tetrachloroethane, 1,1,2,2-	79-34-5	No	Yes	2.00E-01	U	5.80E-05	U	2.00E-02	U	-		1	-
Tetrachloroethylene	127-18-4	No	Yes	2.10E-03	U	2.60E-07	U	6.00E-03	U	4.00E-02	U	1	-
Tetrachlorophenol, 2,3,4,5-	4901-51-3	No	No	-		-		-		-		1	0.1
Tetrachlorophenol, 2,3,4,6-	58-90-2	No	No	-		-		3.00E-02	U	-		1	0.1
Tetrachlorophenols (total)	25167-83-3	No	No	-		-		-		-		1	0.1
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	No	No	-		-		-		-		1	0.1
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	No	Yes	2.00E+01	U	-		-		-		1	-
Tetraethyl Dithiopyrophosphate	3689-24-5	No	No	-		-		5.00E-04	U	-		1	0.1
Tetraethyl Lead	78-00-2	No	Yes	-		-		1.00E-07	U	-		1	-
Tetrafluoroethane, 1,1,1,2-	811-97-2	No	Yes	-		-		-		8.00E+01	U	1	-
Tetrahydrofuran	109-99-9	No	Yes	-		-		9.00E-01	U	2.00E+00	U	1	0.03
Tetrahydrothiophene	110-01-0	No	Yes	-		-		-		-		1	-
Tetramethyl Lead	75-74-1	No	Yes	-		-		-		-		1	-
Tetramethylcyclohexane	30501-43-0	No	Yes	-		-		-		-		1	-
Tetrapotassium phosphate	7320-34-5	No	No	-		-		4.86E+01	U	-		1	-
Tetrapropyl Lead	3440-75-3	No	Yes	-		-		-		-		1	-
Tetrasodium pyrophosphate	7722-88-5	No	No	-		-		4.86E+01	U	-		1	-
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	No	No	-		-		2.00E-03	U	-		1	0.00065
Thallic Oxide	1314-32-5	No	No	-		-		-		-		1	-
Thallium (I) Nitrate	10102-45-1	No	No	-		-		7.00E-06	U	-		1	-
Thallium (Soluble Salts)	7440-28-0	No	No	-		-		1.00E-05	U	-		1	-
Thallium Acetate	563-68-8	No	No	-		-		6.00E-06	U	-		1	0.1
Thallium Carbonate	6533-73-9	No	No	-		-		2.00E-05	U	-		1	0.1
Thallium Chloride	7791-12-0	No	No	-		-		6.00E-06	U	-		1	-
Thallium Selenite	12039-52-0	No	No	-		-		-		-		1	-
Thallium Sulfate	7446-18-6	No	No	-		-		2.00E-05	U	-		1	-
Thiobencarb	28249-77-6	No	No	-		-		1.00E-02	U	-		1	0.1
Thiocyanates	NA	No	No	-		-		2.00E-04	U	-		1	-
Thiocyanic Acid	463-56-9	No	Yes	-		-		2.00E-04	U	-		1	-
Thiodiglycol	111-48-8	No	No	-		-		7.00E-02	U	-		1	0.0075
Thiofanox	39196-18-4	No	No	-		-		3.00E-04	U	-		1	0.1
Thiophanate, Methyl	23564-05-8	No	No	-		-		8.00E-02	U	-		1	0.1
Thiophene	110-02-1	No	Yes	-		-		-		-		1	-
Thiram	137-26-8	No	No	-		-		5.00E-03	U	-		1	0.1
Thorium	NA	No	No	-		-		-		-		1	-
Thymol	89-83-8	No	No	-		-		-		-		1	0.1
Tin	7440-31-5	No	No	-		-		6.00E-01	U	-		1	-
Titanium	7440-32-6	No	No	-		-		-		-		1	-
Titanium Tetrachloride	7550-45-0	No	Yes	-		-		-		1.00E-04	U	1	-
Toluene	108-88-3	No	Yes	-		-		8.00E-02	U	5.00E+00	U	1	-
Toluene-2,5-diamine	95-70-5	No	No	1.80E-01	U	-		2.00E-04	U	-		1	0.1
Toluenediamine, 2,3-	2687-25-4	No	No	-		-		-		-		1	0.1
Toluenediamine, 3,4-	496-72-0	No	No	-		-		-		-		1	0.1
Toluidine, p-	106-49-0	No	No	3.00E-02	U	-		4.00E-03	U	-		1	0.1

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Terbufos	13071-79-9	1	3.64E+05	3.09E+01	3.23E+09	-	-	-	-	7.37E+01	-	-	7.37E+01	7.37E+01 sat
Terbutryn	886-50-0	1	-	-	3.23E+09	-	-	-	-	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Tetrabutyl Lead	1920-90-7	1	6.41E+03	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachloroaniline, 2,3,5,6-	3481-20-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachlorobenzene, 1,2,3,4-	634-66-2	1	8.26E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	1	6.99E+04	-	3.23E+09	-	-	-	-	8.85E+02	-	-	8.85E+02	8.85E+02 nc
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	1	-	-	3.23E+09	1.59E+01	8.99E+01	2.17E+06	1.35E+01	2.06E+01	1.17E+02	4.72E+07	1.75E+01	1.35E+01 ca**
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	1	1.00E+06	-	3.23E+09	5.29E+00	3.00E+01	2.24E+02	4.41E+00	6.87E+00	3.89E+01	4.86E+03	5.83E+00	4.41E+00 ca**
Tetrachloroethane, 1,1,1,2-	630-20-6	1	7.83E+03	6.80E+02	3.23E+09	7.94E+03	-	2.70E+03	2.02E+03	8.85E+04	-	-	8.85E+04	2.02E+03 sat
Tetrachloroethane, 1,1,2,2-	79-34-5	1	2.08E+04	1.90E+03	3.23E+09	1.03E+03	-	9.18E+02	4.86E+02	5.90E+04	-	-	5.90E+04	4.86E+02 ca
Tetrachloroethylene	127-18-4	1	3.24E+03	1.66E+02	3.23E+09	9.83E+04	-	3.18E+04	2.40E+04	1.77E+04	-	4.73E+03	3.73E+03	3.73E+03 sat
Tetrachlorophenol, 2,3,4,5-	4901-51-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachlorophenol, 2,3,4,6-	58-90-2	1	-	-	3.23E+09	-	-	-	-	8.85E+04	7.01E+05	-	7.86E+04	7.86E+04 nc
Tetrachlorophenols (total)	25167-83-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	1	1.46E+05	-	3.23E+09	1.03E+01	-	-	1.03E+01	-	-	-	-	1.03E+01 ca
Tetraethyl Dithiopyrophosphate	3689-24-5	1	-	-	3.23E+09	-	-	-	-	1.47E+03	1.17E+04	-	1.31E+03	1.31E+03 nc
Tetraethyl Lead	78-00-2	1	2.64E+03	2.43E+00	3.23E+09	-	-	-	-	2.95E-01	-	-	2.95E-01	2.95E-01 nc
Tetrafluoroethane, 1,1,1,2-	811-97-2	1	1.68E+03	1.09E+03	3.23E+09	-	-	-	-	-	-	4.92E+06	4.92E+06	4.92E+06 sat
Tetrahydrofuran	109-99-9	1	1.69E+04	1.65E+05	3.23E+09	-	-	-	-	2.65E+06	7.01E+07	1.23E+06	8.31E+05	8.31E+05 sat
Tetrahydrothiophene	110-01-0	1	1.81E+04	3.44E+03	3.23E+09	-	-	-	-	-	-	-	-	
Tetramethyl Lead	75-74-1	1	1.89E+03	3.64E+01	3.23E+09	-	-	-	-	-	-	-	-	
Tetramethylcyclohexane	30501-43-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrapotassium phosphate	7320-34-5	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Tetrapropyl Lead	3440-75-3	1	3.65E+03	-	3.23E+09	-	-	-	-	-	-	-	-	
Tetrasodium pyrophosphate	7722-88-5	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1	-	-	3.23E+09	-	-	-	-	5.90E+03	7.19E+06	-	5.89E+03	5.89E+03 nc
Thallic Oxide	1314-32-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Thallium (I) Nitrate	10102-45-1	1	-	-	3.23E+09	-	-	-	-	2.06E+01	-	-	2.06E+01	2.06E+01 nc
Thallium (Soluble Salts)	7440-28-0	1	-	-	3.23E+09	-	-	-	-	2.95E+01	-	-	2.95E+01	2.95E+01 nc
Thallium Acetate	563-68-8	1	-	-	3.23E+09	-	-	-	-	1.77E+01	1.40E+02	-	1.57E+01	1.57E+01 nc
Thallium Carbonate	6533-73-9	1	-	-	3.23E+09	-	-	-	-	5.90E+01	4.67E+02	-	5.24E+01	5.24E+01 nc
Thallium Chloride	7791-12-0	1	-	-	3.23E+09	-	-	-	-	1.77E+01	-	-	1.77E+01	1.77E+01 nc
Thallium Selenite	12039-52-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Thallium Sulfate	7446-18-6	1	-	-	3.23E+09	-	-	-	-	5.90E+01	-	-	5.90E+01	5.90E+01 nc
Thiobencarb	28249-77-6	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Thiocyanates	NA	1	-	-	3.23E+09	-	-	-	-	5.90E+02	-	-	5.90E+02	5.90E+02 nc
Thiocyanic Acid	463-56-9	1	-	-	3.23E+09	-	-	-	-	5.90E+02	-	-	5.90E+02	5.90E+02 nc
Thiodiglycol	111-48-8	1	-	-	3.23E+09	-	-	-	-	2.06E+05	2.18E+07	-	2.05E+05	2.05E+05 max
Thiofanox	39196-18-4	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Thiophanate, Methyl	23564-05-8	1	-	-	3.23E+09	-	-	-	-	2.36E+05	1.87E+06	-	2.10E+05	2.10E+05 max
Thiophene	110-02-1	1	5.77E+03	1.80E+03	3.23E+09	-	-	-	-	-	-	-	-	
Thiram	137-26-8	1	-	-	3.23E+09	-	-	-	-	1.47E+04	1.17E+05	-	1.31E+04	1.31E+04 nc
Thorium	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Thymol	89-83-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tin	7440-31-5	1	-	-	3.23E+09	-	-	-	-	1.77E+06	-	-	1.77E+06	1.77E+06 max
Titanium	7440-32-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Titanium Tetrachloride	7550-45-0	1	-	-	3.23E+09	-	-	-	-	-	-	1.18E+07	1.18E+07	1.18E+07 max
Toluene	108-88-3	1	5.92E+03	8.18E+02	3.23E+09	-	-	-	-	2.36E+05	-	1.08E+06	1.94E+05	1.94E+05 sat
Toluene-2,5-diamine	95-70-5	1	-	-	3.23E+09	1.15E+03	9.09E+03	-	1.02E+03	5.90E+02	4.67E+03	-	5.24E+02	5.24E+02 nc
Toluenediamine, 2,3-	2687-25-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Toluenediamine, 3,4-	496-72-0	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Toluidine, p-	106-49-0	1	-	-	3.23E+09	6.88E+03	5.45E+04	-	6.11E+03	1.18E+04	9.35E+04	-	1.05E+04	6.11E+03 ca**

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Total Petroleum Hydrocarbons (Aliphatic High)	NA	No	Yes	-		-		3.00E+00	U	-		1	-
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	No	Yes	-		-		-		6.00E-01	U	1	-
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	No	Yes	-		-		1.00E-02	U	1.00E-01	U	1	-
Total Petroleum Hydrocarbons (Aromatic High)	NA	No	No	-		-		4.00E-02	U	-		1	0.1
Total Petroleum Hydrocarbons (Aromatic Low)	NA	No	Yes	-		-		4.00E-03	U	3.00E-02	U	1	-
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	No	Yes	-		-		4.00E-03	U	3.00E-03	U	1	-
Toxaphene	8001-35-2	No	No	1.10E+00	U	3.20E-04	U	-		-		1	0.1
Tralomethrin	66841-25-6	No	No	-		-		7.50E-03	U	-		1	0.1
Tri-n-butyltin	688-73-3	No	Yes	-		-		3.00E-04	U	-		1	-
Triacetin	102-76-1	No	No	-		-		8.00E+01	U	-		1	0.1
Triallate	2303-17-5	No	Yes	-		-		1.30E-02	U	-		1	-
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	No	No	-		-		4.86E+01	U	-		1	-
Triasulfuron	82097-50-5	No	No	-		-		1.00E-02	U	-		1	0.1
Triaziquone	68-76-8	No	No	-		-		-		-		1	0.1
Tribromobenzene, 1,2,4-	615-54-3	No	Yes	-		-		5.00E-03	U	-		1	-
Tribromochloromethane	594-15-0	No	Yes	-		-		-		-		1	-
Tribromodiphenyl Ether	49690-94-0	No	Yes	-		-		-		-		1	-
Tribromophenol, 2,4,6-	118-79-6	No	No	-		-		-		-		1	0.1
Tributyl Phosphate	126-73-8	No	No	9.00E-03	U	-		1.00E-02	U	-		1	0.1
Tributyltin	56573-85-4	No	Yes	-		-		-		-		1	-
Tributyltin Compounds	NA	No	No	-		-		3.00E-04	U	-		1	0.1
Tributyltin Oxide	56-35-9	No	No	-		-		3.00E-04	U	-		1	0.1
Tributyltin chloride	1461-22-9	No	Yes	-		-		-		-		1	-
Tributyltin fluoride	1983-10-4	No	Yes	-		-		-		-		1	-
Tributyltin linoleate	24124-25-2	No	Yes	-		-		-		-		1	-
Tributyltin methacrylate	2155-70-6	No	Yes	-		-		-		-		1	-
Tributyltin naphthenate	85409-17-2	No	No	-		-		-		-		1	0.1
Tricaine Methanesulfonate	886-86-2	No	No	-		-		-		-		1	0.1
Tricalcium phosphate	7758-87-4	No	No	-		-		4.86E+01	U	-		1	-
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	No	Yes	-		-		3.00E+01	U	3.00E+01	U	1	-
Trichloro-2'-hydroxydiphenylether	3380-34-5	No	No	-		-		-		-		1	0.1
Trichloroacetic Acid	76-03-9	No	No	7.00E-02	U	-		2.00E-02	U	-		1	0.1
Trichloroaniline HCl, 2,4,6-	33663-50-2	No	No	2.90E-02	U	-		-		-		1	0.1
Trichloroaniline, 2,4,5-	636-30-6	No	No	-		-		-		-		1	0.1
Trichloroaniline, 2,4,6-	634-93-5	No	No	7.00E-03	U	-		3.00E-05	U	-		1	0.1
Trichlorobenzene	12002-48-1	No	Yes	-		-		-		-		1	-
Trichlorobenzene, 1,2,3-	87-61-6	No	Yes	-		-		8.00E-04	U	-		1	-
Trichlorobenzene, 1,2,4-	120-82-1	No	Yes	2.90E-02	U	-		1.00E-02	U	2.00E-03	U	1	-
Trichloroethane, 1,1,1-	71-55-6	No	Yes	-		-		2.00E+00	U	5.00E+00	U	1	-
Trichloroethane, 1,1,2-	79-00-5	No	Yes	5.70E-02	U	1.60E-05	U	4.00E-03	U	2.00E-04	U	1	-
Trichloroethylene	79-01-6	Yes	Yes	4.60E-02	U	4.10E-06	U	5.00E-04	U	2.00E-03	U	1	-
Trichlorofluoromethane	75-69-4	No	Yes	-		-		3.00E-01	U	7.00E-01	U	1	-
Trichlorophenol, 2,4,5-	95-95-4	No	No	-		-		1.00E-01	U	-		1	0.1
Trichlorophenol, 2,4,6-	88-06-2	No	No	1.10E-02	U	3.10E-06	U	1.00E-03	U	-		1	0.1
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	No	No	-		-		1.00E-02	U	-		1	0.1
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	Yes	No	-		-		-		-		1	-
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	No	No	-		-		8.00E-03	U	-		1	0.1
Trichloropropane, 1,1,2-	598-77-6	No	Yes	-		-		5.00E-03	U	-		1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Total Petroleum Hydrocarbons (Aliphatic High)	NA	1	1.46E+03	3.41E-01	3.23E+09	-	-	-	-	8.85E+06	-	-	8.85E+06	8.85E+06 sat
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	1	1.14E+03	1.41E+02	3.23E+09	-	-	-	-	-	-	2.51E+04	2.51E+04	2.51E+04 sat
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	1	1.44E+03	6.86E+00	3.23E+09	-	-	-	-	2.95E+04	-	5.26E+03	4.46E+03	4.46E+03 sat
Total Petroleum Hydrocarbons (Aromatic High)	NA	1	-	-	3.23E+09	-	-	-	-	1.18E+05	9.35E+05	-	1.05E+05	1.05E+05 max
Total Petroleum Hydrocarbons (Aromatic Low)	NA	1	4.88E+03	1.82E+03	3.23E+09	-	-	-	-	1.18E+04	-	5.34E+03	3.68E+03	3.68E+03 sat
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	1	7.23E+04	-	3.23E+09	-	-	-	-	1.18E+04	-	7.91E+03	4.74E+03	4.74E+03 nc
Toxaphene	8001-35-2	1	-	-	3.23E+09	1.88E+02	1.49E+03	2.58E+07	1.67E+02	-	-	-	-	1.67E+02 ca
Tralomethrin	66841-25-6	1	-	-	3.23E+09	-	-	-	-	2.21E+04	1.75E+05	-	1.96E+04	1.96E+04 nc
Tri-n-butyltin	688-73-3	1	4.63E+03	-	3.23E+09	-	-	-	-	8.85E+02	-	-	8.85E+02	8.85E+02 nc
Triacetin	102-76-1	1	-	-	3.23E+09	-	-	-	-	2.36E+08	1.87E+09	-	2.10E+08	2.10E+08 max
Triallate	2303-17-5	1	5.00E+05	-	3.23E+09	-	-	-	-	3.83E+04	-	-	3.83E+04	3.83E+04 nc
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Triasulfuron	82097-50-5	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Triaziquone	68-76-8	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tribromobenzene, 1,2,4-	615-54-3	1	6.24E+04	-	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 nc
Tribromochloromethane	594-15-0	1	5.65E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Tribromodiphenyl Ether	49690-94-0	1	1.07E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Tribromophenol, 2,4,6-	118-79-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyl Phosphate	126-73-8	1	-	-	3.23E+09	2.29E+04	1.82E+05	-	2.04E+04	2.95E+04	2.34E+05	-	2.62E+04	2.04E+04 ca**
Tributyltin	56573-85-4	1	4.95E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyltin Compounds	NA	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Tributyltin Oxide	56-35-9	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Tributyltin chloride	1461-22-9	1	5.94E+03	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyltin fluoride	1983-10-4	1	8.59E+03	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyltin linoleate	24124-25-2	1	1.67E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyltin methacrylate	2155-70-6	1	1.41E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Tributyltin naphthenate	85409-17-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tricaine Methanesulfonate	886-86-2	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tricalcium phosphate	7758-87-4	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	1	1.77E+03	9.10E+02	3.23E+09	-	-	-	-	8.85E+07	-	1.94E+06	1.90E+06	1.90E+06 sat
Trichloro-2'-hydroxydiphenylether	3380-34-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Trichloroacetic Acid	76-03-9	1	-	-	3.23E+09	2.95E+03	2.34E+04	-	2.62E+03	5.90E+04	4.67E+05	-	5.24E+04	2.62E+03 ca*
Trichloroaniline HCl, 2,4,6-	33663-50-2	1	-	-	3.23E+09	7.12E+03	5.64E+04	-	6.32E+03	-	-	-	-	6.32E+03 ca
Trichloroaniline, 2,4,5-	636-30-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Trichloroaniline, 2,4,6-	634-93-5	1	-	-	3.23E+09	2.95E+04	2.34E+05	-	2.62E+04	8.85E+01	7.01E+02	-	7.86E+01	7.86E+01 nc
Trichlorobenzene	12002-48-1	1	3.55E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Trichlorobenzene, 1,2,3-	87-61-6	1	4.44E+04	-	3.23E+09	-	-	-	-	2.36E+03	-	-	2.36E+03	2.36E+03 nc
Trichlorobenzene, 1,2,4-	120-82-1	1	4.13E+04	4.05E+02	3.23E+09	7.12E+03	-	-	7.12E+03	2.95E+04	-	3.02E+03	2.74E+03	2.74E+03 sat
Trichloroethane, 1,1,1-	71-55-6	1	2.27E+03	6.40E+02	3.23E+09	-	-	-	-	5.90E+06	-	4.15E+05	3.88E+05	3.88E+05 sat
Trichloroethane, 1,1,2-	79-00-5	1	9.95E+03	2.16E+03	3.23E+09	3.62E+03	-	1.59E+03	1.10E+03	1.18E+04	-	7.27E+01	7.22E+01	7.22E+01 nc
Trichloroethylene	79-01-6	1	3.04E+03	6.92E+02	3.23E+09	4.49E+03	-	1.90E+03	1.33E+03	1.47E+03	-	2.22E+02	1.93E+02	1.93E+02 nc
Trichlorofluoromethane	75-69-4	1	1.43E+03	1.23E+03	3.23E+09	-	-	-	-	8.85E+05	-	3.65E+04	3.50E+04	3.50E+04 sat
Trichlorophenol, 2,4,5-	95-95-4	1	-	-	3.23E+09	-	-	-	-	2.95E+05	2.34E+06	-	2.62E+05	2.62E+05 max
Trichlorophenol, 2,4,6-	88-06-2	1	-	-	3.23E+09	1.88E+04	1.49E+05	2.66E+09	1.67E+04	2.95E+03	2.34E+04	-	2.62E+03	2.62E+03 nc
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	1	-	-	3.23E+09	-	-	-	-	2.36E+04	1.87E+05	-	2.10E+04	2.10E+04 nc
Trichloropropane, 1,1,2-	598-77-6	1	2.07E+04	1.28E+03	3.23E+09	-	-	-	-	1.47E+04	-	-	1.47E+04	1.47E+04 sat

Site-specific

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ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
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Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Trichloropropane, 1,2,3-	96-18-4	Yes	Yes	3.00E+01	U	-		4.00E-03	U	3.00E-04	U	1	-
Trichloropropene, 1,2,3-	96-19-5	No	Yes	-		-		3.00E-03	U	3.00E-04	U	1	-
Trichlorotoluene, 2,3,6-	2077-46-5	No	Yes	-		-		-		-		1	-
Trichlorotoluene, alpha 2,6-	2014-83-7	No	Yes	-		-		-		-		1	-
Triclorophenols (total)	NA	No	No	-		-		-		-		1	0.1
Tricresyl Phosphate (TCP)	1330-78-5	No	No	-		-		2.00E-02	U	-		1	0.1
Tridiphane	58138-08-2	No	No	-		-		3.00E-03	U	-		1	0.1
Tridymite	15468-32-3	No	No	-		-		-		-		1	-
Triethyl Lead	5224-23-7	No	Yes	-		-		-		-		1	-
Triethyl phosphorothioate [O,O,O-]	126-68-1	No	Yes	-		-		-		-		1	-
Triethylamine	121-44-8	No	Yes	-		-		-		7.00E-03	U	1	-
Triethylene Glycol	112-27-6	No	No	-		-		2.00E+00	U	-		1	0.1
Trifluralin	1582-09-8	No	Yes	7.70E-03	U	-		7.50E-03	U	-		1	-
Trimagnesium phosphate	7757-87-1	No	No	-		-		4.86E+01	U	-		1	-
Trimethyl Lead	7442-13-9	No	Yes	-		-		-		-		1	-
Trimethyl Phosphate	512-56-1	No	No	2.00E-02	U	-		1.00E-02	U	-		1	0.1
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1	No	Yes	-		-		-		-		1	-
Trimethylbenzene, 1,2,3-	526-73-8	No	Yes	-		-		-		5.00E-03	U	1	-
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes	-		-		-		7.00E-03	U	1	-
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	-		-		1.00E-02	U	-		1	-
Trimethylethyl Lead	1762-26-1	No	Yes	-		-		-		-		1	-
Trimethylpentane, 2,2,4-	540-84-1	No	Yes	-		-		-		-		1	-
Trinitrobenzene, 1,3,5-	99-35-4	No	No	-		-		3.00E-02	U	-		1	0.019
Trinitrotoluene, 2,4,6-	118-96-7	No	No	3.00E-02	U	-		5.00E-04	U	-		1	0.032
Triphenylphosphine Oxide	791-28-6	No	No	-		-		2.00E-02	U	-		1	0.1
Triphenyltin	668-34-8	No	Yes	-		-		-		-		1	-
Tripotassium phosphate	7778-53-2	No	No	-		-		4.86E+01	U	-		1	-
Tripropyl Lead	6618-03-7	No	Yes	-		-		-		-		1	-
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	No	No	-		-		2.00E-02	U	-		1	0.1
Tris(1-chloro-2-propyl)phosphate	13674-84-5	No	No	-		-		1.00E-02	U	-		1	0.1
Tris(2,3-dibromopropyl)phosphate	126-72-7	No	Yes	2.30E+00	U	6.60E-04	U	-		-		1	-
Tris(2-chloroethyl)phosphate	115-96-8	No	No	2.00E-02	U	-		7.00E-03	U	-		1	0.1
Tris(2-ethylhexyl)phosphate	78-42-2	No	No	3.20E-03	U	-		1.00E-01	U	-		1	0.1
Trisbutoxyethyl Phosphate	78-51-3	No	No	-		-		-		-		1	0.1
Trisodium phosphate	7601-54-9	No	No	-		-		4.86E+01	U	-		1	-
Trithion	786-19-6	No	No	-		-		-		-		1	0.1
Tungsten	7440-33-7	No	No	-		-		-		-		1	-
Uranium (Soluble Salts)	NA	No	No	-		-		3.00E-03	U	4.00E-05	U	1	-
Urea	57-13-6	No	No	-		-		-		-		1	0.1
Urethane	51-79-6	Yes	No	1.00E+00	U	2.90E-04	U	-		-		1	0.1
Vanadium Pentoxide	1314-62-1	No	No	-		8.30E-03	U	9.00E-03	U	7.00E-06	U	0.026	-
Vanadium Sulfate	36907-42-3	No	No	-		-		-		-		0.026	-
Vanadium and Compounds	7440-62-2	No	No	-		-		5.04E-03	U	1.00E-04	U	0.026	-
Vanadyl Sulfate	27774-13-6	No	No	-		-		-		-		1	-
Vernolate	1929-77-7	No	Yes	-		-		1.00E-03	U	-		1	-
Vinclozolin	50471-44-8	No	No	-		-		2.50E-02	U	-		1	0.1
Vinyl Acetate	108-05-4	No	Yes	-		-		1.00E+00	U	2.00E-01	U	1	-
Vinyl Bromide	593-60-2	No	Yes	-		3.20E-05	U	-		3.00E-03	U	1	-
Vinyl Chloride	75-01-4	Yes	Yes	7.20E-01	U	4.40E-06	U	3.00E-03	U	1.00E-01	U	1	-
Warfarin	81-81-2	No	No	-		-		3.00E-04	U	-		1	0.1
Xylene, P-	106-42-3	No	Yes	-		-		2.00E-01	U	1.00E-01	U	1	-
Xylene, m-	108-38-3	No	Yes	-		-		2.00E-01	U	1.00E-01	U	1	-
Xylene, o-	95-47-6	No	Yes	-		-		2.00E-01	U	1.00E-01	U	1	-

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gui
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Trichloropropane, 1,2,3-	96-18-4	1	2.17E+04	1.40E+03	3.23E+09	6.88E+00	-	-	6.88E+00	1.18E+04	-	2.38E+02	2.33E+02	6.88E+00 ca*
Trichloropropene, 1,2,3-	96-19-5	1	3.23E+03	4.51E+02	3.23E+09	-	-	-	-	8.85E+03	-	3.53E+01	3.52E+01	3.52E+01 nc
Trichlorotoluene, 2,3,6-	2077-46-5	1	5.83E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Trichlorotoluene, alpha 2,6-	2014-83-7	1	9.70E+04	-	3.23E+09	-	-	-	-	-	-	-	-	
Triclorophenols (total)	NA	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tricresyl Phosphate (TCP)	1330-78-5	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Tridiphane	58138-08-2	1	-	-	3.23E+09	-	-	-	-	8.85E+03	7.01E+04	-	7.86E+03	7.86E+03 nc
Tridymite	15468-32-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Triethyl Lead	5224-23-7	1	1.80E+03	5.67E+03	3.23E+09	-	-	-	-	-	-	-	-	
Triethyl phosphorothioate [O,O,O-]	126-68-1	1	3.87E+04	4.67E+02	3.23E+09	-	-	-	-	-	-	-	-	
Triethylamine	121-44-8	1	2.18E+04	2.78E+04	3.23E+09	-	-	-	-	-	-	5.57E+03	5.57E+03	5.57E+03 nc
Triethylene Glycol	112-27-6	1	-	-	3.23E+09	-	-	-	-	5.90E+06	4.67E+07	-	5.24E+06	5.24E+06 max
Trifluralin	1582-09-8	1	7.07E+05	-	3.23E+09	2.68E+04	-	-	2.68E+04	2.21E+04	-	-	2.21E+04	2.21E+04 nc
Trimagnesium phosphate	7757-87-1	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Trimethyl Lead	7442-13-9	1	1.54E+03	6.92E+04	3.23E+09	-	-	-	-	-	-	-	-	
Trimethyl Phosphate	512-56-1	1	-	-	3.23E+09	1.03E+04	8.18E+04	-	9.17E+03	2.95E+04	2.34E+05	-	2.62E+04	9.17E+03 ca**
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1	1	6.96E+05	-	3.23E+09	-	-	-	-	-	-	-	-	
Trimethylbenzene, 1,2,3-	526-73-8	1	1.30E+04	2.93E+02	3.23E+09	-	-	-	-	-	-	2.38E+03	2.38E+03	2.38E+03 sat
Trimethylbenzene, 1,2,4-	95-63-6	1	1.09E+04	2.18E+02	3.23E+09	-	-	-	-	-	-	2.79E+03	2.79E+03	2.79E+03 sat
Trimethylbenzene, 1,3,5-	108-67-8	1	9.11E+03	1.82E+02	3.23E+09	-	-	-	-	2.95E+04	-	-	2.95E+04	2.95E+04 sat
Trimethylethyl Lead	1762-26-1	1	1.98E+03	2.51E+04	3.23E+09	-	-	-	-	-	-	-	-	
Trimethylpentane, 2,2,4-	540-84-1	1	1.29E+03	6.10E+01	3.23E+09	-	-	-	-	-	-	-	-	
Trinitrobenzene, 1,3,5-	99-35-4	1	-	-	3.23E+09	-	-	-	-	8.85E+04	3.69E+06	-	8.64E+04	8.64E+04 nc
Trinitrotoluene, 2,4,6-	118-96-7	1	-	-	3.23E+09	6.88E+03	1.70E+05	-	6.62E+03	1.47E+03	3.65E+04	-	1.42E+03	1.42E+03 nc
Triphenylphosphine Oxide	791-28-6	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Triphenyltin	668-34-8	1	2.79E+06	-	3.23E+09	-	-	-	-	-	-	-	-	
Tripotassium phosphate	7778-53-2	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Tripropyl Lead	6618-03-7	1	2.30E+03	5.57E+02	3.23E+09	-	-	-	-	-	-	-	-	
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	1	-	-	3.23E+09	-	-	-	-	5.90E+04	4.67E+05	-	5.24E+04	5.24E+04 nc
Tris(1-chloro-2-propyl)phosphate	13674-84-5	1	-	-	3.23E+09	-	-	-	-	2.95E+04	2.34E+05	-	2.62E+04	2.62E+04 nc
Tris(2,3-dibromopropyl)phosphate	126-72-7	1	1.25E+06	4.67E+02	3.23E+09	8.98E+01	-	4.82E+03	8.81E+01	-	-	-	-	8.81E+01 ca
Tris(2-chloroethyl)phosphate	115-96-8	1	-	-	3.23E+09	1.03E+04	8.18E+04	-	9.17E+03	2.06E+04	1.64E+05	-	1.83E+04	9.17E+03 ca**
Tris(2-ethylhexyl)phosphate	78-42-2	1	-	-	3.23E+09	6.45E+04	5.11E+05	-	5.73E+04	2.95E+05	2.34E+06	-	2.62E+05	5.73E+04 ca**
Trisbutoxyethyl Phosphate	78-51-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Trisodium phosphate	7601-54-9	1	-	-	3.23E+09	-	-	-	-	1.43E+08	-	-	1.43E+08	1.43E+08 max
Trithion	786-19-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Tungsten	7440-33-7	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Uranium (Soluble Salts)	NA	1	-	-	3.23E+09	-	-	-	-	8.85E+03	-	4.72E+06	8.83E+03	8.83E+03 nc
Urea	57-13-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Urethane	51-79-6	1	-	-	3.23E+09	2.06E+02	1.64E+03	2.85E+07	1.83E+02	-	-	-	-	1.83E+02 ca
Vanadium Pentoxide	1314-62-1	1	-	-	3.23E+09	-	-	9.95E+05	9.95E+05	2.65E+04	-	8.26E+05	2.57E+04	2.57E+04 nc
Vanadium Sulfate	36907-42-3	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Vanadium and Compounds	7440-62-2	1	-	-	3.23E+09	-	-	-	-	1.49E+04	-	1.18E+07	1.48E+04	1.48E+04 nc
Vanadyl Sulfate	27774-13-6	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Vernolate	1929-77-7	1	1.70E+05	-	3.23E+09	-	-	-	-	2.95E+03	-	-	2.95E+03	2.95E+03 nc
Vinclozolin	50471-44-8	1	-	-	3.23E+09	-	-	-	-	7.37E+04	5.84E+05	-	6.55E+04	6.55E+04 nc
Vinyl Acetate	108-05-4	1	6.06E+03	2.75E+03	3.23E+09	-	-	-	-	2.95E+06	-	4.43E+04	4.36E+04	4.36E+04 sat
Vinyl Bromide	593-60-2	1	1.89E+03	3.38E+03	3.23E+09	-	-	1.51E+02	1.51E+02	-	-	2.07E+02	2.07E+02	1.51E+02 ca**
Vinyl Chloride	75-01-4	1	1.32E+03	3.92E+03	3.23E+09	2.87E+02	-	7.65E+02	2.09E+02	8.85E+03	-	4.81E+03	3.12E+03	2.09E+02 ca*
Warfarin	81-81-2	1	-	-	3.23E+09	-	-	-	-	8.85E+02	7.01E+03	-	7.86E+02	7.86E+02 nc
Xylene, P-	106-42-3	1	7.70E+03	3.89E+02	3.23E+09	-	-	-	-	5.90E+05	-	2.81E+04	2.68E+04	2.68E+04 sat
Xylene, m-	108-38-3	1	7.54E+03	3.87E+02	3.23E+09	-	-	-	-	5.90E+05	-	2.75E+04	2.63E+04	2.63E+04 sat
Xylene, o-	95-47-6	1	8.90E+03	4.34E+02	3.23E+09	-	-	-	-	5.90E+05	-	3.25E+04	3.08E+04	3.08E+04 sat

Site-specific

Outdoor Worker Screening Levels (RSL) for Soil - Modified for Utility Worker Exposure to Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS
Xylenes	1330-20-7	No	Yes	-		-		2.00E-01	U	1.00E-01	U	1	-
Ytterbium	7440-64-4	No	No	-		-		-		-		1	-
Yttrium	7440-65-5	No	No	-		-		-		-		1	-
Zinc Cyanide	557-21-1	No	No	-		-		5.00E-02	U	-		1	-
Zinc Phosphide	1314-84-7	No	No	-		-		3.00E-04	U	-		1	-
Zinc and Compounds	7440-66-6	No	No	-		-		3.00E-01	U	-		1	-
Zineb	12122-67-7	No	No	-		-		5.00E-02	U	-		1	0.1
Zirconium	7440-67-7	No	No	-		-		8.00E-05	U	-		1	-

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL HQ=1 (mg/kg)	Dermal SL HQ=1 (mg/kg)	Inhalation SL HQ=1 (mg/kg)	Noncarcinogenic SL HI=1 (mg/kg)	Screening Level (mg/kg)
Xylenes	1330-20-7	1	8.93E+03	2.58E+02	3.23E+09	-	-	-	-	5.90E+05	-	3.26E+04	3.09E+04	3.09E+04 sat
Ytterbium	7440-64-4	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Yttrium	7440-65-5	1	-	-	3.23E+09	-	-	-	-	-	-	-	-	
Zinc Cyanide	557-21-1	1	-	-	3.23E+09	-	-	-	-	1.47E+05	-	-	1.47E+05	1.47E+05 max
Zinc Phosphide	1314-84-7	1	-	-	3.23E+09	-	-	-	-	8.85E+02	-	-	8.85E+02	8.85E+02 nc
Zinc and Compounds	7440-66-6	1	-	-	3.23E+09	-	-	-	-	8.85E+05	-	-	8.85E+05	8.85E+05 max
Zineb	12122-67-7	1	-	-	3.23E+09	-	-	-	-	1.47E+05	1.17E+06	-	1.31E+05	1.31E+05 max
Zirconium	7440-67-7	1	-	-	3.23E+09	-	-	-	-	2.36E+02	-	-	2.36E+02	2.36E+02 nc

Site-specific
Recreator Equation Inputs for Soil

Variable	Value
TR (target cancer risk) unitless	0.000001
SA_{recsc} (skin surface area - child) cm^2/day	0
SA_{recsa} (skin surface area - adult) cm^2/day	2924.2
SA_{0-2} (skin surface area - mutagenic) cm^2/day	0
SA_{2-6} (skin surface area - mutagenic) cm^2/day	0
SA_{6-16} (skin surface area - mutagenic) cm^2/day	2160
SA_{16-30} (skin surface area - mutagenic) cm^2/day	3470
SA_{recsa} (skin surface area - adult) cm^2/day	2924.2
THQ (target hazard quotient) unitless	1
LT (lifetime - recreator) year	70
$IFS_{rec-adj}$ (age-adjusted soil ingestion factor) mg/kg	1307.077
$DFS_{rec-adj}$ (age-adjusted soil dermal factor) mg/kg	3735.778
$IFSM_{rec-adj}$ (mutagenic age-adjusted soil ingestion factor) mg/kg	3846.591
$DFSM_{rec-adj}$ (mutagenic age-adjusted soil dermal factor) mg/kg	5678.08
EF_{0-2} (exposure frequency) day/year	0
EF_{2-6} (exposure frequency) day/year	0
EF_{6-16} (exposure frequency) day/year	50
EF_{16-30} (exposure frequency) day/year	50
EF_{recsc} (exposure frequency - child) day/year	0
EF_{recsa} (exposure frequency - adult) day/year	50
EF_{recsa} (exposure frequency - adult) day/year	50
EF_{recs} (exposure frequency - recreator) day/year	50
IRS_{0-2} (soil intake rate) mg/day	0
IRS_{2-6} (soil intake rate) mg/day	0
IRS_{6-16} (soil intake rate) mg/day	100
IRS_{16-30} (soil intake rate) mg/day	50

IRS_{recsc} (soil intake rate - child) mg/day	0
IRS_{recsa} (soil intake rate - adult) mg/day	70.8
IRS_{recsa} (soil intake rate - adult) mg/day	70.8
ED_{0-2} (exposure duration) year	0
ED_{2-6} (exposure duration) year	0
ED_{6-16} (exposure duration) year	10
ED_{16-30} (exposure duration) year	14
ED_{recsc} (exposure duration - child) year	0
ED_{recsa} (exposure duration - adult) year	24
ED_{recsa} (exposure duration - adult) year	24
ED_{recs} (exposure duration - recreator) year	24
ET_{0-2} (exposure time) hr/day	0
ET_{2-6} (exposure time) hr/day	0
ET_{6-16} (exposure time) hr/day	2
ET_{16-30} (exposure time) hr/day	2
ET_{recsc} (exposure time - child) hr/day	0
ET_{recsa} (exposure time - adult) hr/day	2
ET_{recsa} (exposure time - adult) hr/day	2
ET_{recs} (exposure time - recreator) hr/day	2
BW_{0-2} (body weight) kg	0
BW_{2-6} (body weight) kg	0
BW_{6-16} (body weight) kg	44
BW_{16-30} (body weight) kg	80
BW_{recsc} (body weight - child) kg	0
BW_{recsa} (body weight - adult) kg	65
BW_{recsa} (body weight - adult) kg	65
AF_{0-2} (skin adherence factor) mg/cm^2	0
AF_{2-6} (skin adherence factor) mg/cm^2	0
AF_{6-16} (skin adherence factor) mg/cm^2	0.04
AF_{16-30} (skin adherence factor) mg/cm^2	0.09
AF_{recsc} (skin adherence factor - child) mg/cm^2	0
AF_{recsa} (skin adherence factor - adult) mg/cm^2	0.0692

AF_{recsa} (skin adherence factor - adult) mg/cm^2	0.0692
City (Climate Zone) PEF Selection	Philadelphia, P
A_s (acres) PEF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) PEF Selection	87.36898
PEF (particulate emission factor) m^3/kg	3232997857
A (PEF Dispersion Constant)	14.0111
B (PEF Dispersion Constant)	19.6154
C (PEF Dispersion Constant)	225.3397
V (fraction of vegetative cover) unitless	0.5
U_m (mean annual wind speed) m/s	4.29
U_t (equivalent threshold value)	11.32
F(x) (function dependant on U_m/U_t) unitless	0.0993
City (Climate Zone) VF Selection	Philadelphia, P
A_s (acres) VF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) VF Selection	87.36898
foc (fraction organic carbon in soil) g/g	0.006
ρ$_b$ (dry soil bulk density) g/cm^3	1.5
ρ$_s$ (soil particle density) g/cm^3	2.65
θ$_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15
T (exposure interval) s	950000000
A (VF Dispersion Constant)	14.0111
B (VF Dispersion Constant)	19.6154
C (VF Dispersion Constant)	225.3397

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Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
ALAR	1596-84-5	No	No	1.80E-02	U	5.10E-06	U	1.50E-01	U			1	0.1	1		
Acenaphthene	83-32-9	No	Yes					6.00E-02	U			1	0.13	1	1.94E+05	
Acenaphthylene	208-96-8	No	Yes									1	0.13	1	2.61E+05	
Acephate	30560-19-1	No	No	8.70E-03	U			4.00E-03	U			1	0.1	1		
Acetaldehyde	75-07-0	No	Yes			2.20E-06	U			9.00E-03	U	1		1	1.20E+04	1.07E+05
Acetochlor	34256-82-1	No	No					2.00E-02	U			1	0.1	1		
Acetone	67-64-1	No	Yes					9.00E-01	U	3.09E+01	U	1		1	1.88E+04	1.14E+05
Acetone Cyanohydrin	75-86-5	No	Yes							2.00E-03	U	1		1	3.28E+04	1.06E+05
Acetonitrile	75-05-8	No	Yes							6.00E-02	U	1		1	1.79E+04	1.28E+05
Acetophenone	98-86-2	No	Yes					1.00E-01	U			1		1	8.24E+04	2.52E+03
Acetylaminofluorene, 2-	53-96-3	No	No	3.80E+00	U	1.30E-03	U					1	0.1	1		
Acifluorofen	50594-66-6	No	No									1	0.1	1		
Acridine	260-94-6	No	No									1	0.1	1		
Acrolein	107-02-8	No	Yes					5.00E-04	U	2.00E-05	U	1		1	9.52E+03	2.27E+04
Acrylamide	79-06-1	Yes	No	5.00E-01	U	1.00E-04	U	2.00E-03	U	6.00E-03	U	1	0.1	1		
Acrylic Acid	79-10-7	No	Yes					5.00E-01	U	1.00E-03	U	1		1	1.31E+05	1.09E+05
Acrylonitrile	107-13-1	No	Yes	5.40E-01	U	6.80E-05	U	4.00E-02	U	2.00E-03	U	1		1	1.06E+04	1.13E+04
Adiponitrile	111-69-3	No	No							6.00E-03	U	1	0.1	1		
Alachlor	15972-60-8	No	No	5.60E-02	U			1.00E-02	U			1	0.1	1		
Aldicarb	116-06-3	No	No					1.00E-03	U			1	0.1	1		
Aldicarb Sulfone	1646-88-4	No	No					1.00E-03	U			1	0.1	1		
Aldicarb sulfoxide	1646-87-3	No	No									1	0.1	1		
Aldrin	309-00-2	No	Yes	1.70E+01	U	4.90E-03	U	3.00E-05	U			1		1	2.37E+06	
Aliphatic Chlorinated Hydrocarbons (each)	NA	No	No									1	0.1	1		
Aliphatic Chlorinated Hydrocarbons (total)	NA	No	No									1	0.1	1		
Alizarin Red Compounds	NA	No	No									1	0.1	1		
Ally	74223-64-6	No	No					2.50E-01	U			1	0.1	1		
Allyl Alcohol	107-18-6	No	Yes					5.00E-03	U	1.00E-04	U	1		1	4.71E+04	1.11E+05
Allyl Chloride	107-05-1	No	Yes	2.10E-02	U	6.00E-06	U			1.00E-03	U	1		1	2.18E+03	1.42E+03
Aluminum	7429-90-5	No	No					1.00E+00	U	5.00E-03	U	1		1		
Aluminum Phosphide	20859-73-8	No	No					4.00E-04	U			1		1		
Aluminum metaphosphate	13776-88-0	No	No					4.86E+01	U			1		1		
Amdro	67485-29-4	No	No					3.00E-04	U			1	0.1	1		
Ametryn	834-12-8	No	No					9.00E-03	U			1	0.1	1		
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	No	Yes									1		1	3.69E+05	
Aminoazobenzene, p-	60-09-3	No	No									1	0.1	1		
Aminobiphenyl, 4-	92-67-1	No	No	2.10E+01	U	6.00E-03	U					1	0.1	1		
Aminophenol, m-	591-27-5	No	No					8.00E-02	U			1	0.1	1		
Aminophenol, o-	95-55-6	No	No									1	0.1	1		
Aminophenol, p-	123-30-8	No	No					2.00E-02	U			1	0.1	1		
Aminopyridine, 4-	504-24-5	No	No									1	0.1	1		
Amitraz	33089-61-1	No	No					2.50E-03	U			1	0.1	1		
Ammonium Perchlorate	7790-98-9	No	No					7.00E-04	U			1		1		
Ammonium Sulfamate	7773-06-0	No	No					2.00E-01	U			1		1		
Ammonium polyphosphate	68333-79-9	No	No					4.86E+01	U			1		1		
Amyl Alcohol, tert-	75-85-4	No	Yes							3.00E-03	U	1		1	3.62E+04	1.37E+04
Aniline	62-53-3	No	No	5.70E-03	U	1.60E-06	U	7.00E-03	U	1.00E-03	U	1	0.1	1		
Anilinobenzothiazole	1843-21-6	No	No									1	0.1	1		
Anthracene	120-12-7	No	Yes					3.00E-01	U			1	0.13	1	7.23E+05	
Anthraquinone, 9,10-	84-65-1	No	No	4.00E-02	U			2.00E-03	U			1	0.1	1		
Antimony (metallic)	7440-36-0	No	No					4.00E-04	U			0.15		1		
Antimony Pentoxide	1314-60-9	No	No					5.00E-04	U			0.15		1		
Antimony Potassium Tartrate	11071-15-1	No	No					9.00E-04	U			0.15		1		
Antimony Tetroxide	1332-81-6	No	No					4.00E-04	U			0.15		1		
Antimony Trichloride	10025-91-9	No	No									1		1		
Antimony Trioxide	1309-64-4	No	No							2.00E-04	U	0.15		1		
Apollo	74115-24-5	No	No					1.30E-02	U			1	0.1	1		
Aramite	140-57-8	No	No	2.50E-02	U	7.10E-06	U	5.00E-02	U			1	0.1	1		
Aroclor 1016	12674-11-2	No	Yes	7.00E-02	U	2.00E-05	U	7.00E-05	U			1	0.14	1	8.07E+05	
Aroclor 1221	11104-28-2	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	1.57E+05	
Aroclor 1232	11141-16-5	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	1.54E+05	
Aroclor 1242	53469-21-9	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	1.09E+06	
Aroclor 1248	12672-29-6	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	7.08E+05	
Aroclor 1254	11097-69-1	No	Yes	2.00E+00	U	5.71E-04	U	2.00E-05	U			1	0.14	1	1.16E+06	

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
ALAR	1596-84-5	3.23E+09	1.09E+03	3.80E+03	1.62E+08	8.45E+02					1.01E+06	3.52E+06		7.82E+05	8.45E+02 ca
Acenaphthene	83-32-9	3.23E+09									4.02E+05	1.08E+06		2.93E+05	2.93E+05 max
Acenaphthylene	208-96-8	3.23E+09													
Acephate	30560-19-1	3.23E+09	2.25E+03	7.86E+03		1.75E+03					2.68E+04	9.38E+04		2.08E+04	1.75E+03 ca*
Acetaldehyde	75-07-0	3.23E+09			1.39E+03	1.39E+03							9.46E+03	9.46E+03	1.39E+03 ca**
Acetochlor	34256-82-1	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Acetone	67-64-1	3.23E+09									6.03E+06		5.10E+07	5.39E+06	5.39E+06 sat
Acetone Cyanohydrin	75-86-5	3.23E+09											5.75E+03	5.75E+03	5.75E+03 nc
Acetonitrile	75-05-8	3.23E+09											9.40E+04	9.40E+04	9.40E+04 nc
Acetophenone	98-86-2	3.23E+09									6.70E+05			6.70E+05	6.70E+05 sat
Acetylaminofluorene, 2-	53-96-3	3.23E+09	5.14E+00	1.80E+01	6.35E+05	4.00E+00									4.00E+00 ca
Acifluorofen	50594-66-6	3.23E+09													
Acridine	260-94-6	3.23E+09													
Acrolein	107-02-8	3.23E+09									3.35E+03		1.67E+01	1.66E+01	1.66E+01 nc
Acrylamide	79-06-1	3.23E+09	1.33E+01	9.00E+01	4.51E+06	1.16E+01					1.34E+04	4.69E+04	1.70E+09	1.04E+04	1.16E+01 ca
Acrylic Acid	79-10-7	3.23E+09									3.35E+06		1.15E+04	1.15E+04	1.15E+04 nc
Acrylonitrile	107-13-1	3.23E+09	3.62E+01		3.98E+01	1.90E+01					2.68E+05		1.85E+03	1.84E+03	1.90E+01 ca*
Adiponitrile	111-69-3	3.23E+09											1.70E+09	1.70E+09	1.70E+09 max
Alachlor	15972-60-8	3.23E+09	3.49E+02	1.22E+03		2.71E+02					6.70E+04	2.34E+05		5.21E+04	2.71E+02 ca
Aldicarb	116-06-3	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Aldicarb Sulfone	1646-88-4	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Aldicarb sulfoxide	1646-87-3	3.23E+09													
Aldrin	309-00-2	3.23E+09	1.15E+00		1.23E+02	1.14E+00					2.01E+02			2.01E+02	1.14E+00 ca
Aliphatic Chlorinated Hydrocarbons (each)	NA	3.23E+09													
Aliphatic Chlorinated Hydrocarbons (total)	NA	3.23E+09													
Alizarin Red Compounds	NA	3.23E+09													
Ally	74223-64-6	3.23E+09									1.68E+06	5.86E+06		1.30E+06	1.30E+06 max
Allyl Alcohol	107-18-6	3.23E+09									3.35E+04		4.12E+02	4.07E+02	4.07E+02 nc
Allyl Chloride	107-05-1	3.23E+09	9.31E+02		9.30E+01	8.45E+01							1.91E+02	1.91E+02	8.45E+01 ca**
Aluminum	7429-90-5	3.23E+09									6.70E+06		1.42E+09	6.67E+06	6.67E+06 max
Aluminum Phosphide	20859-73-8	3.23E+09									2.68E+03			2.68E+03	2.68E+03 nc
Aluminum metaphosphate	13776-88-0	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Amdro	67485-29-4	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Ametryn	834-12-8	3.23E+09									6.03E+04	2.11E+05		4.69E+04	4.69E+04 nc
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	3.23E+09													
Aminoazobenzene, p-	60-09-3	3.23E+09													
Aminobiphenyl, 4-	92-67-1	3.23E+09	9.31E-01	3.26E+00	1.38E+05	7.24E-01									7.24E-01 ca
Aminophenol, m-	591-27-5	3.23E+09									5.36E+05	1.88E+06		4.17E+05	4.17E+05 max
Aminophenol, o-	95-55-6	3.23E+09													
Aminophenol, p-	123-30-8	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Aminopyridine, 4-	504-24-5	3.23E+09													
Amitraz	33089-61-1	3.23E+09									1.68E+04	5.86E+04		1.30E+04	1.30E+04 nc
Ammonium Perchlorate	7790-98-9	3.23E+09									4.69E+03			4.69E+03	4.69E+03 nc
Ammonium Sulfamate	7773-06-0	3.23E+09									1.34E+06			1.34E+06	1.34E+06 max
Ammonium polyphosphate	68333-79-9	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Amyl Alcohol, tert-	75-85-4	3.23E+09											9.50E+03	9.50E+03	9.50E+03 nc
Aniline	62-53-3	3.23E+09	3.43E+03	1.20E+04	5.16E+08	2.67E+03					4.69E+04	1.64E+05	2.83E+08	3.65E+04	2.67E+03 ca*
Anilinobenzothiazole	1843-21-6	3.23E+09													
Anthracene	120-12-7	3.23E+09									2.01E+06	5.41E+06		1.47E+06	1.47E+06 max
Anthraquinone, 9,10-	84-65-1	3.23E+09	4.89E+02	1.71E+03		3.80E+02					1.34E+04	4.69E+04		1.04E+04	3.80E+02 ca*
Antimony (metallic)	7440-36-0	3.23E+09									2.68E+03			2.68E+03	2.68E+03 nc
Antimony Pentoxide	1314-60-9	3.23E+09									3.35E+03			3.35E+03	3.35E+03 nc
Antimony Potassium Tartrate	11071-15-1	3.23E+09									6.03E+03			6.03E+03	6.03E+03 nc
Antimony Tetroxide	1332-81-6	3.23E+09									2.68E+03			2.68E+03	2.68E+03 nc
Antimony Trichloride	10025-91-9	3.23E+09													
Antimony Trioxide	1309-64-4	3.23E+09											5.66E+07	5.66E+07	5.66E+07 max
Apollo	74115-24-5	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Aramite	140-57-8	3.23E+09	7.82E+02	2.74E+03	1.16E+08	6.08E+02					3.35E+05	1.17E+06		2.61E+05	6.08E+02 ca
Aroclor 1016	12674-11-2	3.23E+09	2.79E+02	6.98E+02	1.03E+04	1.96E+02					4.69E+02	1.17E+03		3.35E+02	1.96E+02 ca**
Aroclor 1221	11104-28-2	3.23E+09	9.77E+00	2.44E+01	7.00E+01	6.35E+00									6.35E+00 ca
Aroclor 1232	11141-16-5	3.23E+09	9.77E+00	2.44E+01	6.91E+01	6.34E+00									6.34E+00 ca
Aroclor 1242	53469-21-9	3.23E+09	9.77E+00	2.44E+01	4.89E+02	6.88E+00									6.88E+00 ca
Aroclor 1248	12672-29-6	3.23E+09	9.77E+00	2.44E+01	3.17E+02	6.83E+00									6.83E+00 ca
Aroclor 1254	11097-69-1	3.23E+09	9.77E+00	2.44E+01	5.21E+02	6.89E+00					1.34E+02	3.35E+02		9.57E+01	6.89E+00 ca*

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Aroclor 1260	11096-82-5	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	1.82E+06	
Aroclor 5460	11126-42-4	No	Yes					6.00E-04	U			1	0.14	1	9.89E+05	
Arsenic Salts	NA	No	No									1	0.03	0.6		
Arsenic, Inorganic	7440-38-2	No	No	1.50E+00	U	4.30E-03	U	3.00E-04	U	1.50E-05	U	1	0.03	0.6		
Arsine	7784-42-1	No	No					3.50E-06	U	5.00E-05	U	1		1		
Assure	76578-14-8	No	No					9.00E-03	U			1	0.1	1		
Asulam	3337-71-1	No	No					5.00E-02	U			1	0.1	1		
Atrazine	1912-24-9	No	No	2.30E-01	U			3.50E-02	U			1	0.1	1		
Auramine	492-80-8	No	No	8.80E-01	U	2.50E-04	U					1	0.1	1		
Avermectin B1	65195-55-3	No	No					4.00E-04	U			1	0.1	1		
Azobenzene	103-33-3	No	Yes	1.10E-01	U	3.10E-05	U					1		1	7.21E+05	
Azodicarbonamide	123-77-3	No	No					1.00E+00	U	7.00E-06	U	1	0.1	1		
Barium	7440-39-3	No	No					2.00E-01	U	5.00E-04	U	0.07		1		
Barium Chromate	10294-40-3	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025		1		
Barium Cyanide	542-62-1	No	No									0.07		1		
Baygon	114-26-1	No	No					4.00E-03	U			1	0.1	1		
Bayleton	43121-43-3	No	No					3.00E-02	U			1	0.1	1		
Baythroid	68359-37-5	No	No					2.50E-02	U			1	0.1	1		
Benefin	1861-40-1	No	Yes					3.00E-01	U			1		1	4.23E+05	
Benomyl	17804-35-2	No	No					5.00E-02	U			1	0.1	1		
Bentazon	25057-89-0	No	No					3.00E-02	U			1	0.1	1		
Benz[a]anthracene	56-55-3	Yes	Yes	7.30E-01	U	1.10E-04	U					1	0.13	1	6.09E+06	
Benzaldehyde	100-52-7	No	Yes					1.00E-01	U			1		1	3.10E+04	1.16E+03
Benzene	71-43-2	No	Yes	5.50E-02	U	7.80E-06	U	4.00E-03	U	3.00E-02	U	1		1	4.88E+03	1.82E+03
Benzene, Ethyldimethyl	29224-55-3	No	Yes									1		1	1.26E+04	1.31E+02
Benzene, Ethylmethyl	25550-14-5	No	Yes									1		1	1.30E+04	3.30E+02
Benzene, Methylpropenyl	768-00-3	No	Yes									1		1	1.58E+04	4.90E+02
Benzene, Methylpropyl	28729-54-6	No	No									1	0.1	1		
Benzene, Trimethyl	25551-13-7	No	Yes									1		1	9.03E+03	1.82E+02
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	No	No	1.00E-01	U			3.00E-04	U			1	0.1	1		
Benzenethiol	108-98-5	No	Yes					1.00E-03	U			1		1	2.67E+04	1.26E+03
Benzidine	92-87-5	Yes	No	2.30E+02	U	6.70E-02	U	3.00E-03	U			1	0.1	1		
Benzo(j)fluoranthene	205-82-3	No	No	1.20E+00	U	1.10E-04	U					1	0.13	1		
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	U	1.10E-03	U					1	0.13	1		
Benzo[b]fluoranthene	205-99-2	Yes	No	7.30E-01	U	1.10E-04	U					1	0.13	1		
Benzo[g,h,i]perylene	191-24-2	No	No									1	0.13	1		
Benzo[k]fluoranthene	207-08-9	Yes	No	7.30E-02	U	1.10E-04	U					1	0.13	1		
Benzofluoranthenes, total	NA	No	No									1	0.1	1		
Benzofluorene, 2,3-	243-17-4	No	No									1	0.1	1		
Benzoic Acid	65-85-0	No	No					4.00E+00	U			1	0.1	1		
Benzoic acid, 3,5-dichloro-	51-36-5	No	No									1	0.1	1		
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3	No	No									1	0.1	1		
Benzothiazole	95-16-9	No	No									1	0.1	1		
Benzotrichloride	98-07-7	No	Yes	1.30E+01	U							1		1	9.33E+04	3.23E+02
Benzyl Alcohol	100-51-6	No	No					1.00E-01	U			1	0.1	1		
Benzyl Chloride	100-44-7	No	Yes	1.70E-01	U	4.90E-05	U	2.00E-03	U	1.00E-03	U	1		1	3.52E+04	1.46E+03
Beryllium and compounds	7440-41-7	No	No			2.40E-03	U	2.00E-03	U	2.00E-05	U	0.007		1		
Bidrin	141-66-2	No	No					1.00E-04	U			1	0.1	1		
Bifenox	42576-02-3	No	No					9.00E-03	U			1	0.1	1		
Biphenthrin	82657-04-3	No	No					1.50E-02	U			1	0.1	1		
Biphenyl, 1,1'-	92-52-4	No	Yes	8.00E-03	U			5.00E-01	U	4.00E-04	U	1		1	1.57E+05	
Bis(2-chloro-1-methylethyl) ether	108-60-1	No	Yes	7.00E-02	U	1.00E-05	U	4.00E-02	U			1		1	4.83E+04	1.02E+03
Bis(2-chloroethoxy)methane	111-91-1	No	No					3.00E-03	U			1	0.1	1		
Bis(2-chloroethyl)ether	111-44-4	No	Yes	1.10E+00	U	3.30E-04	U					1		1	5.87E+04	5.05E+03
Bis(2-ethylhexyl)phthalate	117-81-7	No	No	1.40E-02	U	2.40E-06	U	2.00E-02	U			1	0.1	1		
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	No	Yes									1		1	8.48E+04	
Bis(chloromethyl)ether	542-88-1	No	Yes	2.20E+02	U	6.20E-02	U					1		1	2.59E+03	4.22E+03
Bis(oleoyloxy)dibutyl tin	13323-62-1	No	Yes									1		1	2.64E+06	
Bisphenol A	80-05-7	No	No					5.00E-02	U			1	0.1	1		
Boron And Borates Only	7440-42-8	No	No					2.00E-01	U	2.00E-02	U	1		1		
Boron Trichloride	10294-34-5	No	Yes					2.00E+00	U	2.00E-02	U	1		1		
Boron Trifluoride	7637-07-2	No	Yes					4.00E-02	U	1.30E-02	U	1		1		
Bromacil	314-40-9	No	No									1	0.1	1		
Bromate	15541-45-4	No	No	7.00E-01	U			4.00E-03	U			1		1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Aroclor 1260	11096-82-5	3.23E+09	9.77E+00	2.44E+01	8.13E+02	6.92E+00									6.92E+00 ca
Aroclor 5460	11126-42-4	3.23E+09									4.02E+03	1.00E+04		2.87E+03	2.87E+03 nc
Arsenic Salts	NA	3.23E+09													
Arsenic, Inorganic	7440-38-2	3.23E+09	2.17E+01	1.52E+02	1.92E+05	1.90E+01					3.35E+03	2.34E+04	4.25E+06	2.93E+03	1.90E+01 ca
Arsine	7784-42-1	3.23E+09									2.35E+01		1.42E+07	2.35E+01	2.35E+01 nc
Assure	76578-14-8	3.23E+09									6.03E+04	2.11E+05		4.69E+04	4.69E+04 nc
Asulam	3337-71-1	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Atrazine	1912-24-9	3.23E+09	8.50E+01	2.97E+02		6.61E+01					2.35E+05	8.21E+05		1.82E+05	6.61E+01 ca
Auramine	492-80-8	3.23E+09	2.22E+01	7.77E+01	3.30E+06	1.73E+01									1.73E+01 ca
Avermectin B1	65195-55-3	3.23E+09									2.68E+03	9.38E+03		2.08E+03	2.08E+03 nc
Azobenzene	103-33-3	3.23E+09	1.78E+02		5.94E+03	1.73E+02									1.73E+02 ca
Azodicarbonamide	123-77-3	3.23E+09									6.70E+06	2.34E+07	1.98E+06	1.44E+06	1.44E+06 max
Barium	7440-39-3	3.23E+09									1.34E+06		1.42E+08	1.33E+06	1.33E+06 max
Barium Chromate	10294-40-3	3.23E+09	1.33E+01		3.00E+03	1.32E+01					1.34E+05		5.66E+07	1.34E+05	1.32E+01 ca
Barium Cyanide	542-62-1	3.23E+09													
Baygon	114-26-1	3.23E+09									2.68E+04	9.38E+04		2.08E+04	2.08E+04 nc
Bayleton	43121-43-3	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Baythroid	68359-37-5	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Benefin	1861-40-1	3.23E+09									2.01E+06			2.01E+06	2.01E+06 max
Benomyl	17804-35-2	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Bentazon	25057-89-0	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Benz[a]anthracene	56-55-3	3.23E+09	9.10E+00	4.74E+01	7.70E+03	7.63E+00									7.63E+00 ca
Benzaldehyde	100-52-7	3.23E+09									6.70E+05			6.70E+05	6.70E+05 sat
Benzene	71-43-2	3.23E+09	3.55E+02		1.60E+02	1.10E+02					2.68E+04		1.28E+04	8.67E+03	1.10E+02 ca*
Benzene, Ethyldimethyl	29224-55-3	3.23E+09													
Benzene, Ethylmethyl	25550-14-5	3.23E+09													
Benzene, Methylpropenyl	768-00-3	3.23E+09													
Benzene, Methylpropyl	28729-54-6	3.23E+09													
Benzene, Trimethyl	25551-13-7	3.23E+09													
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	3.23E+09	1.95E+02	6.84E+02		1.52E+02					2.01E+03	7.03E+03		1.56E+03	1.52E+02 ca*
Benzenethiol	108-98-5	3.23E+09									6.70E+03			6.70E+03	6.70E+03 sat
Benzidine	92-87-5	3.23E+09	2.89E-02	1.96E-01	6.72E+03	2.52E-02					2.01E+04	7.03E+04		1.56E+04	2.52E-02 ca
Benzo(j)fluoranthene	205-82-3	3.23E+09	1.63E+01	4.38E+01	7.51E+06	1.19E+01									1.19E+01 ca
Benzo[a]pyrene	50-32-8	3.23E+09	9.10E-01	4.74E+00	4.10E+05	7.63E-01									7.63E-01 ca
Benzo[b]fluoranthene	205-99-2	3.23E+09	9.10E+00	4.74E+01	4.10E+06	7.63E+00									7.63E+00 ca
Benzo[g,h,i]perylene	191-24-2	3.23E+09													
Benzo[k]fluoranthene	207-08-9	3.23E+09	9.10E+01	4.74E+02	4.10E+06	7.63E+01									7.63E+01 ca
Benzofluoranthenes, total	NA	3.23E+09													
Benzofluorene, 2,3-	243-17-4	3.23E+09													
Benzoic Acid	65-85-0	3.23E+09									2.68E+07	9.38E+07		2.08E+07	2.08E+07 max
Benzoic acid, 3,5-dichloro-	51-36-5	3.23E+09													
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3	3.23E+09													
Benzothiazole	95-16-9	3.23E+09													
Benzotrichloride	98-07-7	3.23E+09	1.50E+00			1.50E+00									1.50E+00 ca
Benzyl Alcohol	100-51-6	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Benzyl Chloride	100-44-7	3.23E+09	1.15E+02		1.83E+02	7.07E+01					1.34E+04		3.08E+03	2.51E+03	7.07E+01 ca*
Beryllium and compounds	7440-41-7	3.23E+09			3.44E+05	3.44E+05					1.34E+04		5.66E+06	1.34E+04	1.34E+04 nc
Bidrin	141-66-2	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Bifenox	42576-02-3	3.23E+09									6.03E+04	2.11E+05		4.69E+04	4.69E+04 nc
Biphenthrin	82657-04-3	3.23E+09									1.01E+05	3.52E+05		7.82E+04	7.82E+04 nc
Biphenyl, 1,1'-	92-52-4	3.23E+09	2.44E+03			2.44E+03					3.35E+06		5.50E+03	5.49E+03	2.44E+03 ca**
Bis(2-chloro-1-methylethyl) ether	108-60-1	3.23E+09	2.79E+02		1.23E+03	2.28E+02					2.68E+05			2.68E+05	2.28E+02 ca
Bis(2-chloroethoxy)methane	111-91-1	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Bis(2-chloroethyl)ether	111-44-4	3.23E+09	1.78E+01		4.54E+01	1.28E+01									1.28E+01 ca
Bis(2-ethylhexyl)phthalate	117-81-7	3.23E+09	1.40E+03	4.89E+03	3.44E+08	1.09E+03					1.34E+05	4.69E+05		1.04E+05	1.09E+03 ca*
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	3.23E+09													
Bis(chloromethyl)ether	542-88-1	3.23E+09	8.89E-02		1.07E-02	9.53E-03									9.53E-03 ca
Bis(oleoyloxy)dibutyl tin	13323-62-1	3.23E+09													
Bisphenol A	80-05-7	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Boron And Borates Only	7440-42-8	3.23E+09									1.34E+06		5.66E+09	1.34E+06	1.34E+06 max
Boron Trichloride	10294-34-5	3.23E+09									1.34E+07		5.66E+09	1.34E+07	1.34E+07 max
Boron Trifluoride	7637-07-2	3.23E+09									2.68E+05		3.68E+09	2.68E+05	2.68E+05 max
Bromacil	314-40-9	3.23E+09													
Bromate	15541-45-4	3.23E+09	2.79E+01			2.79E+01					2.68E+04			2.68E+04	2.79E+01 ca

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Bromine	7726-95-6	No	Yes									1		1		
Bromo-2-chloroethane, 1-	107-04-0	No	Yes	2.00E+00	U	6.00E-04	U					1		1	8.17E+03	2.38E+03
Bromo-3-fluorobenzene, 1-	1073-06-9	No	Yes									1		1	9.79E+03	9.07E+02
Bromo-4-Ethylbenzene, 1-	1585-07-5	No	Yes									1		1	1.96E+04	2.06E+02
Bromoacetic acid	79-08-3	No	No									1	0.1	1		
Bromoacetophenone, 3-	2142-63-4	No	No									1	0.1	1		
Bromobenzene	108-86-1	No	Yes					8.00E-03	U	6.00E-02	U	1		1	1.15E+04	6.79E+02
Bromochloromethane	74-97-5	No	Yes							4.00E-02	U	1		1	4.94E+03	4.03E+03
Bromodichloromethane	75-27-4	No	Yes	6.20E-02	U	3.70E-05	U	2.00E-02	U			1		1	5.47E+03	9.31E+02
Bromodiphenyl Ether, p-	101-55-3	No	Yes									1		1	2.57E+05	1.06E+02
Bromofluorobenzene, p-	460-00-4	No	Yes									1		1	9.95E+03	1.06E+03
Bromoform	75-25-2	No	Yes	7.90E-03	U	1.10E-06	U	2.00E-02	U			1		1	1.34E+04	9.14E+02
Bromomethane	74-83-9	No	Yes					1.40E-03	U	5.00E-03	U	1		1	1.93E+03	3.59E+03
Bromophenol, p-	106-41-2	No	No									1	0.1	1		
Bromophenyl-phenyl phthalate, 4-	NA	No	No									1	0.1	1		
Bromophos	2104-96-3	No	Yes					5.00E-03	U			1		1	1.71E+05	
Bromopyridine, 2-	109-04-6	No	No									1	0.1	1		
Bromotrichloromethane	75-62-7	No	Yes									1		1	1.80E+04	4.25E+02
Bromoxynil	1689-84-5	No	No					2.00E-02	U			1	0.1	1		
Bromoxynil Octanoate	1689-99-2	No	Yes					2.00E-02	U			1		1	6.55E+05	
Butadiene, 1,3-	106-99-0	No	Yes	3.40E+00	U	3.00E-05	U			2.00E-03	U	1		1	1.20E+03	6.67E+02
Butanediol, 2,3-	513-85-9	No	No									1	0.1	1		
Butanol	35296-72-1	No	Yes									1		1	4.02E+04	1.47E+04
Butanol, N-	71-36-3	No	Yes					1.00E-01	U			1		1	4.13E+04	7.64E+03
Butanone-2, 4-chloro-4,4-difluoro	NA	No	No									1	0.1	1		
Butyl Alcohol, t-	75-65-0	No	Yes									1		1	3.96E+04	
Butyl Benzyl Phthlate	85-68-7	No	No	1.90E-03	U			2.00E-01	U			1	0.1	1		
Butyl Formate, tert-	762-75-4	No	Yes									1		1	6.00E+03	2.99E+03
Butyl alcohol, sec-	78-92-2	No	Yes					2.00E+00	U	3.00E+01	U	1		1	4.03E+04	2.13E+04
Butylacetate	123-86-4	No	Yes									1		1	1.18E+04	1.79E+03
Butylate	2008-41-5	No	Yes					5.00E-02	U			1		1	1.19E+05	
Butylated hydroxyanisole	25013-16-5	No	No	2.00E-04	U	5.70E-08	U					1	0.1	1		
Butylated hydroxytoluene	128-37-0	No	No	3.60E-03	U			3.00E-01	U			1	0.1	1		
Butylbenzene, n-	104-51-8	No	Yes					5.00E-02	U			1		1	1.12E+04	1.07E+02
Butylbenzene, sec-	135-98-8	No	Yes					1.00E-01	U			1		1	1.01E+04	1.45E+02
Butylbenzene, tert-	98-06-6	No	Yes					1.00E-01	U			1		1	1.01E+04	1.83E+02
Butylchloride, t-	507-20-0	No	Yes									1		1	2.34E+03	1.33E+03
Butylphthalyl Butylglycolate	85-70-1	No	No					1.00E+00	U			1	0.1	1		
Butyltin	NA	No	No									1	0.1	1		
Cacodylic Acid	75-60-5	No	No					2.00E-02	U			1	0.1	1		
Cadmium (Diet)	7440-43-9	No	No			1.80E-03	U	1.00E-03	U	1.00E-05	U	0.025	0.001	1		
Calcium	7440-70-2	No	No									1		1		
Calcium Chlorate	10137-74-3	No	No									1		1		
Calcium Chromate	13765-19-0	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025		1		
Calcium Cyanide	592-01-8	No	No					1.00E-03	U			1		1		
Calcium pyrophosphate	7790-76-3	No	No					4.86E+01	U			1		1		
Caprolactam	105-60-2	No	No					5.00E-01	U	2.20E-03	U	1	0.1	1		
Captafol	2425-06-1	No	No	1.50E-01	U	4.30E-05	U	2.00E-03	U			1	0.1	1		
Captan	133-06-2	No	No	2.30E-03	U	6.60E-07	U	1.30E-01	U			1	0.1	1		
Carbaryl	63-25-2	No	No					1.00E-01	U			1	0.1	1		
Carbazole	86-74-8	No	No									1	0.1	1		
Carbofuran	1563-66-2	No	No					5.00E-03	U			1	0.1	1		
Carbon Disulfide	75-15-0	No	Yes					1.00E-01	U	7.00E-01	U	1		1	1.61E+03	7.38E+02
Carbon Tetrachloride	56-23-5	No	Yes	7.00E-02	U	6.00E-06	U	4.00E-03	U	1.00E-01	U	1		1	2.06E+03	4.58E+02
Carbosulfan	55285-14-8	No	No					1.00E-02	U			1	0.1	1		
Carboxin	5234-68-4	No	No					1.00E-01	U			1	0.1	1		
Catechol	120-80-9	No	No									1	0.1	1		
Ceric oxide	1306-38-3	No	No							9.00E-04	U	1		1		
Cerium, Stable	7440-45-1	No	No									1		1		
Chloral	75-87-6	No	Yes									1		1	2.14E+05	3.39E+03
Chloral Hydrate	302-17-0	No	Yes					1.00E-01	U			1		1	2.02E+05	
Chloramben	133-90-4	No	No					1.50E-02	U			1	0.1	1		
Chloramine	127-65-1	No	No									1		1		
Chloranil	118-75-2	No	No	4.03E-01	U							1	0.1	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Bromine	7726-95-6	3.23E+09													
Bromo-2-chloroethane, 1-	107-04-0	3.23E+09	9.77E+00		3.48E+00	2.57E+00									2.57E+00 ca
Bromo-3-fluorobenzene, 1-	1073-06-9	3.23E+09													
Bromo-4-Ethylbenzene, 1-	1585-07-5	3.23E+09													
Bromoacetic acid	79-08-3	3.23E+09													
Bromoacetophenone, 3-	2142-63-4	3.23E+09													
Bromobenzene	108-86-1	3.23E+09									5.36E+04		6.07E+04	2.85E+04	2.85E+04 sat
Bromochloromethane	74-97-5	3.23E+09											1.73E+04	1.73E+04	1.73E+04 sat
Bromodichloromethane	75-27-4	3.23E+09	3.15E+02		3.77E+01	3.37E+01					1.34E+05			1.34E+05	3.37E+01 ca
Bromodiphenyl Ether, p-	101-55-3	3.23E+09													
Bromofluorobenzene, p-	460-00-4	3.23E+09													
Bromoform	75-25-2	3.23E+09	2.47E+03		3.11E+03	1.38E+03					1.34E+05			1.34E+05	1.38E+03 sat
Bromomethane	74-83-9	3.23E+09									9.38E+03		8.47E+02	7.76E+02	7.76E+02 nc
Bromophenol, p-	106-41-2	3.23E+09													
Bromophenyl-phenyl phthalate, 4-	NA	3.23E+09													
Bromophos	2104-96-3	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Bromopyridine, 2-	109-04-6	3.23E+09													
Bromotrichloromethane	75-62-7	3.23E+09													
Bromoxynil	1689-84-5	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Bromoxynil Octanoate	1689-99-2	3.23E+09									1.34E+05			1.34E+05	1.34E+05 max
Butadiene, 1,3-	106-99-0	3.23E+09	5.75E+00		1.02E+01	3.68E+00							2.10E+02	2.10E+02	3.68E+00 ca*
Butanediol, 2,3-	513-85-9	3.23E+09													
Butanol	35296-72-1	3.23E+09													
Butanol, N-	71-36-3	3.23E+09									6.70E+05			6.70E+05	6.70E+05 sat
Butanone-2, 4-chloro-4,4-difluoro	NA	3.23E+09													
Butyl Alcohol, t-	75-65-0	3.23E+09													
Butyl Benzyl Phthlate	85-68-7	3.23E+09	1.03E+04	3.60E+04		8.00E+03					1.34E+06	4.69E+06		1.04E+06	8.00E+03 ca
Butyl Formate, tert-	762-75-4	3.23E+09													
Butyl alcohol, sec-	78-92-2	3.23E+09									1.34E+07		1.06E+08	1.19E+07	1.19E+07 sat
Butylacetate	123-86-4	3.23E+09													
Butylate	2008-41-5	3.23E+09									3.35E+05			3.35E+05	3.35E+05 max
Butylated hydroxyanisole	25013-16-5	3.23E+09	9.77E+04	3.42E+05	1.45E+10	7.60E+04									7.60E+04 ca
Butylated hydroxytoluene	128-37-0	3.23E+09	5.43E+03	1.90E+04		4.22E+03					2.01E+06	7.03E+06		1.56E+06	4.22E+03 ca
Butylbenzene, n-	104-51-8	3.23E+09									3.35E+05			3.35E+05	3.35E+05 sat
Butylbenzene, sec-	135-98-8	3.23E+09									6.70E+05			6.70E+05	6.70E+05 sat
Butylbenzene, tert-	98-06-6	3.23E+09									6.70E+05			6.70E+05	6.70E+05 sat
Butylchloride, t-	507-20-0	3.23E+09													
Butylphthalyl Butylglycolate	85-70-1	3.23E+09									6.70E+06	2.34E+07		5.21E+06	5.21E+06 max
Butyltin	NA	3.23E+09													
Cacodylic Acid	75-60-5	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Cadmium (Diet)	7440-43-9	3.23E+09			4.59E+05	4.59E+05					6.70E+03	5.86E+04	2.83E+06	6.00E+03	6.00E+03 nc
Calcium	7440-70-2	3.23E+09													
Calcium Chlorate	10137-74-3	3.23E+09													
Calcium Chromate	13765-19-0	3.23E+09	1.33E+01		3.00E+03	1.32E+01					1.34E+05		5.66E+07	1.34E+05	1.32E+01 ca
Calcium Cyanide	592-01-8	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Calcium pyrophosphate	7790-76-3	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Caprolactam	105-60-2	3.23E+09									3.35E+06	1.17E+07	6.23E+08	2.60E+06	2.60E+06 max
Captafol	2425-06-1	3.23E+09	1.30E+02	4.56E+02	1.92E+07	1.01E+02					1.34E+04	4.69E+04		1.04E+04	1.01E+02 ca
Captan	133-06-2	3.23E+09	8.50E+03	2.97E+04	1.25E+09	6.61E+03					8.71E+05	3.05E+06		6.78E+05	6.61E+03 ca
Carbaryl	63-25-2	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Carbazole	86-74-8	3.23E+09													
Carbofuran	1563-66-2	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Carbon Disulfide	75-15-0	3.23E+09									6.70E+05		9.89E+04	8.61E+04	8.61E+04 sat
Carbon Tetrachloride	56-23-5	3.23E+09	2.79E+02		8.78E+01	6.68E+01					2.68E+04		1.81E+04	1.08E+04	6.68E+01 ca
Carbosulfan	55285-14-8	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Carboxin	5234-68-4	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Catechol	120-80-9	3.23E+09													
Ceric oxide	1306-38-3	3.23E+09											2.55E+08	2.55E+08	2.55E+08 max
Cerium, Stable	7440-45-1	3.23E+09													
Chloral	75-87-6	3.23E+09													
Chloral Hydrate	302-17-0	3.23E+09									6.70E+05			6.70E+05	6.70E+05 max
Chloramben	133-90-4	3.23E+09									1.01E+05	3.52E+05		7.82E+04	7.82E+04 nc
Chloramine	127-65-1	3.23E+09													
Chloranil	118-75-2	3.23E+09	4.85E+01	1.70E+02		3.77E+01									3.77E+01 ca

Site-specific

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Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Chlorate (ClO3) as	14866-68-3	No	No									1		1		
Chlordane	12789-03-6	No	Yes	3.50E-01	U	1.00E-04	U	5.00E-04	U	7.00E-04	U	1	0.04	1	1.49E+06	
Chlordane (alpha)	5103-71-9	No	Yes									1		1	2.05E+06	
Chlordane (gamma)	5103-74-2	No	Yes									1		1	2.05E+06	
Chlordecone (Kepone)	143-50-0	No	No	1.00E+01	U	4.60E-03	U	3.00E-04	U			1	0.1	1		
Chlorfenvinphos	470-90-6	No	No					7.00E-04	U			1	0.1	1		
Chloride	16887-00-6	No	No									1		1		
Chlorimuron, Ethyl-	90982-32-4	No	No					2.00E-02	U			1	0.1	1		
Chlorinated Hydrocarbons (total)	NA	No	No									1	0.1	1		
Chlorine	7782-50-5	No	Yes					1.00E-01	U	1.45E-04	U	1		1	1.69E+03	2.78E+03
Chlorine Dioxide	10049-04-4	No	Yes					3.00E-02	U	2.00E-04	U	1		1		
Chlorite	14998-27-7	No	No									1		1		
Chlorite (Sodium Salt)	7758-19-2	No	No					3.00E-02	U			1		1		
Chloro-1,1-difluoroethane, 1-	75-68-3	No	Yes							5.00E+01	U	1		1	1.42E+03	1.14E+03
Chloro-1,3-butadiene, 2-	126-99-8	No	Yes			3.00E-04	U	2.00E-02	U	2.00E-02	U	1		1	1.49E+03	7.51E+02
Chloro-2-methylaniline HCl, 4-	3165-93-3	No	No	4.60E-01	U							1	0.1	1		
Chloro-2-methylaniline, 4-	95-69-2	No	No	1.00E-01	U	7.70E-05	U	3.00E-03	U			1	0.1	1		
Chloro-2-methylphenol, 4-	1570-64-5	No	No									1	0.1	1		
Chloro-4-methylphenol	35421-08-0	No	No									1	0.1	1		
Chloro-6-fluorophenol, 2-	2040-90-6	No	No									1	0.1	1		
Chloroacetaldehyde, 2-	107-20-0	No	Yes	2.70E-01	U							1		1	2.56E+04	2.83E+04
Chloroacetamide	79-07-2	No	No									1	0.1	1		
Chloroacetic Acid	79-11-8	No	No					2.00E-03	U			1	0.1	1		
Chloroacetophenone, 2-	532-27-4	No	No							3.00E-05	U	1	0.1	1		
Chloroaniline	27134-26-5	No	No									1	0.1	1		
Chloroaniline, 3-	108-42-9	No	No									1	0.1	1		
Chloroaniline, p-	106-47-8	No	No	2.00E-01	U			4.00E-03	U			1	0.1	1		
Chlorobenzene	108-90-7	No	Yes					2.00E-02	U	5.00E-02	U	1		1	8.90E+03	7.61E+02
Chlorobenzene sulfonic acid, p-	98-66-8	No	No									1	0.1	1		
Chlorobenzenes (total)	NA	No	No									1	0.1	1		
Chlorobenzilate	510-15-6	No	No	1.10E-01	U	3.10E-05	U	2.00E-02	U			1	0.1	1		
Chlorobenzoic Acid, p-	74-11-3	No	No					3.00E-02	U			1	0.1	1		
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	No	Yes									1		1	2.14E+05	9.07E+01
Chlorobenzotrifluoride, 4-	98-56-6	No	Yes					3.00E-03	U	3.00E-01	U	1		1	9.33E+03	1.17E+02
Chlorobiphenyl, p-	2051-62-9	No	Yes									1		1	1.78E+05	
Chlorobutane, 1-	109-69-3	No	Yes					4.00E-02	U			1		1	2.42E+03	7.29E+02
Chlorobutane, 2-	78-86-4	No	Yes									1		1	2.01E+03	6.51E+02
Chlorocyclopentadiene	41851-50-7	No	Yes									1		1	2.60E+03	9.88E+02
Chlorodibromoethane	73506-94-2	No	No									1	0.1	1		
Chlorodifluoromethane	75-45-6	No	Yes							5.00E+01	U	1		1	1.30E+03	1.68E+03
Chloroethanol, 2-	107-07-3	No	Yes					2.00E-02	U			1		1	1.08E+05	1.11E+05
Chloroethylvinyl ether, 2-	110-75-8	No	Yes									1		1	2.21E+03	1.64E+03
Chloroform	67-66-3	No	Yes	3.10E-02	U	2.30E-05	U	1.00E-02	U	9.77E-02	U	1		1	3.62E+03	2.54E+03
Chloromethane	74-87-3	No	Yes							9.00E-02	U	1		1	1.62E+03	1.32E+03
Chloromethyl Methyl Ether	107-30-2	No	Yes	2.40E+00	U	6.90E-04	U					1		1	7.35E+03	2.58E+04
Chloronaphthalene, Beta-	91-58-7	No	Yes					8.00E-02	U			1	0.13	1	1.10E+05	
Chloronaphthalene, alpha-	90-13-1	No	Yes									1		1	1.05E+05	2.66E+02
Chloronitrobenzene, o-	88-73-3	No	No	3.00E-01	U			3.00E-03	U	1.00E-05	U	1	0.1	1		
Chloronitrobenzene, p-	100-00-5	No	No	6.30E-03	U			1.00E-03	U	6.00E-04	U	1	0.1	1		
Chlorophenol, 2-	95-57-8	No	Yes					5.00E-03	U			1		1	1.71E+05	2.19E+04
Chlorophenol, 3-	108-43-0	No	No									1	0.1	1		
Chlorophenol, 4-	106-48-9	No	No									1	0.1	1		
Chlorophenols (each)	NA	No	No									1	0.1	1		
Chlorophenols (total)	NA	No	No									1	0.1	1		
Chlorophenyl Methyl Sulfide, p-	123-09-1	No	Yes									1		1	6.97E+04	2.73E+02
Chlorophenyl Methyl Sulfoxide	934-73-6	No	No									1	0.1	1		
Chlorophenyl phenyl ether, 4-	7005-72-3	No	Yes									1		1	1.83E+05	
Chloropicrin	76-06-2	No	Yes							4.00E-04	U	1		1	6.46E+03	6.17E+02
Chloropropane, 2-	75-29-6	No	Yes									1		1	1.79E+03	1.32E+03
Chlorothalonil	1897-45-6	No	No	3.10E-03	U	8.90E-07	U	1.50E-02	U			1	0.1	1		
Chlorotoluene, o-	95-49-8	No	Yes					2.00E-02	U			1		1	1.12E+04	9.07E+02
Chlorotoluene, p-	106-43-4	No	Yes					2.00E-02	U			1		1	1.01E+04	2.53E+02
Chlorozotocin	54749-90-5	No	No	2.40E+02	U	6.90E-02	U					1	0.1	1		
Chlorpropham	101-21-3	No	No					2.00E-01	U			1	0.1	1		

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Chlorate (ClO3) as	14866-68-3	3.23E+09													
Chlordane	12789-03-6	3.23E+09	5.58E+01	4.89E+02	3.81E+03	4.95E+01					3.35E+03	2.93E+04	9.15E+04	2.91E+03	4.95E+01 ca*
Chlordane (alpha)	5103-71-9	3.23E+09													
Chlordane (gamma)	5103-74-2	3.23E+09													
Chlordecone (Kepone)	143-50-0	3.23E+09	1.95E+00	6.84E+00	1.80E+05	1.52E+00					2.01E+03	7.03E+03		1.56E+03	1.52E+00 ca
Chlorfenvinphos	470-90-6	3.23E+09									4.69E+03	1.64E+04		3.65E+03	3.65E+03 nc
Chloride	16887-00-6	3.23E+09													
Chlorimuron, Ethyl-	90982-32-4	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Chlorinated Hydrocarbons (total)	NA	3.23E+09													
Chlorine	7782-50-5	3.23E+09									6.70E+05		2.14E+01	2.14E+01	2.14E+01 nc
Chlorine Dioxide	10049-04-4	3.23E+09									2.01E+05		5.66E+07	2.00E+05	2.00E+05 max
Chlorite	14998-27-7	3.23E+09													
Chlorite (Sodium Salt)	7758-19-2	3.23E+09									2.01E+05			2.01E+05	2.01E+05 max
Chloro-1,1-difluoroethane, 1-	75-68-3	3.23E+09											6.21E+06	6.21E+06	6.21E+06 sat
Chloro-1,3-butadiene, 2-	126-99-8	3.23E+09			1.27E+00	1.27E+00					1.34E+05		2.61E+03	2.56E+03	1.27E+00 ca
Chloro-2-methylaniline HCl, 4-	3165-93-3	3.23E+09	4.25E+01	1.49E+02		3.30E+01									3.30E+01 ca
Chloro-2-methylaniline, 4-	95-69-2	3.23E+09	1.95E+02	6.84E+02	1.07E+07	1.52E+02					2.01E+04	7.03E+04		1.56E+04	1.52E+02 ca
Chloro-2-methylphenol, 4-	1570-64-5	3.23E+09													
Chloro-4-methylphenol	35421-08-0	3.23E+09													
Chloro-6-fluorophenol, 2-	2040-90-6	3.23E+09													
Chloroacetaldehyde, 2-	107-20-0	3.23E+09	7.24E+01			7.24E+01									7.24E+01 ca
Chloroacetamide	79-07-2	3.23E+09													
Chloroacetic Acid	79-11-8	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Chloroacetophenone, 2-	532-27-4	3.23E+09											8.50E+06	8.50E+06	8.50E+06 max
Chloroaniline	27134-26-5	3.23E+09													
Chloroaniline, 3-	108-42-9	3.23E+09													
Chloroaniline, p-	106-47-8	3.23E+09	9.77E+01	3.42E+02		7.60E+01					2.68E+04	9.38E+04		2.08E+04	7.60E+01 ca
Chlorobenzene	108-90-7	3.23E+09									1.34E+05		3.90E+04	3.02E+04	3.02E+04 sat
Chlorobenzene sulfonic acid, p-	98-66-8	3.23E+09													
Chlorobenzenes (total)	NA	3.23E+09													
Chlorobenzilate	510-15-6	3.23E+09	1.78E+02	6.22E+02	2.66E+07	1.38E+02					1.34E+05	4.69E+05		1.04E+05	1.38E+02 ca
Chlorobenzoic Acid, p-	74-11-3	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	3.23E+09													
Chlorobenzotrifluoride, 4-	98-56-6	3.23E+09									2.01E+04		2.45E+05	1.86E+04	1.86E+04 sat
Chlorobiphenyl, p-	2051-62-9	3.23E+09													
Chlorobutane, 1-	109-69-3	3.23E+09									2.68E+05			2.68E+05	2.68E+05 sat
Chlorobutane, 2-	78-86-4	3.23E+09													
Chlorocyclopentadiene	41851-50-7	3.23E+09													
Chlorodibromoethane	73506-94-2	3.23E+09													
Chlorodifluoromethane	75-45-6	3.23E+09											5.68E+06	5.68E+06	5.68E+06 sat
Chloroethanol, 2-	107-07-3	3.23E+09									1.34E+05			1.34E+05	1.34E+05 sat
Chloroethylvinyl ether, 2-	110-75-8	3.23E+09													
Chloroform	67-66-3	3.23E+09	6.31E+02		4.03E+01	3.79E+01					6.70E+04		3.10E+04	2.12E+04	3.79E+01 ca
Chloromethane	74-87-3	3.23E+09											1.28E+04	1.28E+04	1.28E+04 sat
Chloromethyl Methyl Ether	107-30-2	3.23E+09	8.14E+00		2.72E+00	2.04E+00									2.04E+00 ca
Chloronaphthalene, Beta-	91-58-7	3.23E+09									5.36E+05	1.44E+06		3.91E+05	3.91E+05 max
Chloronaphthalene, alpha-	90-13-1	3.23E+09													
Chloronitrobenzene, o-	88-73-3	3.23E+09	6.52E+01	2.28E+02		5.07E+01					2.01E+04	7.03E+04	2.83E+06	1.56E+04	5.07E+01 ca
Chloronitrobenzene, p-	100-00-5	3.23E+09	3.10E+03	1.09E+04		2.41E+03					6.70E+03	2.34E+04	1.70E+08	5.21E+03	2.41E+03 ca**
Chlorophenol, 2-	95-57-8	3.23E+09									3.35E+04			3.35E+04	3.35E+04 sat
Chlorophenol, 3-	108-43-0	3.23E+09													
Chlorophenol, 4-	106-48-9	3.23E+09													
Chlorophenols (each)	NA	3.23E+09													
Chlorophenols (total)	NA	3.23E+09													
Chlorophenyl Methyl Sulfide, p-	123-09-1	3.23E+09													
Chlorophenyl Methyl Sulfoxide	934-73-6	3.23E+09													
Chlorophenyl phenyl ether, 4-	7005-72-3	3.23E+09													
Chloropicrin	76-06-2	3.23E+09											2.26E+02	2.26E+02	2.26E+02 nc
Chloropropane, 2-	75-29-6	3.23E+09													
Chlorothalonil	1897-45-6	3.23E+09	6.31E+03	2.21E+04	9.28E+08	4.90E+03					1.01E+05	3.52E+05		7.82E+04	4.90E+03 ca*
Chlorotoluene, o-	95-49-8	3.23E+09									1.34E+05			1.34E+05	1.34E+05 sat
Chlorotoluene, p-	106-43-4	3.23E+09									1.34E+05			1.34E+05	1.34E+05 sat
Chlorozotocin	54749-90-5	3.23E+09	8.14E-02	2.85E-01	1.20E+04	6.33E-02									6.33E-02 ca
Chlorpropham	101-21-3	3.23E+09									1.34E+06	4.69E+06		1.04E+06	1.04E+06 max

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Chlorpyrifos	2921-88-2	No	No					1.00E-03	U			1	0.1	1		
Chlorpyrifos Methyl	5598-13-0	No	No					1.00E-02	U			1	0.1	1		
Chlorsulfuron	64902-72-3	No	No					5.00E-02	U			1	0.1	1		
Chlorthiophos	60238-56-4	No	No					8.00E-04	U			1	0.1	1		
Chromium(III), Insoluble Salts	16065-83-1	No	No					1.50E+00	U			0.013		1		
Chromium(VI)	18540-29-9	Yes	No	5.00E-01	U	8.40E-02	U	3.00E-03	U	1.00E-04	U	0.025		1		
Chromium, Total	7440-47-3	No	No									0.013		1		
Chrysene	218-01-9	Yes	No	7.30E-03	U	1.10E-05	U					1	0.13	1		
Cobalt	7440-48-4	No	No			9.00E-03	U	3.00E-04	U	6.00E-06	U	1		1		
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	No	No									1	0.1	1		
Copper	7440-50-8	No	No					4.00E-02	U			1		1		
Copper Cyanide	544-92-3	No	No					5.00E-03	U			1		1		
Coronene	191-07-1	No	No									1	0.13	1		
Creosote	8001-58-9	No	No									1	0.1	1		
Cresol, m-	108-39-4	No	No					5.00E-02	U	6.00E-01	U	1	0.1	1		
Cresol, o-	95-48-7	No	No					5.00E-02	U	6.00E-01	U	1	0.1	1		
Cresol, p-	106-44-5	No	No					1.00E-01	U	6.00E-01	U	1	0.1	1		
Cresol, p-chloro-m-	59-50-7	No	No					1.00E-01	U			1	0.1	1		
Cresols	1319-77-3	No	No					1.00E-01	U	6.00E-01	U	1	0.1	1		
Crotonaldehyde	4170-30-3	No	Yes									1		1	2.61E+04	2.00E+04
Crotonaldehyde, trans-	123-73-9	No	Yes	1.90E+00	U			1.00E-03	U			1		1	2.61E+04	1.66E+04
Cumene	98-82-8	No	Yes					1.00E-01	U	4.00E-01	U	1		1	8.56E+03	2.68E+02
Cupferron	135-20-6	No	No	2.20E-01	U	6.30E-05	U					1	0.1	1		
Cyanazine	21725-46-2	No	No	8.40E-01	U			2.00E-03	U			1	0.1	1		
Cyanide (CN-)	57-12-5	No	Yes					6.00E-04	U	8.00E-04	U	1		1	6.42E+04	1.00E+07
Cyanide (total complex)	NA	No	No									1		1		
Cyanogen	460-19-5	No	Yes					1.00E-03	U			1		1		
Cyanogen Bromide	506-68-3	No	Yes					9.00E-02	U			1		1		
Cyanogen Chloride	506-77-4	No	Yes					5.00E-02	U			1		1		
Cyclohexane	110-82-7	No	Yes							6.00E+00	U	1		1	1.44E+03	1.18E+02
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	No	No	2.30E-02	U							1	0.1	1		
Cyclohexanone	108-94-1	No	Yes					5.00E+00	U	7.00E-01	U	1		1	5.75E+04	5.11E+03
Cyclohexene	110-83-8	No	Yes					5.00E-03	U	1.00E+00	U	1		1	2.02E+03	2.83E+02
Cyclohexylamine	108-91-8	No	Yes					2.00E-01	U			1		1	1.03E+05	2.93E+05
Cyclopentadiene	542-92-7	No	Yes									1		1	2.05E+03	1.34E+03
Cyhalothrin/karate	68085-85-8	No	No					5.00E-03	U			1	0.1	1		
Cypermethrin	52315-07-8	No	No					1.00E-02	U			1	0.1	1		
Cyromazine	66215-27-8	No	No					7.50E-03	U			1	0.1	1		
DDD	72-54-8	No	No	2.40E-01	U	6.90E-05	U					1	0.1	1		
DDD, o,p'-	53-19-0	No	No									1	0.1	1		
DDE, p,p'-	72-55-9	No	Yes	3.40E-01	U	9.70E-05	U					1		1	2.91E+06	
DDT	50-29-3	No	No	3.40E-01	U	9.70E-05	U	5.00E-04	U			1	0.03	1		
DDT, o,p'-	789-02-6	No	No									1	0.1	1		
DDT/DDE/DDD (total)	NA	No	No									1	0.1	1		
Dacthal	1861-32-1	No	No					1.00E-02	U			1	0.1	1		
Dalapon	75-99-0	No	No					3.00E-02	U			1	0.1	1		
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	No	No	7.00E-04	U			7.00E-03	U			1	0.1	1		
Decane	124-18-5	No	Yes									1		1	1.56E+03	2.53E+00
Decanol, n-	112-30-1	No	Yes									1		1	8.71E+04	3.19E+01
Deltamethrin	52918-63-5	No	No									1	0.1	1		
Demeton	8065-48-3	No	No					4.00E-05	U			1	0.1	1		
Di(2-ethylhexyl)adipate	103-23-1	No	No	1.20E-03	U			6.00E-01	U			1	0.1	1		
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	No	Yes									1		1	1.29E+05	
Di-n-butyltin bis(methyl maleate)	15546-11-9	No	No									1	0.1	1		
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	No	No									1	0.1	1		
Di-n-butyltin dilaurate	77-58-7	No	Yes									1		1	4.40E+05	
Di-n-butyltin distearate	5847-55-2	No	Yes									1		1	2.33E+06	
Di-n-hexylphthalate	84-75-3	No	Yes									1		1	1.33E+06	3.85E+00
Diallate	2303-16-4	No	No	6.10E-02	U							1	0.1	1		
Diammonium phosphate	7783-28-0	No	No					4.86E+01	U			1		1		
Diazinon	333-41-5	No	No					7.00E-04	U			1	0.1	1		
Dibenz[a,h]anthracene	53-70-3	Yes	No	7.30E+00	U	1.20E-03	U					1	0.13	1		
Dibenzo(a,e)pyrene	192-65-4	No	No	1.20E+01	U	1.10E-03	U					1	0.13	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Chlorpyrifos	2921-88-2	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Chlorpyrifos Methyl	5598-13-0	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Chlorsulfuron	64902-72-3	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Chlorthiophos	60238-56-4	3.23E+09									5.36E+03	1.88E+04		4.17E+03	4.17E+03 nc
Chromium(III), Insoluble Salts	16065-83-1	3.23E+09									1.01E+07			1.01E+07	1.01E+07 max
Chromium(VI)	18540-29-9	3.23E+09	1.33E+01		5.36E+03	1.33E+01					2.01E+04		2.83E+07	2.01E+04	1.33E+01 ca
Chromium, Total	7440-47-3	3.23E+09													
Chrysene	218-01-9	3.23E+09	9.10E+02	4.74E+03	4.10E+07	7.63E+02									7.63E+02 ca
Cobalt	7440-48-4	3.23E+09			9.18E+04	9.18E+04					2.01E+03		1.70E+06	2.01E+03	2.01E+03 nc
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	3.23E+09													
Copper	7440-50-8	3.23E+09									2.68E+05			2.68E+05	2.68E+05 max
Copper Cyanide	544-92-3	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Coronene	191-07-1	3.23E+09													
Creosote	8001-58-9	3.23E+09													
Cresol, m-	108-39-4	3.23E+09									3.35E+05	1.17E+06	1.70E+11	2.61E+05	2.61E+05 max
Cresol, o-	95-48-7	3.23E+09									3.35E+05	1.17E+06	1.70E+11	2.61E+05	2.61E+05 max
Cresol, p-	106-44-5	3.23E+09									6.70E+05	2.34E+06	1.70E+11	5.21E+05	5.21E+05 max
Cresol, p-chloro-m-	59-50-7	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Cresols	1319-77-3	3.23E+09									6.70E+05	2.34E+06	1.70E+11	5.21E+05	5.21E+05 max
Crotonaldehyde	4170-30-3	3.23E+09													
Crotonaldehyde, trans-	123-73-9	3.23E+09	1.03E+01			1.03E+01					6.70E+03			6.70E+03	1.03E+01 ca
Cumene	98-82-8	3.23E+09									6.70E+05		3.00E+05	2.07E+05	2.07E+05 sat
Cupferron	135-20-6	3.23E+09	8.89E+01	3.11E+02	1.31E+07	6.91E+01									6.91E+01 ca
Cyanazine	21725-46-2	3.23E+09	2.33E+01	8.14E+01		1.81E+01					1.34E+04	4.69E+04		1.04E+04	1.81E+01 ca
Cyanide (CN-)	57-12-5	3.23E+09									4.02E+03		4.50E+03	2.12E+03	2.12E+03 nc
Cyanide (total complex)	NA	3.23E+09													
Cyanogen	460-19-5	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Cyanogen Bromide	506-68-3	3.23E+09									6.03E+05			6.03E+05	6.03E+05 max
Cyanogen Chloride	506-77-4	3.23E+09									3.35E+05			3.35E+05	3.35E+05 max
Cyclohexane	110-82-7	3.23E+09											7.56E+05	7.56E+05	7.56E+05 sat
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	3.23E+09	8.50E+02	2.97E+03		6.61E+02									6.61E+02 ca
Cyclohexanone	108-94-1	3.23E+09									3.35E+07		3.53E+06	3.19E+06	3.19E+06 sat
Cyclohexene	110-83-8	3.23E+09									3.35E+04		1.77E+05	2.82E+04	2.82E+04 sat
Cyclohexylamine	108-91-8	3.23E+09									1.34E+06			1.34E+06	1.34E+06 sat
Cyclopentadiene	542-92-7	3.23E+09													
Cyhalothrin/karate	68085-85-8	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Cypermethrin	52315-07-8	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Cyromazine	66215-27-8	3.23E+09									5.03E+04	1.76E+05		3.91E+04	3.91E+04 nc
DDD	72-54-8	3.23E+09	8.14E+01	2.85E+02	1.20E+07	6.33E+01									6.33E+01 ca
DDD, o,p'-	53-19-0	3.23E+09													
DDE, p,p'-	72-55-9	3.23E+09	5.75E+01		7.65E+03	5.71E+01									5.71E+01 ca
DDT	50-29-3	3.23E+09	5.75E+01	6.71E+02	8.52E+06	5.30E+01					3.35E+03	3.91E+04		3.09E+03	5.30E+01 ca*
DDT, o,p'-	789-02-6	3.23E+09													
DDT/DDE/DDD (total)	NA	3.23E+09													
Dacthal	1861-32-1	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Dalapon	75-99-0	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'-(BDE-209)	1163-19-5	3.23E+09	2.79E+04	9.77E+04		2.17E+04					4.69E+04	1.64E+05		3.65E+04	2.17E+04 ca**
Decane	124-18-5	3.23E+09													
Decanol, n-	112-30-1	3.23E+09													
Deltamethrin	52918-63-5	3.23E+09													
Demeton	8065-48-3	3.23E+09									2.68E+02	9.38E+02		2.08E+02	2.08E+02 nc
Di(2-ethylhexyl)adipate	103-23-1	3.23E+09	1.63E+04	5.70E+04		1.27E+04					4.02E+06	1.41E+07		3.13E+06	1.27E+04 ca
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	3.23E+09													
Di-n-butyltin bis(methyl maleate)	15546-11-9	3.23E+09													
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	3.23E+09													
Di-n-butyltin dilaurate	77-58-7	3.23E+09													
Di-n-butyltin distearate	5847-55-2	3.23E+09													
Di-n-hexylphthalate	84-75-3	3.23E+09													
Diallate	2303-16-4	3.23E+09	3.20E+02	1.12E+03		2.49E+02									2.49E+02 ca
Diammonium phosphate	7783-28-0	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Diazinon	333-41-5	3.23E+09									4.69E+03	1.64E+04		3.65E+03	3.65E+03 nc
Dibenz[a,h]anthracene	53-70-3	3.23E+09	9.10E-01	4.74E+00	3.75E+05	7.63E-01									7.63E-01 ca
Dibenzo(a,e)pyrene	192-65-4	3.23E+09	1.63E+00	4.38E+00	7.51E+05	1.19E+00									1.19E+00 ca

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Dibenzofuran	132-64-9	No	Yes					1.00E-03	U			1	0.03	1	2.70E+05	
Dibenzothiophene	132-65-0	No	Yes					1.00E-02	U			1		1	7.24E+05	
Dibromo-3-chloropropane, 1,2-	96-12-8	Yes	Yes	8.00E-01	U	6.00E-03	U	2.00E-04	U	2.00E-04	U	1		1	4.42E+04	9.80E+02
Dibromoacetic acid	631-64-1	No	No									1	0.1	1		
Dibromobenzene, 1,3-	108-36-1	No	Yes					4.00E-04	U			1		1	2.66E+04	1.59E+02
Dibromobenzene, 1,4-	106-37-6	No	Yes					1.00E-02	U			1		1	3.03E+04	
Dibromochloromethane	124-48-1	No	Yes	8.40E-02	U	2.70E-05	U	2.00E-02	U			1		1	1.10E+04	8.02E+02
Dibromodichloromethane	594-18-3	No	Yes									1		1	3.20E+04	
Dibromodiphenyl Ether, p,p'-	2050-47-7	No	Yes									1		1	5.22E+05	
Dibromoethane, 1,2-	106-93-4	No	Yes	2.00E+00	U	6.00E-04	U	9.00E-03	U	9.00E-03	U	1		1	1.19E+04	1.34E+03
Dibromomethane (Methylene Bromide)	74-95-3	No	Yes					1.00E-02	U	4.00E-03	U	1		1	7.79E+03	2.82E+03
Dibutoxy di-n-butyltin	3349-36-8	No	Yes									1		1	8.25E+04	
Dibutyl Phthalate	84-74-2	No	No					1.00E-01	U			1	0.1	1		
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	No	No									1	0.1	1		
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	No	Yes									1		1	3.40E+06	
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	No	No									1	0.1	1		
Dibutylbis(palmitoyloxy)stannane	13323-63-2	No	Yes									1		1	1.20E+06	
Dibutyltin Compounds	NA	No	No					3.00E-04	U			1	0.1	1		
Dibutyltin diacetate	1067-33-0	No	Yes									1		1	1.75E+04	1.86E+00
Dibutyltin dichloride	683-18-1	No	Yes									1		1	3.93E+04	
Dibutyltin oxide	818-08-6	No	Yes									1		1		
Dicalcium phosphate	7757-93-9	No	No					4.86E+01	U			1		1		
Dicamba	1918-00-9	No	No					3.00E-02	U			1	0.1	1		
Dichloro-2-butene, 1,4-	764-41-0	No	Yes			4.20E-03	U					1		1	1.54E+04	5.20E+02
Dichloro-2-butene, cis-1,4-	1476-11-5	No	Yes			4.20E-03	U					1		1	1.54E+04	5.20E+02
Dichloro-2-butene, trans-1,4-	110-57-6	No	Yes			4.20E-03	U					1		1	1.54E+04	7.63E+02
Dichloroacetic Acid	79-43-6	No	No	5.00E-02	U			4.00E-03	U			1	0.1	1		
Dichloroaniline, 2,4-	554-00-7	No	No									1	0.1	1		
Dichloroaniline, 3,4-	95-76-1	No	Yes									1		1	1.39E+05	
Dichlorobenzene	25321-22-6	No	Yes									1		1	1.61E+04	1.93E+02
Dichlorobenzene, 1,2-	95-50-1	No	Yes					9.00E-02	U	2.00E-01	U	1		1	1.61E+04	3.76E+02
Dichlorobenzene, 1,3-	541-73-1	No	Yes									1		1	1.37E+04	2.96E+02
Dichlorobenzene, 1,4-	106-46-7	No	Yes	5.40E-03	U	1.10E-05	U	7.00E-02	U	8.00E-01	U	1		1	1.44E+04	
Dichlorobenzidine, 3,3'-	91-94-1	No	No	4.50E-01	U	3.40E-04	U					1	0.1	1		
Dichlorobenzoic acid, -3,5	51-36-5	No	No									1	0.1	1		
Dichlorobenzophenone, 4,4'-	90-98-2	No	No					9.00E-03	U			1	0.1	1		
Dichlorobenzotrifluoride, 3,4-	328-84-7	No	Yes									1		1	1.59E+04	4.57E+01
Dichlorodifluoromethane	75-71-8	No	Yes					2.00E-01	U	1.00E-01	U	1		1	1.16E+03	8.44E+02
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	No	Yes									1		1	1.81E+04	2.35E+02
Dichloroethane, 1,1-	75-34-3	No	Yes	5.70E-03	U	1.60E-06	U	2.00E-01	U			1		1	2.87E+03	1.69E+03
Dichloroethane, 1,2-	107-06-2	No	Yes	9.10E-02	U	2.60E-05	U	6.00E-03	U	7.00E-03	U	1		1	6.31E+03	2.98E+03
Dichloroethylene, 1,1-	75-35-4	No	Yes					5.00E-02	U	2.00E-01	U	1		1	1.59E+03	1.19E+03
Dichloroethylene, 1,2-cis-	156-59-2	No	Yes					2.00E-03	U			1		1	3.45E+03	2.37E+03
Dichloroethylene, 1,2-trans-	156-60-5	No	Yes					2.00E-02	U			1		1	3.46E+03	1.67E+03
Dichlorophenol, 2,3-	576-24-9	No	No									1	0.1	1		
Dichlorophenol, 2,4-	120-83-2	No	No					3.00E-03	U			1	0.1	1		
Dichlorophenol, 2,5-	583-78-8	Yes	No									1	0.1	1		
Dichlorophenol, 2,6-	87-65-0	No	No									1	0.1	1		
Dichlorophenol, 3,4-	95-77-2	No	No									1	0.1	1		
Dichlorophenols (total)	NA	No	No									1	0.1	1		
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	No	No					1.00E-02	U			1	0.05	1		
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	No	No					8.00E-03	U			1	0.1	1		
Dichloropropane, 1,2-	78-87-5	No	Yes	3.60E-02	U	1.00E-05	U	9.00E-02	U	4.00E-03	U	1		1	5.23E+03	1.36E+03
Dichloropropane, 1,3-	142-28-9	No	Yes					2.00E-02	U			1		1	9.33E+03	1.49E+03
Dichloropropane, 2,2-	594-20-7	No	Yes									1		1	2.21E+03	5.27E+02
Dichloropropanol, 2,3-	616-23-9	No	No					3.00E-03	U			1	0.1	1		
Dichloropropene, 1,3-	542-75-6	No	Yes	1.00E-01	U	4.00E-06	U	3.00E-02	U	2.00E-02	U	1		1	4.91E+03	1.57E+03
Dichloropropene, 2,3-	78-88-6	No	Yes									1		1	4.27E+03	1.07E+03
Dichloropropene, cis-1,3-	10061-01-5	No	Yes									1		1	4.90E+03	1.22E+03
Dichloropropene, trans-1,3-	10061-02-6	No	Yes									1		1	4.91E+03	1.57E+03
Dichlorvos	62-73-7	No	No	2.90E-01	U	8.30E-05	U	5.00E-04	U	5.00E-04	U	1	0.1	1		
Diclofop-methyl	51338-27-3	No	No									1	0.1	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Dibenzofuran	132-64-9	3.23E+09									6.70E+03	7.82E+04		6.17E+03	6.17E+03 nc
Dibenzothiophene	132-65-0	3.23E+09									6.70E+04			6.70E+04	6.70E+04 nc
Dibromo-3-chloropropane, 1,2-	96-12-8	3.23E+09	8.30E+00		1.03E+00	9.13E-01					1.34E+03		7.74E+02	4.91E+02	9.13E-01 ca
Dibromoacetic acid	631-64-1	3.23E+09													
Dibromobenzene, 1,3-	108-36-1	3.23E+09									2.68E+03			2.68E+03	2.68E+03 sat
Dibromobenzene, 1,4-	106-37-6	3.23E+09									6.70E+04			6.70E+04	6.70E+04 nc
Dibromochloromethane	124-48-1	3.23E+09	2.33E+02		1.04E+02	7.18E+01					1.34E+05			1.34E+05	7.18E+01 ca
Dibromodichloromethane	594-18-3	3.23E+09													
Dibromodiphenyl Ether, p,p'-	2050-47-7	3.23E+09													
Dibromoethane, 1,2-	106-93-4	3.23E+09	9.77E+00		5.08E+00	3.34E+00					6.03E+04		9.40E+03	8.13E+03	3.34E+00 ca
Dibromomethane (Methylene Bromide)	74-95-3	3.23E+09									6.70E+04		2.73E+03	2.62E+03	2.62E+03 nc
Dibutoxy di-n-butyltin	3349-36-8	3.23E+09													
Dibutyl Phthalate	84-74-2	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	3.23E+09													
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	3.23E+09													
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	3.23E+09													
Dibutylbis(palmitoyloxy)stannane	13323-63-2	3.23E+09													
Dibutyltin Compounds	NA	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Dibutyltin diacetate	1067-33-0	3.23E+09													
Dibutyltin dichloride	683-18-1	3.23E+09													
Dibutyltin oxide	818-08-6	3.23E+09													
Dicalcium phosphate	7757-93-9	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Dicamba	1918-00-9	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Dichloro-2-butene, 1,4-	764-41-0	3.23E+09			9.35E-01	9.35E-01									9.35E-01 ca
Dichloro-2-butene, cis-1,4-	1476-11-5	3.23E+09			9.35E-01	9.35E-01									9.35E-01 ca
Dichloro-2-butene, trans-1,4-	110-57-6	3.23E+09			9.36E-01	9.36E-01									9.36E-01 ca
Dichloroacetic Acid	79-43-6	3.23E+09	3.91E+02	1.37E+03		3.04E+02					2.68E+04	9.38E+04		2.08E+04	3.04E+02 ca*
Dichloroaniline, 2,4-	554-00-7	3.23E+09													
Dichloroaniline, 3,4-	95-76-1	3.23E+09													
Dichlorobenzene	25321-22-6	3.23E+09													
Dichlorobenzene, 1,2-	95-50-1	3.23E+09									6.03E+05		2.82E+05	1.92E+05	1.92E+05 sat
Dichlorobenzene, 1,3-	541-73-1	3.23E+09													
Dichlorobenzene, 1,4-	106-46-7	3.23E+09	3.62E+03		3.35E+02	3.06E+02					4.69E+05		1.01E+06	3.20E+05	3.06E+02 ca
Dichlorobenzidine, 3,3'-	91-94-1	3.23E+09	4.34E+01	1.52E+02	2.43E+06	3.38E+01									3.38E+01 ca
Dichlorobenzoic acid, -3,5	51-36-5	3.23E+09													
Dichlorobenzophenone, 4,4'-	90-98-2	3.23E+09									6.03E+04	2.11E+05		4.69E+04	4.69E+04 nc
Dichlorobenzotrifluoride, 3,4-	328-84-7	3.23E+09													
Dichlorodifluoromethane	75-71-8	3.23E+09									1.34E+06		1.02E+04	1.01E+04	1.01E+04 sat
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	3.23E+09													
Dichloroethane, 1,1-	75-34-3	3.23E+09	3.43E+03		4.59E+02	4.05E+02					1.34E+06			1.34E+06	4.05E+02 ca
Dichloroethane, 1,2-	107-06-2	3.23E+09	2.15E+02		6.20E+01	4.81E+01					4.02E+04		3.87E+03	3.53E+03	4.81E+01 ca*
Dichloroethylene, 1,1-	75-35-4	3.23E+09									3.35E+05		2.79E+04	2.58E+04	2.58E+04 sat
Dichloroethylene, 1,2-cis-	156-59-2	3.23E+09									1.34E+04			1.34E+04	1.34E+04 sat
Dichloroethylene, 1,2-trans-	156-60-5	3.23E+09									1.34E+05			1.34E+05	1.34E+05 sat
Dichlorophenol, 2,3-	576-24-9	3.23E+09													
Dichlorophenol, 2,4-	120-83-2	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Dichlorophenol, 2,5-	583-78-8	3.23E+09													
Dichlorophenol, 2,6-	87-65-0	3.23E+09													
Dichlorophenol, 3,4-	95-77-2	3.23E+09													
Dichlorophenols (total)	NA	3.23E+09													
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	3.23E+09									6.70E+04	4.69E+05		5.86E+04	5.86E+04 nc
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	3.23E+09									5.36E+04	1.88E+05		4.17E+04	4.17E+04 nc
Dichloropropane, 1,2-	78-87-5	3.23E+09	5.43E+02		1.34E+02	1.07E+02					6.03E+05		1.83E+03	1.83E+03	1.07E+02 ca*
Dichloropropane, 1,3-	142-28-9	3.23E+09									1.34E+05			1.34E+05	1.34E+05 sat
Dichloropropane, 2,2-	594-20-7	3.23E+09													
Dichloropropanol, 2,3-	616-23-9	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Dichloropropene, 1,3-	542-75-6	3.23E+09	1.95E+02		3.13E+02	1.20E+02					2.01E+05		8.59E+03	8.24E+03	1.20E+02 ca*
Dichloropropene, 2,3-	78-88-6	3.23E+09													
Dichloropropene, cis-1,3-	10061-01-5	3.23E+09													
Dichloropropene, trans-1,3-	10061-02-6	3.23E+09													
Dichlorvos	62-73-7	3.23E+09	6.74E+01	2.36E+02	9.95E+06	5.24E+01					3.35E+03	1.17E+04	1.42E+08	2.61E+03	5.24E+01 ca*
Diclofop-methyl	51338-27-3	3.23E+09													

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Dicofol	115-32-2	No	No									1	0.1	1		
Dicyclohexylamine	101-83-7	No	Yes									1		1	8.62E+04	2.16E+03
Dicyclopentadiene	77-73-6	No	Yes					8.00E-02	U	3.00E-04	U	1		1	5.67E+03	
Didecyl dimethyl ammonium chloride	7173-51-5	No	No									1	0.1	1		
Dieldrin	60-57-1	No	No	1.60E+01	U	4.60E-03	U	5.00E-05	U			1	0.1	1		
Diepoxybutane	1464-53-5	No	Yes									1		1	2.02E+05	1.15E+05
Diethanolamine	111-42-2	No	No					2.00E-03	U	2.00E-04	U	1	0.1	1		
Diethyl Phthalate	84-66-2	No	No					8.00E-01	U			1	0.1	1		
Diethyl sulfate	64-67-5	No	No									1	0.1	1		
Diethyl-p-nitrophenylphosphate	311-45-5	No	No									1	0.1	1		
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	No	No									1	0.1	1		
Diethylene Glycol Monobutyl Ether	112-34-5	No	No					3.00E-02	U	1.00E-04	U	1	0.1	1		
Diethylene Glycol Monoethyl Ether	111-90-0	No	No					6.00E-02	U	3.00E-04	U	1	0.1	1		
Diethylene-glycol	111-46-6	No	No									1	0.1	1		
Diethylformamide	617-84-5	No	Yes					1.00E-03	U			1		1	1.91E+05	1.12E+05
Diethylphosphorodithioate	298-06-6	No	Yes									1		1	1.79E+04	2.15E-02
Diethylstilbestrol	56-53-1	No	No	3.50E+02	U	1.00E-01	U					1	0.1	1		
Difenzoquat	43222-48-6	No	No					8.00E-02	U			1	0.1	1		
Diflubenzuron	35367-38-5	No	No					2.00E-02	U			1	0.1	1		
Difluoroethane, 1,1-	75-37-6	No	Yes							4.00E+01	U	1		1	1.59E+03	1.43E+03
Difluoropropane, 2,2-	420-45-1	No	Yes									1		1	1.01E+03	4.63E+04
Dihydrosafrole	94-58-6	No	Yes	4.40E-02	U	1.30E-05	U					1		1	2.08E+03	
Diisopropyl Ether	108-20-3	No	Yes							7.00E-01	U	1		1	4.21E+03	2.26E+03
Diisopropyl Methylphosphonate	1445-75-6	No	Yes					8.00E-02	U			1		1	5.26E+04	5.30E+02
Dimagnesium phosphate	7782-75-4	No	No					4.86E+01	U			1		1		
Dimethipin	55290-64-7	No	No					2.00E-02	U			1	0.1	1		
Dimethoate	60-51-5	No	No					2.00E-04	U			1	0.1	1		
Dimethoxybenzidine, 3,3'-	119-90-4	No	No	1.60E+00	U							1	0.1	1		
Dimethyl Sulfate	77-78-1	No	No									1	0.1	1		
Dimethyl Sulfide	75-18-3	No	Yes									1		1	4.10E+03	5.34E+03
Dimethyl methylphosphonate	756-79-6	No	No	1.70E-03	U			6.00E-02	U			1	0.1	1		
Dimethylamino azobenzene [p-]	60-11-7	No	No	4.60E+00	U	1.30E-03	U					1	0.1	1		
Dimethylaniline HCl, 2,4-	21436-96-4	No	No	5.80E-01	U							1	0.1	1		
Dimethylaniline, 2,4-	95-68-1	No	No	2.00E-01	U			2.00E-03	U			1	0.1	1		
Dimethylaniline, N,N-	121-69-7	No	Yes					2.00E-03	U			1		1	4.32E+04	8.30E+02
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	2.50E+02	U	7.10E-02	U					1	0.13	1		
Dimethylbenzidine, 3,3'-	119-93-7	No	No	1.10E+01	U							1	0.1	1		
Dimethylcyclohexylamine, n,n-	98-94-2	No	Yes									1		1	5.23E+04	
Dimethylethyl Lead	107584-40-7	No	No									1	0.1	1		
Dimethylformamide	68-12-2	No	Yes					1.00E-01	U	3.00E-02	U	1		1	1.76E+05	1.06E+05
Dimethylhydrazine, 1,1-	57-14-7	No	Yes					1.00E-04	U	2.00E-06	U	1		1	2.23E+05	1.72E+05
Dimethylhydrazine, 1,2-	540-73-8	No	Yes	5.50E+02	U	1.60E-01	U					1		1	2.31E+05	1.89E+05
Dimethylmercury	593-74-8	No	Yes									1		1	5.88E+03	4.14E+03
Dimethylphenethylamine	122-09-8	No	No									1	0.1	1		
Dimethylphenol, 2,4-	105-67-9	No	No					2.00E-02	U			1	0.1	1		
Dimethylphenol, 2,6-	576-26-1	No	No					6.00E-04	U			1	0.1	1		
Dimethylphenol, 3,4-	95-65-8	No	No					1.00E-03	U			1	0.1	1		
Dimethylphthalate	131-11-3	No	No									1	0.1	1		
Dimethylterephthalate	120-61-6	No	Yes					1.00E-01	U			1		1	2.95E+04	
Dimethylvinylchloride	513-37-1	No	Yes	4.50E-02	U	1.30E-05	U					1		1	1.39E+03	1.09E+03
Dinitro-o-cresol, 4,6-	534-52-1	No	No					8.00E-05	U			1	0.1	1		
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	No	No					2.00E-03	U			1	0.1	1		
Dinitroaniline, 3,5-	618-87-1	No	No									1	0.1	1		
Dinitrobenzene, 1,2-	528-29-0	No	No					1.00E-04	U			1	0.1	1		
Dinitrobenzene, 1,3-	99-65-0	No	No					1.00E-04	U			1	0.1	1		
Dinitrobenzene, 1,4-	100-25-4	No	No					1.00E-04	U			1	0.1	1		
Dinitrophenol, 2,4-	51-28-5	No	No					2.00E-03	U			1	0.1	1		
Dinitrophenols	25550-58-7	Yes	No									1	0.1	1		
Dinitrosopentamethylenetetramine, N,N-	101-25-7	No	No									1	0.1	1		
Dinitrotoluene Mixture, 2,4/2,6-	NA	No	No	6.80E-01	U							1	0.1	1		
Dinitrotoluene, 2,4-	121-14-2	No	No	3.10E-01	U	8.90E-05	U	2.00E-03	U			1	0.102	1		
Dinitrotoluene, 2,6-	606-20-2	No	No	1.50E+00	U			3.00E-04	U			1	0.099	1		
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	No	No					2.00E-03	U			1	0.006	1		
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	No	No					2.00E-03	U			1	0.009	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Dicofol	115-32-2	3.23E+09													
Dicyclohexylamine	101-83-7	3.23E+09													
Dicyclopentadiene	77-73-6	3.23E+09									5.36E+05		1.49E+02	1.49E+02	1.49E+02 nc
Didecyl dimethyl ammonium chloride	7173-51-5	3.23E+09													
Dieldrin	60-57-1	3.23E+09	1.22E+00	4.27E+00	1.80E+05	9.50E-01					3.35E+02	1.17E+03		2.61E+02	9.50E-01 ca
Diepoxybutane	1464-53-5	3.23E+09													
Diethanolamine	111-42-2	3.23E+09									1.34E+04	4.69E+04	5.66E+07	1.04E+04	1.04E+04 nc
Diethyl Phthalate	84-66-2	3.23E+09									5.36E+06	1.88E+07		4.17E+06	4.17E+06 max
Diethyl sulfate	64-67-5	3.23E+09													
Diethyl-p-nitrophenylphosphate	311-45-5	3.23E+09													
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	3.23E+09													
Diethylene Glycol Monobutyl Ether	112-34-5	3.23E+09									2.01E+05	7.03E+05	2.83E+07	1.56E+05	1.56E+05 max
Diethylene Glycol Monoethyl Ether	111-90-0	3.23E+09									4.02E+05	1.41E+06	8.50E+07	3.12E+05	3.12E+05 max
Diethylene-glycol	111-46-6	3.23E+09													
Diethylformamide	617-84-5	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Diethylphosphorodithioate	298-06-6	3.23E+09													
Diethylstilbestrol	56-53-1	3.23E+09	5.58E-02	1.95E-01	8.26E+03	4.34E-02									4.34E-02 ca
Difenzoquat	43222-48-6	3.23E+09									5.36E+05	1.88E+06		4.17E+05	4.17E+05 max
Diflubenzuron	35367-38-5	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Difluoroethane, 1,1-	75-37-6	3.23E+09											5.55E+06	5.55E+06	5.55E+06 sat
Difluoropropane, 2,2-	420-45-1	3.23E+09													
Dihydrosafrole	94-58-6	3.23E+09	4.44E+02		4.09E+01	3.74E+01									3.74E+01 ca
Diisopropyl Ether	108-20-3	3.23E+09											2.58E+05	2.58E+05	2.58E+05 sat
Diisopropyl Methylphosphonate	1445-75-6	3.23E+09									5.36E+05			5.36E+05	5.36E+05 sat
Dimagnesium phosphate	7782-75-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Dimethipin	55290-64-7	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Dimethoate	60-51-5	3.23E+09									1.34E+03	4.69E+03		1.04E+03	1.04E+03 nc
Dimethoxybenzidine, 3,3'-	119-90-4	3.23E+09	1.22E+01	4.27E+01		9.50E+00									9.50E+00 ca
Dimethyl Sulfate	77-78-1	3.23E+09													
Dimethyl Sulfide	75-18-3	3.23E+09													
Dimethyl methylphosphonate	756-79-6	3.23E+09	1.15E+04	4.02E+04		8.94E+03					4.02E+05	1.41E+06		3.13E+05	8.94E+03 ca*
Dimethylamino azobenzene [p-]	60-11-7	3.23E+09	4.25E+00	1.49E+01	6.35E+05	3.30E+00									3.30E+00 ca
Dimethylaniline HCl, 2,4-	21436-96-4	3.23E+09	3.37E+01	1.18E+02		2.62E+01									2.62E+01 ca
Dimethylaniline, 2,4-	95-68-1	3.23E+09	9.77E+01	3.42E+02		7.60E+01					1.34E+04	4.69E+04		1.04E+04	7.60E+01 ca
Dimethylaniline, N,N-	121-69-7	3.23E+09									1.34E+04			1.34E+04	1.34E+04 sat
Dimethylbenz(a)anthracene, 7,12-	57-97-6	3.23E+09	2.66E-02	1.38E-01	6.35E+03	2.23E-02									2.23E-02 ca
Dimethylbenzidine, 3,3'-	119-93-7	3.23E+09	1.78E+00	6.22E+00		1.38E+00									1.38E+00 ca
Dimethylcyclohexylamine, n,n-	98-94-2	3.23E+09													
Dimethylethyl Lead	107584-40-7	3.23E+09													
Dimethylformamide	68-12-2	3.23E+09									6.70E+05		4.62E+05	2.74E+05	2.74E+05 sat
Dimethylhydrazine, 1,1-	57-14-7	3.23E+09									6.70E+02		3.91E+01	3.69E+01	3.69E+01 nc
Dimethylhydrazine, 1,2-	540-73-8	3.23E+09	3.55E-02		3.69E-01	3.24E-02									3.24E-02 ca
Dimethylmercury	593-74-8	3.23E+09													
Dimethylphenethylamine	122-09-8	3.23E+09													
Dimethylphenol, 2,4-	105-67-9	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Dimethylphenol, 2,6-	576-26-1	3.23E+09									4.02E+03	1.41E+04		3.13E+03	3.13E+03 nc
Dimethylphenol, 3,4-	95-65-8	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Dimethylphthalate	131-11-3	3.23E+09													
Dimethylterephthalate	120-61-6	3.23E+09									6.70E+05			6.70E+05	6.70E+05 max
Dimethylvinylchloride	513-37-1	3.23E+09	4.34E+02		2.73E+01	2.57E+01									2.57E+01 ca
Dinitro-o-cresol, 4,6-	534-52-1	3.23E+09									5.36E+02	1.88E+03		4.17E+02	4.17E+02 nc
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Dinitroaniline, 3,5-	618-87-1	3.23E+09													
Dinitrobenzene, 1,2-	528-29-0	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Dinitrobenzene, 1,3-	99-65-0	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Dinitrobenzene, 1,4-	100-25-4	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Dinitrophenol, 2,4-	51-28-5	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Dinitrophenols	25550-58-7	3.23E+09													
Dinitrosopentamethylenetetramine, N,N-	101-25-7	3.23E+09													
Dinitrotoluene Mixture, 2,4/2,6-	NA	3.23E+09	2.87E+01	1.01E+02		2.24E+01									2.24E+01 ca
Dinitrotoluene, 2,4-	121-14-2	3.23E+09	6.31E+01	2.16E+02	9.28E+06	4.88E+01					1.34E+04	4.60E+04		1.04E+04	4.88E+01 ca
Dinitrotoluene, 2,6-	606-20-2	3.23E+09	1.30E+01	4.61E+01		1.02E+01					2.01E+03	7.11E+03		1.57E+03	1.02E+01 ca
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	3.23E+09									1.34E+04	7.82E+05		1.32E+04	1.32E+04 nc
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	3.23E+09									1.34E+04	5.21E+05		1.31E+04	1.31E+04 nc

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Dinitrotoluene, Technical grade	25321-14-6	No	No	4.50E-01	U			9.00E-04	U			1	0.1	1		
Dinoseb	88-85-7	No	No					1.00E-03	U			1	0.1	1		
Dioxane, 1,4-	123-91-1	No	Yes	1.00E-01	U	5.00E-06	U	3.00E-02	U	3.00E-02	U	1		1	5.47E+04	1.16E+05
Diphenamid	957-51-7	No	No					3.00E-02	U			1	0.1	1		
Diphenyl Sulfone	127-63-9	No	No					8.00E-04	U			1	0.1	1		
Diphenylamine	122-39-4	No	No					2.50E-02	U			1	0.1	1		
Diphenylhydrazine, 1,2-	122-66-7	No	No	8.00E-01	U	2.20E-04	U					1	0.1	1		
Dipotassium phosphate	7758-11-4	No	No					4.86E+01	U			1		1		
Diquat	85-00-7	No	No					2.20E-03	U			1	0.1	1		
Direct Black 38	1937-37-7	No	No	7.10E+00	U	1.40E-01	U					1	0.1	1		
Direct Blue 6	2602-46-2	No	No	7.40E+00	U	1.40E-01	U					1	0.1	1		
Direct Brown 95	16071-86-6	No	No	6.70E+00	U	1.40E-01	U					1	0.1	1		
Direct Sky Blue	2610-05-1	No	No									1	0.1	1		
Disodium phosphate	7558-79-4	No	No					4.86E+01	U			1		1		
Disulfoton	298-04-4	No	No					4.00E-05	U			1	0.1	1		
Dithiane, 1,4-	505-29-3	No	Yes					1.00E-02	U			1		1	6.26E+04	
Diuron	330-54-1	No	No					2.00E-03	U			1	0.1	1		
Dodecyl benzenesulfonic acid	27176-87-0	No	No									1	0.1	1		
Dodine	2439-10-3	No	No					4.00E-03	U			1	0.1	1		
EPTC	759-94-4	No	Yes					2.50E-02	U			1		1	1.62E+05	
Endosulfan	115-29-7	No	Yes					6.00E-03	U			1		1	5.65E+05	
Endosulfan I	959-98-8	No	Yes									1		1	5.65E+05	
Endosulfan II	33213-65-9	No	Yes									1		1	5.51E+05	
Endosulfan Sulfate	1031-07-8	No	No									1	0.1	1		
Endothall	145-73-3	No	No					2.00E-02	U			1	0.1	1		
Endrin	72-20-8	No	No					3.00E-04	U			1	0.1	1		
Endrin aldehyde	7421-93-4	No	No									1	0.1	1		
Endrin ketone	53494-70-5	No	No									1	0.1	1		
Epichlorohydrin	106-89-8	No	Yes	9.90E-03	U	1.20E-06	U	6.00E-03	U	1.00E-03	U	1		1	2.61E+04	1.05E+04
Epoxybutane, 1,2-	106-88-7	No	Yes							2.00E-02	U	1		1	1.06E+04	1.53E+04
Ethanol	64-17-5	No	Yes									1		1	4.34E+04	1.06E+05
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	No	No									1	0.1	1		
Ethephon	16672-87-0	No	No					5.00E-03	U			1	0.1	1		
Ethion	563-12-2	No	No					5.00E-04	U			1	0.1	1		
Ethoxy Propanol	52125-53-8	No	Yes									1		1	1.26E+05	8.55E+04
Ethoxyethanol Acetate, 2-	111-15-9	No	Yes					1.00E-01	U	6.00E-02	U	1		1	8.47E+04	3.14E+04
Ethoxyethanol, 2-	110-80-5	No	Yes					9.00E-02	U	2.00E-01	U	1		1	1.36E+05	1.06E+05
Ethyl Acetate	141-78-6	No	Yes					9.00E-01	U	7.00E-02	U	1		1	1.19E+04	1.08E+04
Ethyl Acrylate	140-88-5	No	Yes	4.80E-02	U			5.00E-03	U	8.00E-03	U	1		1	8.74E+03	2.50E+03
Ethyl Chloride	75-00-3	No	Yes							1.00E+01	U	1		1	1.78E+03	2.12E+03
Ethyl Ether	60-29-7	No	Yes					2.00E-01	U			1		1	4.31E+03	1.01E+04
Ethyl Methacrylate	97-63-2	No	Yes					9.00E-02	U	3.00E-01	U	1		1	7.97E+03	1.11E+03
Ethyl methane sulfonate	62-50-0	No	No									1	0.1	1		
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	No	No					1.00E-05	U			1	0.1	1		
Ethylbenzene	100-41-4	No	Yes	1.10E-02	U	2.50E-06	U	1.00E-01	U	1.00E+00	U	1		1	7.82E+03	4.79E+02
Ethylene Cyanohydrin	109-78-4	No	No					7.00E-02	U			1	0.1	1		
Ethylene Diamine	107-15-3	No	Yes					9.00E-02	U			1		1	2.48E+05	1.89E+05
Ethylene Glycol	107-21-1	No	No					2.00E+00	U	4.00E-01	U	1	0.1	1		
Ethylene Glycol Monobutyl Ether	111-76-2	No	No					1.00E-01	U	1.60E+00	U	1	0.1	1		
Ethylene Oxide	75-21-8	No	Yes	3.10E-01	U	8.80E-05	U			3.00E-02	U	1		1	8.40E+03	1.21E+05
Ethylene Thiourea	96-45-7	No	No	4.50E-02	U	1.30E-05	U	8.00E-05	U			1	0.1	1		
Ethyleneimine	151-56-4	No	Yes	6.50E+01	U	1.90E-02	U					1		1	3.29E+04	1.54E+05
Ethylphenol, 4-	123-07-9	No	No									1	0.1	1		
Ethylphthalyl Ethyl Glycolate	84-72-0	No	No					3.00E+00	U			1	0.1	1		
Express	101200-48-0	No	No					8.00E-03	U			1	0.1	1		
Famphur	52-85-7	No	No									1	0.1	1		
Fenamiphos	22224-92-6	No	No					2.50E-04	U			1	0.1	1		
Fenpropathrin	39515-41-8	No	No					2.50E-02	U			1	0.1	1		
Fluometuron	2164-17-2	No	No					1.30E-02	U			1	0.1	1		
Fluoranthene	206-44-0	No	No					4.00E-02	U			1	0.13	1		
Fluorene	86-73-7	No	Yes					4.00E-02	U			1	0.13	1	3.88E+05	
Fluoride	16984-48-8	No	No					4.00E-02	U	1.30E-02	U	1		1		
Fluorine (Soluble Fluoride)	7782-41-4	No	No					6.00E-02	U	1.30E-02	U	1		1		
Fluorobenzene	462-06-6	No	Yes									1		1	6.49E+03	2.39E+03

Site-specific

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Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Dinitrotoluene, Technical grade	25321-14-6	3.23E+09	4.34E+01	1.52E+02		3.38E+01					6.03E+03	2.11E+04		4.69E+03	3.38E+01 ca
Dinoseb	88-85-7	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Dioxane, 1,4-	123-91-1	3.23E+09	1.95E+02		2.80E+03	1.83E+02					2.01E+05		1.44E+05	8.38E+04	1.83E+02 ca
Diphenamid	957-51-7	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Diphenyl Sulfone	127-63-9	3.23E+09									5.36E+03	1.88E+04		4.17E+03	4.17E+03 nc
Diphenylamine	122-39-4	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Diphenylhydrazine, 1,2-	122-66-7	3.23E+09	2.44E+01	8.55E+01	3.75E+06	1.90E+01									1.90E+01 ca
Dipotassium phosphate	7758-11-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Diquat	85-00-7	3.23E+09									1.47E+04	5.16E+04		1.15E+04	1.15E+04 nc
Direct Black 38	1937-37-7	3.23E+09	2.75E+00	9.63E+00	5.90E+03	2.14E+00									2.14E+00 ca
Direct Blue 6	2602-46-2	3.23E+09	2.64E+00	9.24E+00	5.90E+03	2.05E+00									2.05E+00 ca
Direct Brown 95	16071-86-6	3.23E+09	2.92E+00	1.02E+01	5.90E+03	2.27E+00									2.27E+00 ca
Direct Sky Blue	2610-05-1	3.23E+09													
Disodium phosphate	7558-79-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Disulfoton	298-04-4	3.23E+09									2.68E+02	9.38E+02		2.08E+02	2.08E+02 nc
Dithiane, 1,4-	505-29-3	3.23E+09									6.70E+04			6.70E+04	6.70E+04 nc
Diuron	330-54-1	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Dodecyl benzenesulfonic acid	27176-87-0	3.23E+09													
Dodine	2439-10-3	3.23E+09									2.68E+04	9.38E+04		2.08E+04	2.08E+04 nc
EPTC	759-94-4	3.23E+09									1.68E+05			1.68E+05	1.68E+05 max
Endosulfan	115-29-7	3.23E+09									4.02E+04			4.02E+04	4.02E+04 nc
Endosulfan I	959-98-8	3.23E+09													
Endosulfan II	33213-65-9	3.23E+09													
Endosulfan Sulfate	1031-07-8	3.23E+09													
Endothall	145-73-3	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Endrin	72-20-8	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Endrin aldehyde	7421-93-4	3.23E+09													
Endrin ketone	53494-70-5	3.23E+09													
Epichlorohydrin	106-89-8	3.23E+09	1.97E+03		5.55E+03	1.46E+03					4.02E+04		2.28E+03	2.16E+03	1.46E+03 ca**
Epoxybutane, 1,2-	106-88-7	3.23E+09											1.85E+04	1.85E+04	1.85E+04 sat
Ethanol	64-17-5	3.23E+09													
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	3.23E+09													
Ethephon	16672-87-0	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Ethion	563-12-2	3.23E+09									3.35E+03	1.17E+04		2.61E+03	2.61E+03 nc
Ethoxy Propanol	52125-53-8	3.23E+09													
Ethoxyethanol Acetate, 2-	111-15-9	3.23E+09									6.70E+05		4.45E+05	2.68E+05	2.68E+05 sat
Ethoxyethanol, 2-	110-80-5	3.23E+09									6.03E+05		2.38E+06	4.81E+05	4.81E+05 sat
Ethyl Acetate	141-78-6	3.23E+09									6.03E+06		7.29E+04	7.20E+04	7.20E+04 sat
Ethyl Acrylate	140-88-5	3.23E+09	4.07E+02			4.07E+02					3.35E+04		6.13E+03	5.18E+03	4.07E+02 ca*
Ethyl Chloride	75-00-3	3.23E+09											1.56E+06	1.56E+06	1.56E+06 sat
Ethyl Ether	60-29-7	3.23E+09									1.34E+06			1.34E+06	1.34E+06 sat
Ethyl Methacrylate	97-63-2	3.23E+09									6.03E+05		2.10E+05	1.55E+05	1.55E+05 sat
Ethyl methane sulfonate	62-50-0	3.23E+09													
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	3.23E+09									6.70E+01	2.34E+02		5.21E+01	5.21E+01 nc
Ethylbenzene	100-41-4	3.23E+09	1.78E+03		7.99E+02	5.51E+02					6.70E+05		6.85E+05	3.39E+05	5.51E+02 sat
Ethylene Cyanohydrin	109-78-4	3.23E+09									4.69E+05	1.64E+06		3.65E+05	3.65E+05 max
Ethylene Diamine	107-15-3	3.23E+09									6.03E+05			6.03E+05	6.03E+05 sat
Ethylene Glycol	107-21-1	3.23E+09									1.34E+07	4.69E+07	1.13E+11	1.04E+07	1.04E+07 max
Ethylene Glycol Monobutyl Ether	111-76-2	3.23E+09									6.70E+05	2.34E+06	4.53E+11	5.21E+05	5.21E+05 max
Ethylene Oxide	75-21-8	3.23E+09	6.31E+01		2.44E+01	1.76E+01							2.21E+04	2.21E+04	1.76E+01 ca
Ethylene Thiourea	96-45-7	3.23E+09	4.34E+02	1.52E+03	6.35E+07	3.38E+02					5.36E+02	1.88E+03		4.17E+02	3.38E+02 ca**
Ethyleneimine	151-56-4	3.23E+09	3.01E-01		4.43E-01	1.79E-01									1.79E-01 ca
Ethylphenol, 4-	123-07-9	3.23E+09													
Ethylphthalyl Ethyl Glycolate	84-72-0	3.23E+09									2.01E+07	7.03E+07		1.56E+07	1.56E+07 max
Express	101200-48-0	3.23E+09									5.36E+04	1.88E+05		4.17E+04	4.17E+04 nc
Famphur	52-85-7	3.23E+09													
Fenamiphos	22224-92-6	3.23E+09									1.68E+03	5.86E+03		1.30E+03	1.30E+03 nc
Fenpropathrin	39515-41-8	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Fluometuron	2164-17-2	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Fluoranthene	206-44-0	3.23E+09									2.68E+05	7.22E+05		1.95E+05	1.95E+05 max
Fluorene	86-73-7	3.23E+09									2.68E+05	7.22E+05		1.95E+05	1.95E+05 max
Fluoride	16984-48-8	3.23E+09									2.68E+05		3.68E+09	2.68E+05	2.68E+05 max
Fluorine (Soluble Fluoride)	7782-41-4	3.23E+09									4.02E+05		3.68E+09	4.02E+05	4.02E+05 max
Fluorobenzene	462-06-6	3.23E+09													

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Fluorobiphenyl, 2-	321-60-8	No	Yes									1		1	1.08E+05	
Fluorophenol, 2-	367-12-4	No	Yes									1		1	2.93E+05	9.21E+04
Fluridone	59756-60-4	No	No					8.00E-02	U			1	0.1	1		
Flurprimidol	56425-91-3	No	No					2.00E-02	U			1	0.1	1		
Flutolanil	66332-96-5	No	No					6.00E-02	U			1	0.1	1		
Fluvalinate	69409-94-5	No	No					1.00E-02	U			1	0.1	1		
Folpet	133-07-3	No	No	3.50E-03	U			1.00E-01	U			1	0.1	1		
Fomesafen	72178-02-0	No	No	1.90E-01	U							1	0.1	1		
Fonofos	944-22-9	No	No					2.00E-03	U			1	0.1	1		
Formaldehyde	50-00-0	No	Yes			1.30E-05	U	2.00E-01	U	9.83E-03	U	1		1	1.07E+05	4.24E+04
Formic Acid	64-18-6	No	Yes					9.00E-01	U	3.00E-04	U	1		1	1.28E+05	1.06E+05
Fosetyl-AL	39148-24-8	No	No					3.00E+00	U			1	0.1	1		
Fuel Oil Number 2	68476-30-2	No	No									1	0.1	1		
Furan	110-00-9	No	Yes					1.00E-03	U			1	0.03	1	3.60E+03	6.22E+03
Furazolidone	67-45-8	No	No	3.80E+00	U							1	0.1	1		
Furfural	98-01-1	No	Yes					3.00E-03	U	5.00E-02	U	1		1	6.71E+04	1.01E+04
Furium	531-82-8	No	No	1.50E+00	U	4.30E-04	U					1	0.1	1		
Furmecyclox	60568-05-0	No	No	3.00E-02	U	8.60E-06	U					1	0.1	1		
Gadolinium	7440-54-2	No	No									1		1		
Gallium	7440-55-3	No	No									1		1		
Germanium	7440-56-4	No	No									1		1		
Glufosinate, Ammonium	77182-82-2	No	No					4.00E-04	U			1	0.1	1		
Glutaraldehyde	111-30-8	No	No							8.00E-05	U	1	0.1	1		
Glycerol	56-81-5	No	No									1	0.1	1		
Glycidyl	765-34-4	No	Yes					4.00E-04	U	1.00E-03	U	1		1	1.01E+05	1.06E+05
Glyphosate	1071-83-6	No	No					1.00E-01	U			1	0.1	1		
Goal	42874-03-3	No	No					3.00E-03	U			1	0.1	1		
Guanidine	113-00-8	No	Yes					1.00E-02	U			1		1	2.00E+05	
Guanidine Chloride	50-01-1	No	No					2.00E-02	U			1	0.1	1		
Guanidine Nitrate	506-93-4	No	No									1	0.1	1		
Guthion	86-50-0	No	No					3.00E-03	U	1.00E-02	U	1	0.1	1		
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	No	Yes	1.30E+03	U	3.80E-01	U	1.00E-06	U	4.00E-06	U	1		1	4.52E+06	
Haloacetic acids	NA	No	No									1	0.1	1		
Haloxyfop, Methyl	69806-40-2	No	No					5.00E-05	U			1	0.1	1		
Harmony	79277-27-3	No	No					1.30E-02	U			1	0.1	1		
Heptachlor	76-44-8	No	Yes	4.50E+00	U	1.30E-03	U	5.00E-04	U			1		1	6.62E+05	
Heptachlor Epoxide	1024-57-3	No	Yes	9.10E+00	U	2.60E-03	U	1.30E-05	U			1		1	1.16E+06	
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	2.81E+06	
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03	1	1.15E+07	
Heptanal, n-	111-71-7	No	Yes									1		1	1.08E+04	2.09E+02
Heptane, N-	142-82-5	No	Yes									1		1	1.23E+03	5.79E+01
Heptanol, n-	111-70-6	No	Yes									1		1	4.73E+04	3.78E+02
Hexabromobenzene	87-82-1	No	Yes					2.00E-03	U			1		1	5.24E+05	
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	No	No					2.00E-04	U			1	0.1	1		
Hexachlorobenzene	118-74-1	No	Yes	1.60E+00	U	4.60E-04	U	8.00E-04	U			1		1	9.37E+04	
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	1.98E+06	
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	2.00E+06	
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	2.13E+06	
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	No	Yes	3.90E+03	U	1.14E+00	U	2.33E-08	U	1.33E-06	U	1	0.14	1	1.98E+06	
Hexachlorobutadiene	87-68-3	No	Yes	7.80E-02	U	2.20E-05	U	1.00E-03	U			1		1	1.49E+04	1.68E+01
Hexachlorocyclohexane, Alpha-	319-84-6	No	No	6.30E+00	U	1.80E-03	U	8.00E-03	U			1	0.1	1		
Hexachlorocyclohexane, Beta-	319-85-7	No	No	1.80E+00	U	5.30E-04	U					1	0.1	1		
Hexachlorocyclohexane, Delta-	319-86-8	No	No									1	0.1	1		
Hexachlorocyclohexane, Epsilon	6108-10-7	No	No									1	0.1	1		
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	No	No	1.10E+00	U	3.10E-04	U	3.00E-04	U			1	0.04	1		
Hexachlorocyclohexane, Technical	608-73-1	No	No	1.80E+00	U	5.10E-04	U					1	0.1	1		
Hexachlorocyclopentadiene	77-47-4	No	Yes					6.00E-03	U	2.00E-04	U	1		1	1.18E+04	1.57E+01
Hexachlorodibenzo-p-dioxin	34465-46-8	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1		
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	6.59E+06	
Hexachlorodibenzo-p-dioxin, Mixture	NA	No	No	6.20E+03	U	1.30E+00	U					1	0.03	1		
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	5.38E+06	
Hexachloroethane	67-72-1	No	Yes	4.00E-02	U	1.10E-05	U	7.00E-04	U	3.00E-02	U	1		1	1.10E+04	

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Fluorobiphenyl, 2-	321-60-8	3.23E+09													
Fluorophenol, 2-	367-12-4	3.23E+09													
Fluridone	59756-60-4	3.23E+09									5.36E+05	1.88E+06		4.17E+05	4.17E+05 max
Flurprimidol	56425-91-3	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Flutolanil	66332-96-5	3.23E+09									4.02E+05	1.41E+06		3.13E+05	3.13E+05 max
Fluvalinate	69409-94-5	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Folpet	133-07-3	3.23E+09	5.58E+03	1.95E+04		4.34E+03					6.70E+05	2.34E+06		5.21E+05	4.34E+03 ca
Fomesafen	72178-02-0	3.23E+09	1.03E+02	3.60E+02		8.00E+01									8.00E+01 ca
Fonofos	944-22-9	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Formaldehyde	50-00-0	3.23E+09			2.11E+03	2.11E+03					1.34E+06		9.23E+04	8.64E+04	2.11E+03 ca*
Formic Acid	64-18-6	3.23E+09									6.03E+06		3.37E+03	3.37E+03	3.37E+03 nc
Fosetyl-AL	39148-24-8	3.23E+09									2.01E+07	7.03E+07		1.56E+07	1.56E+07 max
Fuel Oil Number 2	68476-30-2	3.23E+09													
Furan	110-00-9	3.23E+09									6.70E+03	7.82E+04		6.17E+03	6.17E+03 nc
Furazolidone	67-45-8	3.23E+09	5.14E+00	1.80E+01		4.00E+00									4.00E+00 ca
Furfural	98-01-1	3.23E+09									2.01E+04		2.94E+05	1.88E+04	1.88E+04 sat
Furium	531-82-8	3.23E+09	1.30E+01	4.56E+01	1.92E+06	1.01E+01									1.01E+01 ca
Furmecyclox	60568-05-0	3.23E+09	6.52E+02	2.28E+03	9.61E+07	5.07E+02									5.07E+02 ca
Gadolinium	7440-54-2	3.23E+09													
Gallium	7440-55-3	3.23E+09													
Germanium	7440-56-4	3.23E+09													
Glufosinate, Ammonium	77182-82-2	3.23E+09									2.68E+03	9.38E+03		2.08E+03	2.08E+03 nc
Glutaraldehyde	111-30-8	3.23E+09											2.27E+07	2.27E+07	2.27E+07 max
Glycerol	56-81-5	3.23E+09													
Glycidyl	765-34-4	3.23E+09									2.68E+03		8.88E+03	2.06E+03	2.06E+03 nc
Glyphosate	1071-83-6	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Goal	42874-03-3	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Guanidine	113-00-8	3.23E+09									6.70E+04			6.70E+04	6.70E+04 nc
Guanidine Chloride	50-01-1	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Guanidine Nitrate	506-93-4	3.23E+09													
Guthion	86-50-0	3.23E+09									2.01E+04	7.03E+04	2.83E+09	1.56E+04	1.56E+04 nc
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	3.23E+09	1.50E-02		3.04E+00	1.50E-02					6.70E+00		1.58E+03	6.67E+00	1.50E-02 ca
Haloacetic acids	NA	3.23E+09													
Haloxyfop, Methyl	69806-40-2	3.23E+09									3.35E+02	1.17E+03		2.61E+02	2.61E+02 nc
Harmony	79277-27-3	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Heptachlor	76-44-8	3.23E+09	4.34E+00		1.30E+02	4.20E+00					3.35E+03			3.35E+03	4.20E+00 ca
Heptachlor Epoxide	1024-57-3	3.23E+09	2.15E+00		1.14E+02	2.11E+00					8.71E+01			8.71E+01	2.11E+00 ca*
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	3.23E+09	5.01E+00	1.25E+01	6.29E+02	3.56E+00					1.56E+02	3.90E+02	3.27E+05	1.11E+02	3.56E+00 ca*
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	3.23E+09	1.50E-02	1.75E-01	7.74E+00	1.38E-02					4.69E-01	5.47E+00	4.03E+03	4.32E-01	1.38E-02 ca*
Heptanal, n-	111-71-7	3.23E+09													
Heptane, N-	142-82-5	3.23E+09													
Heptanol, n-	111-70-6	3.23E+09													
Hexabromobenzene	87-82-1	3.23E+09									1.34E+04			1.34E+04	1.34E+04 nc
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	3.23E+09									1.34E+03	4.69E+03		1.04E+03	1.04E+03 nc
Hexachlorobenzene	118-74-1	3.23E+09	1.22E+01		5.21E+01	9.90E+00					5.36E+03			5.36E+03	9.90E+00 ca
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	3.23E+09	5.01E+00	1.25E+01	4.43E+02	3.55E+00					1.56E+02	3.90E+02	2.30E+05	1.11E+02	3.55E+00 ca*
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	3.23E+09	5.01E+00	1.25E+01	4.48E+02	3.55E+00					1.56E+02	3.90E+02	2.33E+05	1.11E+02	3.55E+00 ca*
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	3.23E+09	5.01E+00	1.25E+01	4.77E+02	3.55E+00					1.56E+02	3.90E+02	2.48E+05	1.11E+02	3.55E+00 ca*
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	3.23E+09	5.01E-03	1.25E-02	4.43E-01	3.55E-03					1.56E-01	3.90E-01	2.30E+02	1.11E-01	3.55E-03 ca*
Hexachlorobutadiene	87-68-3	3.23E+09	2.51E+02		1.73E+02	1.02E+02					6.70E+03			6.70E+03	1.02E+02 sat
Hexachlorocyclohexane, Alpha-	319-84-6	3.23E+09	3.10E+00	1.09E+01	4.59E+05	2.41E+00					5.36E+04	1.88E+05		4.17E+04	2.41E+00 ca
Hexachlorocyclohexane, Beta-	319-85-7	3.23E+09	1.09E+01	3.80E+01	1.56E+06	8.45E+00									8.45E+00 ca
Hexachlorocyclohexane, Delta-	319-86-8	3.23E+09													
Hexachlorocyclohexane, Epsilon	6108-10-7	3.23E+09													
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	3.23E+09	1.78E+01	1.55E+02	2.66E+06	1.59E+01					2.01E+03	1.76E+04		1.80E+03	1.59E+01 ca
Hexachlorocyclohexane, Technical	608-73-1	3.23E+09	1.09E+01	3.80E+01	1.62E+06	8.45E+00									8.45E+00 ca
Hexachlorocyclopentadiene	77-47-4	3.23E+09									4.02E+04		2.06E+02	2.05E+02	2.05E+02 sat
Hexachlorodibenzo-p-dioxin	34465-46-8	3.23E+09	1.50E-03	1.75E-02	2.17E+02	1.38E-03					4.69E-02	5.47E-01	1.13E+05	4.32E-02	1.38E-03 ca*
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	3.23E+09	1.50E-03	1.75E-02	4.42E-01	1.38E-03					4.69E-02	5.47E-01	2.31E+02	4.32E-02	1.38E-03 ca*
Hexachlorodibenzo-p-dioxin, Mixture	NA	3.23E+09	3.15E-03	3.68E-02	6.35E+02	2.90E-03									2.90E-03 ca
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	3.23E+09	1.50E-03	1.75E-02	3.61E-01	1.38E-03					4.69E-02	5.47E-01	1.88E+02	4.32E-02	1.38E-03 ca*
Hexachloroethane	67-72-1	3.23E+09	4.89E+02		2.57E+02	1.68E+02					4.69E+03		2.90E+04	4.04E+03	1.68E+02 ca*

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Hexachlorophene	70-30-4	No	No					3.00E-04	U			1	0.1	1		
Hexachloropropene	1888-71-7	No	Yes									1		1	1.48E+04	4.37E+01
Hexadecanoic Acid	57-10-3	No	Yes									1		1	7.66E+05	
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	No	No	1.10E-01	U			3.00E-03	U			1	0.015	1		
Hexamethylene Diisocyanate, 1,6-	822-06-0	No	Yes							1.00E-05	U	1		1	4.15E+05	5.19E+03
Hexamethylphosphoramide	680-31-9	No	No					4.00E-04	U			1	0.1	1		
Hexane, N-	110-54-3	No	Yes					6.00E-02	U	7.00E-01	U	1		1	1.14E+03	1.41E+02
Hexanedioic Acid	124-04-9	No	No					2.00E+00	U			1	0.1	1		
Hexanol, n-	111-27-3	No	Yes									1		1	4.03E+04	9.98E+02
Hexanone, 2-	591-78-6	No	Yes					5.00E-03	U	3.00E-02	U	1		1	1.83E+04	3.28E+03
Hexazinone	51235-04-2	No	No					3.30E-02	U			1	0.1	1		
HpCDD, 2,3,7,8-	37871-00-4	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03	1	3.36E+06	
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03	1	1.15E+07	
HpCDF, 2,3,7,8-	38998-75-3	No	Yes	1.30E+03	U	3.80E-01	U	7.00E-08	U	4.00E-06	U	1	0.03	1	1.15E+07	
HxCDD, 1,2,3,6,7,8-	57653-85-7	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	6.59E+06	
HxCDD, 1,2,3,7,8,9-	19408-74-3	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	6.59E+06	
HxCDF, 1,2,3,6,7,8-	57117-44-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	5.38E+06	
HxCDF, 1,2,3,7,8,9-	72918-21-9	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1		
HxCDF, 2,3,4,6,7,8-	60851-34-5	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	5.38E+06	
HxCDF, 2,3,7,8-	55684-94-1	No	No	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1		
Hydrazine	302-01-2	No	Yes	3.00E+00	U	4.90E-03	U			3.00E-05	U	1		1		
Hydrazine Sulfate	10034-93-2	No	No	3.00E+00	U	4.90E-03	U					1		1		
Hydrogen Chloride	7647-01-0	No	Yes							2.00E-02	U	1		1		
Hydrogen Cyanide	74-90-8	No	Yes					6.00E-04	U	8.00E-04	U	1		1	7.20E+04	1.00E+07
Hydrogen Fluoride	7664-39-3	No	Yes					4.00E-02	U	1.40E-02	U	1		1		
Hydrogen Selenide	77830-70-5	No	No									1		1		
Hydrogen Sulfate	12143-45-2	No	No									1		1		
Hydrogen Sulfide	7783-06-4	No	Yes							2.00E-03	U	1		1		
Hydroquinone	123-31-9	No	No	6.00E-02	U			4.00E-02	U			1	0.1	1		
Imazalil	35554-44-0	No	No					1.30E-02	U			1	0.1	1		
Imazaquin	81335-37-7	No	No					2.50E-01	U			1	0.1	1		
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	7.30E-01	U	1.10E-04	U					1	0.13	1		
Indium	7440-74-6	No	No									1		1		
Iodide	20461-54-5	No	No									1		1		
Iodine	7553-56-2	No	No					1.00E-02	U			1		1		
Iodomethane	74-88-4	No	Yes									1		1	2.55E+03	3.03E+03
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	No	No									1	0.1	1		
Iprodione	36734-19-7	No	No					4.00E-02	U			1	0.1	1		
Iron	7439-89-6	No	No					7.00E-01	U			1		1		
Iron Sulfide	11126-12-8	No	No									1		1		
Isobutyl Alcohol	78-83-1	No	Yes					3.00E-01	U			1		1	3.88E+04	1.00E+04
Isodrin	465-73-6	No	Yes									1		1	2.32E+06	
Isophorone	78-59-1	No	No	9.50E-04	U			2.00E-01	U	2.00E+00	U	1	0.1	1		
Isopropalin	33820-53-0	No	Yes					1.50E-02	U			1		1	5.78E+05	
Isopropanol	67-63-0	No	Yes					2.00E+00	U	2.00E-01	U	1		1	3.83E+04	1.09E+05
Isopropyl Methyl Phosphonic Acid	1832-54-8	No	No					1.00E-01	U			1	0.1	1		
Isopropyltoluene, p-	99-87-6	No	Yes									1		1	1.18E+04	1.62E+02
Isosafrole	120-58-1	No	Yes									1		1	3.42E+03	2.04E+01
Isoxaben	82558-50-7	No	No					5.00E-02	U			1	0.1	1		
JP-4	50815-00-4	No	Yes									1		1		
JP-5/JP-8	8002-20-6	No	Yes									1		1		
JP-7	NA	No	Yes							3.00E-01	U	1		1		
Kerb	23950-58-5	No	No					7.50E-02	U			1	0.1	1		
Kerosene	8008-20-6	No	Yes									1		1		
Lactofen	77501-63-4	No	No					2.00E-03	U			1	0.1	1		
Lactonitrile	78-97-7	No	No									1	0.1	1		
Lanthanum	7439-91-0	No	No									1		1		
Lead Alkyls	NA	No	No									1	0.1	1		
Lead Chromate	7758-97-6	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025		1		
Lead Phosphate	7446-27-7	No	No	8.50E-03	U	1.20E-05	U					1		1		
Lead acetate	301-04-2	No	No	2.80E-01	U	8.00E-05	U					1	0.1	1		
Lead and Compounds	7439-92-1	No	No									1		1		
Lead subacetate	1335-32-6	No	No	8.50E-03	U	1.20E-05	U					1	0.1	1		
Linuron	330-55-2	No	No					2.00E-03	U			1	0.1	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Hexachlorophene	70-30-4	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Hexachloropropene	1888-71-7	3.23E+09													
Hexadecanoic Acid	57-10-3	3.23E+09													
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	3.23E+09	1.78E+02	4.15E+03		1.70E+02					2.01E+04	4.69E+05		1.93E+04	1.70E+02 ca
Hexamethylene Diisocyanate, 1,6-	822-06-0	3.23E+09											3.63E+02	3.63E+02	3.63E+02 nc
Hexamethylphosphoramide	680-31-9	3.23E+09									2.68E+03	9.38E+03		2.08E+03	2.08E+03 nc
Hexane, N-	110-54-3	3.23E+09									4.02E+05		7.01E+04	5.97E+04	5.97E+04 sat
Hexanedioic Acid	124-04-9	3.23E+09									1.34E+07	4.69E+07		1.04E+07	1.04E+07 max
Hexanol, n-	111-27-3	3.23E+09													
Hexanone, 2-	591-78-6	3.23E+09									3.35E+04		4.82E+04	1.98E+04	1.98E+04 sat
Hexazinone	51235-04-2	3.23E+09									2.21E+05	7.74E+05		1.72E+05	1.72E+05 max
HpCDD, 2,3,7,8-	37871-00-4	3.23E+09	1.50E-02	1.75E-01	2.26E+00	1.38E-02					4.69E-01	5.47E+00	1.18E+03	4.32E-01	1.38E-02 ca*
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	3.23E+09	1.50E-02	1.75E-01	7.74E+00	1.38E-02					4.69E-01	5.47E+00	4.03E+03	4.32E-01	1.38E-02 ca*
HpCDF, 2,3,7,8-	38998-75-3	3.23E+09	1.50E-02	1.75E-01	7.74E+00	1.38E-02					4.69E-01	5.47E+00	4.03E+03	4.32E-01	1.38E-02 ca*
HxCDD, 1,2,3,6,7,8-	57653-85-7	3.23E+09	1.50E-03	1.75E-02	4.42E-01	1.38E-03					4.69E-02	5.47E-01	2.31E+02	4.32E-02	1.38E-03 ca*
HxCDD, 1,2,3,7,8,9-	19408-74-3	3.23E+09	1.50E-03	1.75E-02	4.42E-01	1.38E-03					4.69E-02	5.47E-01	2.31E+02	4.32E-02	1.38E-03 ca*
HxCDF, 1,2,3,6,7,8-	57117-44-9	3.23E+09	1.50E-03	1.75E-02	3.61E-01	1.38E-03					4.69E-02	5.47E-01	1.88E+02	4.32E-02	1.38E-03 ca*
HxCDF, 1,2,3,7,8,9-	72918-21-9	3.23E+09	1.50E-03	1.75E-02	2.17E+02	1.38E-03					4.69E-02	5.47E-01	1.13E+05	4.32E-02	1.38E-03 ca*
HxCDF, 2,3,4,6,7,8-	60851-34-5	3.23E+09	1.50E-03	1.75E-02	3.61E-01	1.38E-03					4.69E-02	5.47E-01	1.88E+02	4.32E-02	1.38E-03 ca*
HxCDF, 2,3,7,8-	55684-94-1	3.23E+09	1.50E-03	1.75E-02	2.17E+02	1.38E-03					4.69E-02	5.47E-01	1.13E+05	4.32E-02	1.38E-03 ca*
Hydrazine	302-01-2	3.23E+09	6.52E+00		1.69E+05	6.52E+00							8.50E+06	8.50E+06	6.52E+00 ca
Hydrazine Sulfate	10034-93-2	3.23E+09	6.52E+00		1.69E+05	6.52E+00									6.52E+00 ca
Hydrogen Chloride	7647-01-0	3.23E+09											5.66E+09	5.66E+09	5.66E+09 max
Hydrogen Cyanide	74-90-8	3.23E+09									4.02E+03		5.05E+03	2.24E+03	2.24E+03 nc
Hydrogen Fluoride	7664-39-3	3.23E+09									2.68E+05		3.96E+09	2.68E+05	2.68E+05 max
Hydrogen Selenide	77830-70-5	3.23E+09													
Hydrogen Sulfate	12143-45-2	3.23E+09													
Hydrogen Sulfide	7783-06-4	3.23E+09											5.66E+08	5.66E+08	5.66E+08 max
Hydroquinone	123-31-9	3.23E+09	3.26E+02	1.14E+03		2.53E+02					2.68E+05	9.38E+05		2.08E+05	2.53E+02 ca
Imazalil	35554-44-0	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Imazaquin	81335-37-7	3.23E+09									1.68E+06	5.86E+06		1.30E+06	1.30E+06 max
Indeno[1,2,3-cd]pyrene	193-39-5	3.23E+09	9.10E+00	4.74E+01	4.10E+06	7.63E+00									7.63E+00 ca
Indium	7440-74-6	3.23E+09													
Iodide	20461-54-5	3.23E+09													
Iodine	7553-56-2	3.23E+09									6.70E+04			6.70E+04	6.70E+04 nc
Iodomethane	74-88-4	3.23E+09													
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	3.23E+09													
Iprodione	36734-19-7	3.23E+09									2.68E+05	9.38E+05		2.08E+05	2.08E+05 max
Iron	7439-89-6	3.23E+09									4.69E+06			4.69E+06	4.69E+06 max
Iron Sulfide	11126-12-8	3.23E+09													
Isobutyl Alcohol	78-83-1	3.23E+09									2.01E+06			2.01E+06	2.01E+06 sat
Isodrin	465-73-6	3.23E+09													
Isophorone	78-59-1	3.23E+09	2.06E+04	7.20E+04		1.60E+04					1.34E+06	4.69E+06	5.66E+11	1.04E+06	1.60E+04 ca*
Isopropalin	33820-53-0	3.23E+09									1.01E+05			1.01E+05	1.01E+05 max
Isopropanol	67-63-0	3.23E+09									1.34E+07		6.70E+05	6.38E+05	6.38E+05 sat
Isopropyl Methyl Phosphonic Acid	1832-54-8	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Isopropyltoluene, p-	99-87-6	3.23E+09													
Isosafrole	120-58-1	3.23E+09													
Isoxaben	82558-50-7	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
JP-4	50815-00-4	3.23E+09													
JP-5/JP-8	8002-20-6	3.23E+09													
JP-7	NA	3.23E+09											8.50E+10	8.50E+10	8.50E+10 max
Kerb	23950-58-5	3.23E+09									5.03E+05	1.76E+06		3.91E+05	3.91E+05 max
Kerosene	8008-20-6	3.23E+09													
Lactofen	77501-63-4	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Lactonitrile	78-97-7	3.23E+09													
Lanthanum	7439-91-0	3.23E+09													
Lead Alkyls	NA	3.23E+09													
Lead Chromate	7758-97-6	3.23E+09	1.33E+01		3.00E+03	1.32E+01					1.34E+05		5.66E+07	1.34E+05	1.32E+01 ca
Lead Phosphate	7446-27-7	3.23E+09	2.30E+03		6.88E+07	2.30E+03									2.30E+03 ca
Lead acetate	301-04-2	3.23E+09	6.98E+01	2.44E+02	1.03E+07	5.43E+01									5.43E+01 ca
Lead and Compounds	7439-92-1	3.23E+09								4.00E+02					4.00E+02 nc
Lead subacetate	1335-32-6	3.23E+09	2.30E+03	8.05E+03	6.88E+07	1.79E+03									1.79E+03 ca
Linuron	330-55-2	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Lithium	7439-93-2	No	No					2.00E-03	U			1		1		
Lithium Perchlorate	7791-03-9	No	No					7.00E-04	U			1		1		
Londax	83055-99-6	No	No					2.00E-01	U			1	0.1	1		
Lutetium	7439-94-3	No	No									1		1		
MCPA	94-74-6	No	No					5.00E-04	U			1	0.1	1		
MCPB	94-81-5	No	No					1.00E-02	U			1	0.1	1		
MCPP	93-65-2	No	No					1.00E-03	U			1	0.1	1		
Magnesium	7439-95-4	No	No									1		1		
Magnesium Chlorate	10326-21-3	No	No									1		1		
Malathion	121-75-5	No	No					2.00E-02	U			1	0.1	1		
Maleic Anhydride	108-31-6	No	No					1.00E-01	U	7.00E-04	U	1	0.1	1		
Maleic Hydrazide	123-33-1	No	No					5.00E-01	U			1	0.1	1		
Malononitrile	109-77-3	No	No					1.00E-04	U			1	0.1	1		
Mancozeb	8018-01-7	No	No					3.00E-02	U			1	0.1	1		
Maneb	12427-38-2	No	No					5.00E-03	U			1	0.1	1		
Manganese (Non-diet)	7439-96-5	No	No					2.40E-02	U	5.00E-05	U	0.04		1		
Mechlorethamine	51-75-2	No	No									1	0.1	1		
Mephosfolan	950-10-7	No	No					9.00E-05	U			1	0.1	1		
Mepiquat Chloride	24307-26-4	No	No					3.00E-02	U			1	0.1	1		
Mercuric Chloride	7487-94-7	No	No					3.00E-04	U	3.00E-04	U	0.07		1		
Mercury (elemental)	7439-97-6	No	Yes							3.00E-04	U	1		1	4.16E+04	3.13E+00
Merphos	150-50-5	No	Yes					3.00E-05	U			1		1	2.67E+06	
Merphos Oxide	78-48-8	No	No					3.00E-05	U			1	0.1	1		
Metalaxyl	57837-19-1	No	No					6.00E-02	U			1	0.1	1		
Methacrylonitrile	126-98-7	No	Yes					1.00E-04	U	3.00E-02	U	1		1	9.38E+03	4.59E+03
Methamidophos	10265-92-6	No	No					5.00E-05	U			1	0.1	1		
Methanol	67-56-1	No	Yes					2.00E+00	U	2.00E+01	U	1		1	4.01E+04	1.06E+05
Methapyrilene	91-80-5	No	No									1	0.1	1		
Methidathion	950-37-8	No	No					1.00E-03	U			1	0.1	1		
Methomyl	16752-77-5	No	No					2.50E-02	U			1	0.1	1		
Methoxy-5-nitroaniline, 2-	99-59-2	No	No	4.90E-02	U	1.40E-05	U					1	0.1	1		
Methoxychlor	72-43-5	No	No					5.00E-03	U			1	0.1	1		
Methoxyethanol Acetate, 2-	110-49-6	No	Yes					8.00E-03	U	1.00E-03	U	1		1	1.71E+05	1.15E+05
Methoxyethanol, 2-	109-86-4	No	Yes					5.00E-03	U	2.00E-02	U	1		1	1.39E+05	1.06E+05
Methyl Acetate	79-20-9	No	Yes					1.00E+00	U			1		1	1.12E+04	2.90E+04
Methyl Acrylate	96-33-3	No	Yes					3.00E-02	U	2.00E-02	U	1		1	9.62E+03	6.75E+03
Methyl Ethyl Ketone (2-Butanone)	78-93-3	No	Yes					6.00E-01	U	5.00E+00	U	1		1	1.68E+04	2.84E+04
Methyl Hydrazine	60-34-4	No	Yes			1.00E-03	U	1.00E-03	U	2.00E-05	U	1		1	2.16E+05	1.80E+05
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	No	Yes					8.00E-02	U	3.00E+00	U	1		1	1.46E+04	3.36E+03
Methyl Isocyanate	624-83-9	No	Yes							1.00E-03	U	1		1	6.08E+03	1.67E+04
Methyl Mercaptan	74-93-1	No	Yes									1		1	2.46E+03	3.13E+03
Methyl Mercury	22967-92-6	No	No					1.00E-04	U			1		1		
Methyl Methacrylate	80-62-6	No	Yes					1.40E+00	U	7.00E-01	U	1		1	8.75E+03	2.36E+03
Methyl Parathion	298-00-0	No	No					2.50E-04	U			1	0.1	1		
Methyl Phosphonic Acid	993-13-5	No	No					6.00E-02	U			1	0.1	1		
Methyl Styrene (Mixed Isomers)	25013-15-4	No	Yes					6.00E-03	U	4.00E-02	U	1		1	1.65E+04	3.93E+02
Methyl dicyclohexylamine, n-	7560-83-0	No	Yes									1		1	6.54E+04	
Methyl methanesulfonate	66-27-3	No	No	9.90E-02	U	2.80E-05	U					1	0.1	1		
Methyl tert-Butyl Ether (MTBE)	1634-04-4	No	Yes	1.80E-03	U	2.60E-07	U			3.00E+00	U	1		1	6.76E+03	8.88E+03
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	No	No					3.00E-04	U			1	0.1	1		
Methyl-2-Pentanol, 4-	108-11-2	No	Yes									1		1	2.37E+04	2.45E+03
Methyl-5-Nitroaniline, 2-	99-55-8	No	No	9.00E-03	U			2.00E-02	U			1	0.1	1		
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	No	No	8.30E+00	U	2.40E-03	U					1	0.1	1		
Methylaniline Hydrochloride, 2-	636-21-5	No	No	1.30E-01	U	3.70E-05	U					1	0.1	1		
Methylarsonic acid	124-58-3	No	No					1.00E-02	U			1	0.1	1		
Methylaziridine, 2-	75-55-8	No	Yes									1		1	4.41E+04	1.87E+05
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	No	No					2.00E-04	U			1	0.1	1		
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	No	No	1.00E-01	U			3.00E-04	U			1	0.1	1		
Methylcholanthrene, 3-	56-49-5	Yes	No	2.20E+01	U	6.30E-03	U					1	0.1	1		
Methylcyclohexane	108-87-2	No	Yes									1		1	1.37E+03	6.77E+01
Methylcyclohexylamine, n-	100-60-7	No	Yes									1		1	4.39E+04	2.81E+04
Methylcyclopentane	96-37-7	No	Yes									1		1	1.22E+03	1.54E+02

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Lithium	7439-93-2	3.23E+09									1.34E+04			1.34E+04	1.34E+04 nc
Lithium Perchlorate	7791-03-9	3.23E+09									4.69E+03			4.69E+03	4.69E+03 nc
Londax	83055-99-6	3.23E+09									1.34E+06	4.69E+06		1.04E+06	1.04E+06 max
Lutetium	7439-94-3	3.23E+09													
MCPA	94-74-6	3.23E+09									3.35E+03	1.17E+04		2.61E+03	2.61E+03 nc
MCPB	94-81-5	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
MCPP	93-65-2	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Magnesium	7439-95-4	3.23E+09													
Magnesium Chlorate	10326-21-3	3.23E+09													
Malathion	121-75-5	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Maleic Anhydride	108-31-6	3.23E+09									6.70E+05	2.34E+06	1.98E+08	5.20E+05	5.20E+05 max
Maleic Hydrazide	123-33-1	3.23E+09									3.35E+06	1.17E+07		2.61E+06	2.61E+06 max
Malononitrile	109-77-3	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Mancozeb	8018-01-7	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Maneb	12427-38-2	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Manganese (Non-diet)	7439-96-5	3.23E+09									1.61E+05		1.42E+07	1.59E+05	1.59E+05 max
Mechlorethamine	51-75-2	3.23E+09													
Mephosfolan	950-10-7	3.23E+09									6.03E+02	2.11E+03		4.69E+02	4.69E+02 nc
Mepiquat Chloride	24307-26-4	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Mercuric Chloride	7487-94-7	3.23E+09									2.01E+03		8.50E+07	2.01E+03	2.01E+03 nc
Mercury (elemental)	7439-97-6	3.23E+09											1.09E+03	1.09E+03	1.09E+03 sat
Merphos	150-50-5	3.23E+09									2.01E+02			2.01E+02	2.01E+02 nc
Merphos Oxide	78-48-8	3.23E+09									2.01E+02	7.03E+02		1.56E+02	1.56E+02 nc
Metalaxyl	57837-19-1	3.23E+09									4.02E+05	1.41E+06		3.13E+05	3.13E+05 max
Methacrylonitrile	126-98-7	3.23E+09									6.70E+02		2.46E+04	6.52E+02	6.52E+02 nc
Methamidophos	10265-92-6	3.23E+09									3.35E+02	1.17E+03		2.61E+02	2.61E+02 nc
Methanol	67-56-1	3.23E+09									1.34E+07		7.02E+07	1.13E+07	1.13E+07 sat
Methapyrilene	91-80-5	3.23E+09													
Methidathion	950-37-8	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Methomyl	16752-77-5	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Methoxy-5-nitroaniline, 2-	99-59-2	3.23E+09	3.99E+02	1.40E+03	5.90E+07	3.10E+02									3.10E+02 ca
Methoxychlor	72-43-5	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Methoxyethanol Acetate, 2-	110-49-6	3.23E+09									5.36E+04		1.50E+04	1.17E+04	1.17E+04 nc
Methoxyethanol, 2-	109-86-4	3.23E+09									3.35E+04		2.44E+05	2.95E+04	2.95E+04 nc
Methyl Acetate	79-20-9	3.23E+09									6.70E+06			6.70E+06	6.70E+06 sat
Methyl Acrylate	96-33-3	3.23E+09									2.01E+05		1.68E+04	1.55E+04	1.55E+04 sat
Methyl Ethyl Ketone (2-Butanone)	78-93-3	3.23E+09									4.02E+06		7.36E+06	2.60E+06	2.60E+06 sat
Methyl Hydrazine	60-34-4	3.23E+09			5.51E+01	5.51E+01					6.70E+03		3.78E+02	3.58E+02	5.51E+01 ca**
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	3.23E+09									5.36E+05		3.83E+06	4.70E+05	4.70E+05 sat
Methyl Isocyanate	624-83-9	3.23E+09											5.32E+02	5.32E+02	5.32E+02 nc
Methyl Mercaptan	74-93-1	3.23E+09													
Methyl Mercury	22967-92-6	3.23E+09									6.70E+02			6.70E+02	6.70E+02 nc
Methyl Methacrylate	80-62-6	3.23E+09									9.38E+06		5.36E+05	5.07E+05	5.07E+05 sat
Methyl Parathion	298-00-0	3.23E+09									1.68E+03	5.86E+03		1.30E+03	1.30E+03 nc
Methyl Phosphonic Acid	993-13-5	3.23E+09									4.02E+05	1.41E+06		3.13E+05	3.13E+05 max
Methyl Styrene (Mixed Isomers)	25013-15-4	3.23E+09									4.02E+04		5.80E+04	2.37E+04	2.37E+04 sat
Methyl dicyclohexylamine, n-	7560-83-0	3.23E+09													
Methyl methanesulfonate	66-27-3	3.23E+09	1.97E+02	6.91E+02	2.95E+07	1.54E+02									1.54E+02 ca
Methyl tert-Butyl Ether (MTBE)	1634-04-4	3.23E+09	1.09E+04		6.65E+03	4.12E+03							1.78E+06	1.78E+06	4.12E+03 ca
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Methyl-2-Pentanol, 4-	108-11-2	3.23E+09													
Methyl-5-Nitroaniline, 2-	99-55-8	3.23E+09	2.17E+03	7.60E+03		1.69E+03					1.34E+05	4.69E+05		1.04E+05	1.69E+03 ca*
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	3.23E+09	2.36E+00	8.24E+00	3.44E+05	1.83E+00									1.83E+00 ca
Methylaniline Hydrochloride, 2-	636-21-5	3.23E+09	1.50E+02	5.26E+02	2.23E+07	1.17E+02									1.17E+02 ca
Methylarsonic acid	124-58-3	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Methylaziridine, 2-	75-55-8	3.23E+09													
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	3.23E+09									1.34E+03	4.69E+03		1.04E+03	1.04E+03 nc
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	3.23E+09	1.95E+02	6.84E+02		1.52E+02					2.01E+03	7.03E+03		1.56E+03	1.52E+02 ca*
Methylcholanthrene, 3-	56-49-5	3.23E+09	3.02E-01	2.05E+00	7.15E+04	2.63E-01									2.63E-01 ca
Methylcyclohexane	108-87-2	3.23E+09													
Methylcyclohexylamine, n-	100-60-7	3.23E+09													
Methylcyclopentane	96-37-7	3.23E+09													

Site-specific

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Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Methylene Chloride	75-09-2	Yes	Yes	2.00E-03	U	1.00E-08	U	6.00E-03	U	6.00E-01	U	1		1	3.02E+03	3.32E+03
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	Yes	No	1.00E-01	U	4.30E-04	U	2.00E-03	U			1	0.1	1		
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	No	No	4.60E-02	U	1.30E-05	U					1	0.1	1		
Methylenebisbenzenamine, 4,4'-	101-77-9	No	No	1.60E+00	U	4.60E-04	U			2.00E-02	U	1	0.1	1		
Methylenediphenyl Diisocyanate	101-68-8	No	No							6.00E-04	U	1	0.1	1		
Methylisothiocyanate	556-61-6	No	Yes									1		1	2.04E+04	
Methylnaphthalene	1321-94-4	No	Yes									1		1	8.08E+04	
Methylnaphthalene, 1-	90-12-0	No	Yes	2.90E-02	U			7.00E-02	U			1	0.13	1	8.09E+04	
Methylnaphthalene, 2-	91-57-6	No	Yes					4.00E-03	U			1	0.13	1	8.00E+04	
Methylstyrene, Alpha-	98-83-9	No	Yes					7.00E-02	U			1		1	1.77E+04	5.00E+02
Methyltriethyl Lead	1762-28-3	No	Yes									1		1	2.24E+03	4.81E+03
Metolachlor	51218-45-2	No	No					1.50E-01	U			1	0.1	1		
Metribuzin	21087-64-9	No	No					2.50E-02	U			1	0.1	1		
Mineral oils	8012-95-1	No	Yes					3.00E+00	U			1		1	1.90E+03	3.41E-01
Mirex	2385-85-5	No	Yes	1.80E+01	U	5.10E-03	U	2.00E-04	U			1		1	1.18E+06	
Molinate	2212-67-1	No	No					2.00E-03	U			1	0.1	1		
Molybdenum	7439-98-7	No	No					5.00E-03	U			1		1		
Monoaluminum phosphate	13530-50-2	No	No					4.86E+01	U			1		1		
Monoammonium phosphate	7722-76-1	No	No					4.86E+01	U			1		1		
Monobutyltin Compounds	NA	No	No									1	0.1	1		
Monocalcium phosphate	7758-23-8	No	No					4.86E+01	U			1		1		
Monochloramine	10599-90-3	No	No					1.00E-01	U			1		1		
Monochlorobutanes	25154-42-1	No	No									1	0.1	1		
Monochlorophenols (total)	NA	No	No									1	0.1	1		
Monocyclic aromatic hydrocarbons (total)	NA	No	No									1	0.1	1		
Monomagnesium phosphate	7757-86-0	No	No					4.86E+01	U			1		1		
Monomethylaniline	100-61-8	No	No					2.00E-03	U			1	0.1	1		
Monopotassium phosphate	7778-77-0	No	No					4.86E+01	U			1		1		
Monosodium phosphate	7558-80-7	No	No					4.86E+01	U			1		1		
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	No	No					3.00E-04	U			1	0.1	1		
N-Methyl dithiocarbamate	137-42-8	No	No									1	0.1	1		
Naled	300-76-5	No	Yes					2.00E-03	U			1		1	7.87E+04	
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	No	Yes					3.00E-02	U	1.00E-01	U	1		1		
Naphthalene	91-20-3	No	Yes			3.40E-05	U	2.00E-02	U	3.00E-03	U	1	0.13	1	6.38E+04	
Naphthol, 2-	135-19-3	No	No									1	0.1	1		
Naphthoquinone, 1,4-	130-15-4	No	No									1	0.1	1		
Naphthylamine, 1-	134-32-7	No	No									1	0.1	1		
Naphthylamine, 2-	91-59-8	No	No	1.80E+00	U	0.00E+00	U					1	0.1	1		
Napropamide	15299-99-7	No	No					1.00E-01	U			1	0.1	1		
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	No	No									1		1		
Niagara Blue 4B	2429-74-5	No	No									1	0.1	1		
Nickel Acetate	373-02-4	No	No			2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1	1		
Nickel Carbonate	3333-67-3	No	No			2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1	1		
Nickel Carbonyl	13463-39-3	No	Yes			2.60E-04	U	1.10E-02	U	1.40E-05	U	1		1		
Nickel Hydroxide	12054-48-7	No	No			2.60E-04	U	1.10E-02	U	1.40E-05	U	0.04		1		
Nickel Oxide	1313-99-1	No	No			2.60E-04	U	1.10E-02	U	2.00E-05	U	0.04		1		
Nickel Refinery Dust	NA	No	No			2.40E-04	U	1.10E-02	U	1.40E-05	U	0.04		1		
Nickel Soluble Salts	7440-02-0	No	No			2.60E-04	U	2.00E-02	U	9.00E-05	U	0.04		1		
Nickel Subsulfide	12035-72-2	No	No	1.70E+00	U	4.80E-04	U	1.10E-02	U	1.40E-05	U	0.04		1		
Nickelocene	1271-28-9	No	No			2.60E-04	U	1.10E-02	U	1.40E-05	U	1	0.1	1		
Nicotinonitrile	100-54-9	No	No									1	0.1	1		
Niobium	7440-03-1	No	No									1		1		
Nitrapyrin	1929-82-4	No	Yes									1		1	3.05E+05	
Nitrate	14797-55-8	No	No					1.60E+00	U			1		1		
Nitrate + Nitrite (as N)	NA	No	No									1		1		
Nitric Acid	7697-37-2	No	No									1	0.1	1		
Nitric Oxide	10102-43-9	No	Yes									1		1		
Nitrite	14797-65-0	No	No					1.00E-01	U			1		1		
Nitroaniline, 2-	88-74-4	No	No					1.00E-02	U	5.00E-05	U	1	0.1	1		
Nitroaniline, 3-	99-09-2	No	No									1	0.1	1		
Nitroaniline, 4-	100-01-6	No	No	2.00E-02	U			4.00E-03	U	6.00E-03	U	1	0.1	1		
Nitrobenzene	98-95-3	No	Yes			4.00E-05	U	2.00E-03	U	9.00E-03	U	1		1	1.01E+05	3.04E+03
Nitrobiphenyl, 4-	92-93-3	No	No									1	0.1	1		
Nitrocellulose	9004-70-0	No	No					3.00E+03	U			1	0.1	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Methylene Chloride	75-09-2	3.23E+09	3.32E+03		4.21E+04	3.08E+03					4.02E+04		1.59E+05	3.21E+04	3.08E+03 ca*
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	3.23E+09	6.64E+01	4.50E+02	1.05E+06	5.79E+01					1.34E+04	4.69E+04		1.04E+04	5.79E+01 ca
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	3.23E+09	4.25E+02	1.49E+03	6.35E+07	3.30E+02									3.30E+02 ca
Methylenebisbenzenamine, 4,4'-	101-77-9	3.23E+09	1.22E+01	4.27E+01	1.80E+06	9.50E+00							5.66E+09	5.66E+09	9.50E+00 ca
Methylenediphenyl Diisocyanate	101-68-8	3.23E+09											1.70E+08	1.70E+08	1.70E+08 max
Methylisothiocyanate	556-61-6	3.23E+09													
Methylnaphthalene	1321-94-4	3.23E+09													
Methylnaphthalene, 1-	90-12-0	3.23E+09	6.74E+02	1.81E+03		4.91E+02					4.69E+05	1.26E+06		3.42E+05	4.91E+02 ca
Methylnaphthalene, 2-	91-57-6	3.23E+09									2.68E+04	7.22E+04		1.95E+04	1.95E+04 nc
Methylstyrene, Alpha-	98-83-9	3.23E+09									4.69E+05			4.69E+05	4.69E+05 sat
Methyltriethyl Lead	1762-28-3	3.23E+09													
Metolachlor	51218-45-2	3.23E+09									1.01E+06	3.52E+06		7.82E+05	7.82E+05 max
Metribuzin	21087-64-9	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Mineral oils	8012-95-1	3.23E+09									2.01E+07			2.01E+07	2.01E+07 sat
Mirex	2385-85-5	3.23E+09	1.09E+00		5.92E+01	1.07E+00					1.34E+03			1.34E+03	1.07E+00 ca
Molinate	2212-67-1	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Molybdenum	7439-98-7	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Monoaluminum phosphate	13530-50-2	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Monoammonium phosphate	7722-76-1	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Monobutyltin Compounds	NA	3.23E+09													
Monocalcium phosphate	7758-23-8	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Monochloramine	10599-90-3	3.23E+09									6.70E+05			6.70E+05	6.70E+05 max
Monochlorobutanes	25154-42-1	3.23E+09													
Monochlorophenols (total)	NA	3.23E+09													
Monocyclic aromatic hydrocarbons (total)	NA	3.23E+09													
Monomagnesium phosphate	7757-86-0	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Monomethylaniline	100-61-8	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Monopotassium phosphate	7778-77-0	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Monosodium phosphate	7558-80-7	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
N-Methyl dithiocarbamate	137-42-8	3.23E+09													
Naled	300-76-5	3.23E+09									1.34E+04			1.34E+04	1.34E+04 nc
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	3.23E+09									2.01E+05		2.83E+10	2.01E+05	2.01E+05 max
Naphthalene	91-20-3	3.23E+09			4.79E+02	4.79E+02					1.34E+05	3.61E+05	1.68E+04	1.43E+04	4.79E+02 ca*
Naphthol, 2-	135-19-3	3.23E+09													
Naphthoquinone, 1,4-	130-15-4	3.23E+09													
Naphthylamine, 1-	134-32-7	3.23E+09													
Naphthylamine, 2-	91-59-8	3.23E+09	1.09E+01	3.80E+01		8.45E+00									8.45E+00 ca
Napropamide	15299-99-7	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	3.23E+09													
Niagara Blue 4B	2429-74-5	3.23E+09													
Nickel Acetate	373-02-4	3.23E+09			3.18E+06	3.18E+06					7.37E+04	2.58E+05	3.96E+06	5.65E+04	5.65E+04 nc
Nickel Carbonate	3333-67-3	3.23E+09			3.18E+06	3.18E+06					7.37E+04	2.58E+05	3.96E+06	5.65E+04	5.65E+04 nc
Nickel Carbonyl	13463-39-3	3.23E+09			3.18E+06	3.18E+06					7.37E+04		3.96E+06	7.24E+04	7.24E+04 nc
Nickel Hydroxide	12054-48-7	3.23E+09			3.18E+06	3.18E+06					7.37E+04		3.96E+06	7.24E+04	7.24E+04 nc
Nickel Oxide	1313-99-1	3.23E+09			3.18E+06	3.18E+06					7.37E+04		5.66E+06	7.28E+04	7.28E+04 nc
Nickel Refinery Dust	NA	3.23E+09			3.44E+06	3.44E+06					7.37E+04		3.96E+06	7.24E+04	7.24E+04 nc
Nickel Soluble Salts	7440-02-0	3.23E+09			3.18E+06	3.18E+06					1.34E+05		2.55E+07	1.33E+05	1.33E+05 max
Nickel Subsulfide	12035-72-2	3.23E+09	1.15E+01		1.72E+06	1.15E+01					7.37E+04		3.96E+06	7.24E+04	1.15E+01 ca
Nickelocene	1271-28-9	3.23E+09			3.18E+06	3.18E+06					7.37E+04	2.58E+05	3.96E+06	5.65E+04	5.65E+04 nc
Nicotinonitrile	100-54-9	3.23E+09													
Niobium	7440-03-1	3.23E+09													
Nitrapyrin	1929-82-4	3.23E+09													
Nitrate	14797-55-8	3.23E+09									1.07E+07			1.07E+07	1.07E+07 max
Nitrate + Nitrite (as N)	NA	3.23E+09													
Nitric Acid	7697-37-2	3.23E+09													
Nitric Oxide	10102-43-9	3.23E+09													
Nitrite	14797-65-0	3.23E+09									6.70E+05			6.70E+05	6.70E+05 max
Nitroaniline, 2-	88-74-4	3.23E+09									6.70E+04	2.34E+05	1.42E+07	5.19E+04	5.19E+04 nc
Nitroaniline, 3-	99-09-2	3.23E+09													
Nitroaniline, 4-	100-01-6	3.23E+09	9.77E+02	3.42E+03		7.60E+02					2.68E+04	9.38E+04	1.70E+09	2.08E+04	7.60E+02 ca*
Nitrobenzene	98-95-3	3.23E+09			6.44E+02	6.44E+02					1.34E+04		7.95E+04	1.15E+04	6.44E+02 ca*
Nitrobiphenyl, 4-	92-93-3	3.23E+09													
Nitrocellulose	9004-70-0	3.23E+09									2.01E+10	7.03E+10		1.56E+10	1.56E+10 max

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Nitrodiphenylamine, 2-	119-75-5	No	No									1	0.1	1		
Nitrofurantoin	67-20-9	No	No					7.00E-02	U			1	0.1	1		
Nitrofurazone	59-87-0	No	No	1.30E+00	U	3.70E-04	U					1	0.1	1		
Nitrogen Dioxide	10102-44-0	No	Yes									1		1		
Nitroglycerin	55-63-0	No	No	1.70E-02	U			1.00E-04	U			1	0.1	1		
Nitroguanidine	556-88-7	No	No					1.00E-01	U			1	0.1	1		
Nitromethane	75-52-5	No	Yes			8.80E-06	U			5.00E-03	U	1		1	2.34E+04	1.80E+04
Nitrophenol, 2-	88-75-5	No	Yes									1		1	1.65E+05	
Nitrophenol, 2-amino-4-	99-57-0	No	No									1	0.1	1		
Nitrophenol, 3-	554-84-7	No	No									1	0.1	1		
Nitrophenol, 4-	100-02-7	No	No									1	0.1	1		
Nitrophenol, 4-amino-2-	119-34-6	No	No									1	0.1	1		
Nitropropane, 2-	79-46-9	No	Yes			2.70E-03	U			2.00E-02	U	1		1	1.81E+04	4.86E+03
Nitropyrene, 4-	57835-92-4	No	No	1.20E+00	U	1.10E-04	U					1	0.13	1		
Nitroquinoline-1-oxide, 4-	56-57-5	No	No									1	0.1	1		
Nitroso-N-ethylurea, N-	759-73-9	Yes	No	2.70E+01	U	7.70E-03	U					1	0.1	1		
Nitroso-N-methylurea, N-	684-93-5	Yes	No	1.20E+02	U	3.40E-02	U					1	0.1	1		
Nitroso-di-N-butylamine, N-	924-16-3	No	Yes	5.40E+00	U	1.60E-03	U					1		1	3.35E+05	
Nitroso-di-N-propylamine, N-	621-64-7	No	No	7.00E+00	U	2.00E-03	U					1	0.1	1		
Nitrosodiethanolamine, N-	1116-54-7	No	No	2.80E+00	U	8.00E-04	U					1	0.1	1		
Nitrosodiethylamine, N-	55-18-5	Yes	No	1.50E+02	U	4.30E-02	U					1	0.1	1		
Nitrosodimethylamine, N-	62-75-9	Yes	Yes	5.10E+01	U	1.40E-02	U	8.00E-06	U	4.00E-05	U	1		1	1.14E+05	2.37E+05
Nitrosodiphenylamine, N-	86-30-6	No	No	4.90E-03	U	2.60E-06	U					1	0.1	1		
Nitrosomethylethylamine, N-	10595-95-6	No	Yes	2.20E+01	U	6.30E-03	U					1		1	1.67E+05	1.08E+05
Nitrosomethylvinylamine, N-	4549-40-0	No	Yes									1		1	1.12E+05	1.08E+04
Nitrosomorpholine [N-]	59-89-2	No	No	6.70E+00	U	1.90E-03	U					1	0.1	1		
Nitrosopiperidine [N-]	100-75-4	No	No	9.40E+00	U	2.70E-03	U					1	0.1	1		
Nitrosopyrrolidine, N-	930-55-2	No	No	2.10E+00	U	6.10E-04	U					1	0.1	1		
Nitrotoluene, 4-Amino-2-	119-32-4	No	No									1	0.1	1		
Nitrotoluene, m-	99-08-1	No	No					1.00E-04	U			1	0.1	1		
Nitrotoluene, o-	88-72-2	No	Yes	2.20E-01	U			9.00E-04	U			1		1	1.89E+05	1.51E+03
Nitrotoluene, p-	99-99-0	No	No	1.60E-02	U			4.00E-03	U			1	0.1	1		
Nonachlor, trans-	39765-80-5	No	Yes									1		1	3.73E+06	
Nonane, n-	111-84-2	No	Yes					3.00E-04	U	2.00E-02	U	1		1	1.44E+03	6.86E+00
Nonanol, n-	143-08-8	No	Yes									1		1	6.41E+04	7.27E+01
Norflurazon	27314-13-2	No	No					4.00E-02	U			1	0.1	1		
Nustar	85509-19-9	No	No					7.00E-04	U			1	0.1	1		
OCDD	3268-87-9	No	No	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.03	1		
OCDF	39001-02-0	No	No	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.03	1		
Octabromodiphenyl Ether	32536-52-0	No	No					3.00E-03	U			1	0.1	1		
Octachlorostyrene	29082-74-4	No	Yes									1		1	8.40E+05	
Octadecanoic Acid	57-11-4	No	No									1	0.1	1		
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	No	No					5.00E-02	U			1	0.006	1		
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	No	No									1	0.1	1		
Octamethylpyrophosphoramide	152-16-9	No	No					2.00E-03	U			1	0.1	1		
Octanol, n-	111-87-5	No	Yes									1		1	5.35E+04	1.78E+02
Octanone, 2-	111-13-7	No	Yes									1		1	2.12E+04	3.60E+02
Octanone, 3-	106-68-3	No	Yes									1		1	2.60E+04	1.08E+03
Octyl Phthalate, di-N-	117-84-0	No	No					1.00E-02	U			1	0.1	1		
Oleic acid	112-80-1	Yes	Yes									1		1	1.43E+06	1.44E+00
Oleum	8014-95-7	No	No									1		1		
Oryzalin	19044-88-3	No	No					5.00E-02	U			1	0.1	1		
Oxadiazon	19666-30-9	No	No					5.00E-03	U			1	0.1	1		
Oxamyl	23135-22-0	No	No					2.50E-02	U			1	0.1	1		
Oxychlordane	27304-13-8	No	No									1	0.1	1		
Ozone	10028-15-6	No	No									1		1		
Paclobutrazol	76738-62-0	No	No					1.30E-02	U			1	0.1	1		
Paraquat Dichloride	1910-42-5	No	No					4.50E-03	U			1	0.1	1		
Parathion	56-38-2	No	No					6.00E-03	U			1	0.1	1		
PeCDD, 2,3,7,8-	36088-22-9	No	No	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03	1		
PeCDF, 1,2,3,7,8-	57117-41-6	No	No	3.90E+03	U	1.14E+00	U	2.33E-08	U	1.33E-06	U	1	0.03	1		
PeCDF, 2,3,4,7,8-	57117-31-4	No	No	3.90E+04	U	1.14E+01	U	2.33E-09	U	1.33E-07	U	1	0.03	1		
Pebulate	1114-71-2	No	Yes					5.00E-02	U			1		1	6.20E+04	

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Nitrodiphenylamine, 2-	119-75-5	3.23E+09													
Nitrofurantoin	67-20-9	3.23E+09									4.69E+05	1.64E+06		3.65E+05	3.65E+05 max
Nitrofurazone	59-87-0	3.23E+09	1.50E+01	5.26E+01	2.23E+06	1.17E+01									1.17E+01 ca
Nitrogen Dioxide	10102-44-0	3.23E+09													
Nitroglycerin	55-63-0	3.23E+09	1.15E+03	4.02E+03		8.94E+02					6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Nitroguanidine	556-88-7	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Nitromethane	75-52-5	3.23E+09			6.78E+02	6.78E+02							1.02E+04	1.02E+04	6.78E+02 ca*
Nitrophenol, 2-	88-75-5	3.23E+09													
Nitrophenol, 2-amino-4-	99-57-0	3.23E+09													
Nitrophenol, 3-	554-84-7	3.23E+09													
Nitrophenol, 4-	100-02-7	3.23E+09													
Nitrophenol, 4-amino-2-	119-34-6	3.23E+09													
Nitropropane, 2-	79-46-9	3.23E+09			1.71E+00	1.71E+00							3.17E+04	3.17E+04	1.71E+00 ca
Nitropyrene, 4-	57835-92-4	3.23E+09	1.63E+01	4.38E+01	7.51E+06	1.19E+01									1.19E+01 ca
Nitroquinoline-1-oxide, 4-	56-57-5	3.23E+09													
Nitroso-N-ethylurea, N-	759-73-9	3.23E+09	2.46E-01	1.67E+00	5.85E+04	2.14E-01									2.14E-01 ca
Nitroso-N-methylurea, N-	684-93-5	3.23E+09	5.54E-02	3.75E-01	1.33E+04	4.82E-02									4.82E-02 ca
Nitroso-di-N-butylamine, N-	924-16-3	3.23E+09	3.62E+00		5.35E+01	3.39E+00									3.39E+00 ca
Nitroso-di-N-propylamine, N-	621-64-7	3.23E+09	2.79E+00	9.77E+00	4.13E+05	2.17E+00									2.17E+00 ca
Nitrosodiethanolamine, N-	1116-54-7	3.23E+09	6.98E+00	2.44E+01	1.03E+06	5.43E+00									5.43E+00 ca
Nitrosodiethylamine, N-	55-18-5	3.23E+09	4.43E-02	3.00E-01	1.05E+04	3.86E-02									3.86E-02 ca
Nitrosodimethylamine, N-	62-75-9	3.23E+09	1.30E-01		1.13E+00	1.17E-01					5.36E+01		3.98E+02	4.72E+01	1.17E-01 ca
Nitrosodiphenylamine, N-	86-30-6	3.23E+09	3.99E+03	1.40E+04	3.18E+08	3.10E+03									3.10E+03 ca
Nitrosomethylethylamine, N-	10595-95-6	3.23E+09	8.89E-01		6.77E+00	7.85E-01									7.85E-01 ca
Nitrosomethylvinylamine, N-	4549-40-0	3.23E+09													
Nitrosomorpholine [N-]	59-89-2	3.23E+09	2.92E+00	1.02E+01	4.35E+05	2.27E+00									2.27E+00 ca
Nitrosopiperidine [N-]	100-75-4	3.23E+09	2.08E+00	7.28E+00	3.06E+05	1.62E+00									1.62E+00 ca
Nitrosopyrrolidine, N-	930-55-2	3.23E+09	9.31E+00	3.26E+01	1.35E+06	7.24E+00									7.24E+00 ca
Nitrotoluene, 4-Amino-2-	119-32-4	3.23E+09													
Nitrotoluene, m-	99-08-1	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Nitrotoluene, o-	88-72-2	3.23E+09	8.89E+01			8.89E+01					6.03E+03			6.03E+03	8.89E+01 ca*
Nitrotoluene, p-	99-99-0	3.23E+09	1.22E+03	4.27E+03		9.50E+02					2.68E+04	9.38E+04		2.08E+04	9.50E+02 ca*
Nonachlor, trans-	39765-80-5	3.23E+09													
Nonane, n-	111-84-2	3.23E+09									2.01E+03		2.52E+03	1.12E+03	1.12E+03 sat
Nonanol, n-	143-08-8	3.23E+09													
Norflurazon	27314-13-2	3.23E+09									2.68E+05	9.38E+05		2.08E+05	2.08E+05 max
Nustar	85509-19-9	3.23E+09									4.69E+03	1.64E+04		3.65E+03	3.65E+03 nc
OCDD	3268-87-9	3.23E+09	5.01E-01	5.85E+00	7.25E+04	4.62E-01					1.56E+01	1.82E+02	3.77E+07	1.44E+01	4.62E-01 ca*
OCDF	39001-02-0	3.23E+09	5.01E-01	5.85E+00	7.25E+04	4.62E-01					1.56E+01	1.82E+02	3.77E+07	1.44E+01	4.62E-01 ca*
Octabromodiphenyl Ether	32536-52-0	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Octachlorostyrene	29082-74-4	3.23E+09													
Octadecanoic Acid	57-11-4	3.23E+09													
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	3.23E+09									3.35E+05	1.95E+07		3.29E+05	3.29E+05 max
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	3.23E+09													
Octamethylpyrophosphoramide	152-16-9	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Octanol, n-	111-87-5	3.23E+09													
Octanone, 2-	111-13-7	3.23E+09													
Octanone, 3-	106-68-3	3.23E+09													
Octyl Phthalate, di-N-	117-84-0	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Oleic acid	112-80-1	3.23E+09													
Oleum	8014-95-7	3.23E+09													
Oryzalin	19044-88-3	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Oxadiazon	19666-30-9	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Oxamyl	23135-22-0	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Oxychlordane	27304-13-8	3.23E+09													
Ozone	10028-15-6	3.23E+09													
Paclobutrazol	76738-62-0	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Paraquat Dichloride	1910-42-5	3.23E+09									3.02E+04	1.06E+05		2.35E+04	2.35E+04 nc
Parathion	56-38-2	3.23E+09									4.02E+04	1.41E+05		3.13E+04	3.13E+04 nc
PeCDD, 2,3,7,8-	36088-22-9	3.23E+09	1.50E-04	1.75E-03	2.17E+01	1.38E-04					4.69E-03	5.47E-02	1.13E+04	4.32E-03	1.38E-04 ca*
PeCDF, 1,2,3,7,8-	57117-41-6	3.23E+09	5.01E-03	5.85E-02	7.25E+02	4.62E-03					1.56E-01	1.82E+00	3.77E+05	1.44E-01	4.62E-03 ca*
PeCDF, 2,3,4,7,8-	57117-31-4	3.23E+09	5.01E-04	5.85E-03	7.25E+01	4.62E-04					1.56E-02	1.82E-01	3.77E+04	1.44E-02	4.62E-04 ca*
Pebulate	1114-71-2	3.23E+09									3.35E+05			3.35E+05	3.35E+05 max

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Pendimethalin	40487-42-1	No	No					4.00E-02	U			1	0.1	1		
Pentabromodiphenyl Ether	32534-81-9	No	No					2.00E-03	U			1	0.1	1		
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	No	No					1.00E-04	U			1	0.1	1		
Pentachloroaniline	527-20-8	No	No									1	0.1	1		
Pentachlorobenzene	608-93-5	No	Yes					8.00E-04	U			1		1	1.12E+05	
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	1.42E+06	
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	1.14E+06	
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	1.17E+06	
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	No	Yes	3.90E+00	U	1.14E-03	U	2.33E-05	U	1.33E-03	U	1	0.14	1	1.42E+06	
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.14	1	1.41E+06	
Pentachlorocyclopentadiene	25329-35-5	No	Yes									1		1	1.95E+04	
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	No	Yes	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03	1	4.61E+06	
Pentachloroethane	76-01-7	No	Yes	9.00E-02	U							1		1	1.33E+04	4.47E+02
Pentachloronitrobenzene	82-68-8	No	Yes	2.60E-01	U			3.00E-03	U			1		1	5.95E+05	
Pentachlorophenol	87-86-5	No	No	4.00E-01	U	5.10E-06	U	5.00E-03	U			1	0.25	1		
Pentaerythritol tetranitrate (PETN)	78-11-5	No	No	4.00E-03	U			2.00E-03	U			1	0.1	1		
Pentamethyl dipropylenetriamine	3855-32-1	No	No									1	0.1	1		
Pentane, n-	109-66-0	No	Yes							1.00E+00	U	1		1	1.07E+03	3.88E+02
Pentyl Alcohol, N-	71-41-0	No	Yes									1		1	3.91E+04	3.04E+03
Perchlorate and Perchlorate Salts	14797-73-0	No	No					7.00E-04	U			1		1		
Perfluorobutane Sulfonate	375-73-5	No	Yes					2.00E-02	U			1		1	1.82E+05	
Perfluorooctane Sulphonic Acid	1763-23-1	No	Yes									1		1	1.48E+05	
Perfluorooctanoic acid	335-67-1	No	Yes									1		1	3.00E+04	
Permethrin	52645-53-1	No	No					5.00E-02	U			1	0.1	1		
Perylene	198-55-0	No	No									1	0.13	1		
Pesticides (total)	NA	No	No									1	0.1	1		
Pesticides, organochlorinated (each)	NA	No	No									1	0.1	1		
Pesticides, organochlorinated (total)	NA	No	No									1	0.1	1		
Phenacetin	62-44-2	No	No	2.20E-03	U	6.30E-07	U					1	0.1	1		
Phenanthrene	85-01-8	No	Yes									1	0.13	1	8.87E+05	
Phenmedipham	13684-63-4	No	No					2.50E-01	U			1	0.1	1		
Phenol	108-95-2	No	No					3.00E-01	U	2.00E-01	U	1	0.1	1		
Phenothiazine	92-84-2	No	No					5.00E-04	U			1	0.1	1		
Phenyl Isothiocyanate	103-72-0	No	Yes									1		1	9.76E+03	1.29E+02
Phenylenediamine, m-	108-45-2	No	No					6.00E-03	U			1	0.1	1		
Phenylenediamine, o-	95-54-5	No	No	4.70E-02	U							1	0.1	1		
Phenylenediamine, p-	106-50-3	No	No					1.90E-01	U			1	0.1	1		
Phenylmercuric Acetate	62-38-4	No	No					8.00E-05	U			1	0.1	1		
Phenylphenol, 2-	90-43-7	No	No	1.94E-03	U							1	0.1	1		
Phorate	298-02-2	No	No					2.00E-04	U			1	0.1	1		
Phosgene	75-44-5	No	Yes							3.00E-04	U	1		1	1.35E+03	1.61E+03
Phosmet	732-11-6	No	No					2.00E-02	U			1	0.1	1		
Phosphine	7803-51-2	No	Yes					3.00E-04	U	3.00E-04	U	1		1		
Phosphoric Acid	7664-38-2	No	No					4.86E+01	U	1.00E-02	U	1		1		
Phosphorus (total)	NA	No	No									1		1		
Phosphorus pentoxide	1314-56-3	No	No									1		1		
Phosphorus, White	7723-14-0	No	Yes					2.00E-05	U			1		1	9.55E+03	
Phthalates (total)	NA	No	No									1	0.1	1		
Phthalic Acid, P-	100-21-0	No	No					1.00E+00	U			1	0.1	1		
Phthalic Acid, m-	121-91-5	No	No									1	0.1	1		
Phthalic Acid, o-	88-99-3	No	No									1	0.1	1		
Phthalic Anhydride	85-44-9	No	No					2.00E+00	U	2.00E-02	U	1	0.1	1		
Picloram	1918-02-1	No	No					7.00E-02	U			1	0.1	1		
Picoline, 2-	109-06-8	No	Yes									1		1	1.05E+05	7.90E+05
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	No	No					1.00E-04	U			1	0.1	1		
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	No	No									1	0.1	1		
Piperidine	110-89-4	Yes	Yes									1		1	1.12E+05	1.96E+05
Pirimiphos, Methyl	29232-93-7	No	No					1.00E-02	U			1	0.1	1		
Polybrominated Biphenyls	59536-65-1	No	No	3.00E+01	U	8.60E-03	U	7.00E-06	U			1	0.1	1		
Polychlorinated Biphenyls (high risk)	1336-36-3	No	Yes	2.00E+00	U	5.71E-04	U					1	0.14	1	1.08E+06	
Polycyclic aromatic hydrocarbons (PAH), Total	NA	No	No									1	0.13	1		
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	No	No									1	0.13	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Pendimethalin	40487-42-1	3.23E+09									2.68E+05	9.38E+05		2.08E+05	2.08E+05 max
Pentabromodiphenyl Ether	32534-81-9	3.23E+09									1.34E+04	4.69E+04		1.04E+04	1.04E+04 nc
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Pentachloroaniline	527-20-8	3.23E+09													
Pentachlorobenzene	608-93-5	3.23E+09									5.36E+03			5.36E+03	5.36E+03 nc
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	3.23E+09	5.01E+00	1.25E+01	3.19E+02	3.54E+00					1.56E+02	3.90E+02	1.66E+05	1.11E+02	3.54E+00 ca*
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	3.23E+09	5.01E+00	1.25E+01	2.56E+02	3.53E+00					1.56E+02	3.90E+02	1.33E+05	1.11E+02	3.53E+00 ca*
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	3.23E+09	5.01E+00	1.25E+01	2.61E+02	3.53E+00					1.56E+02	3.90E+02	1.36E+05	1.11E+02	3.53E+00 ca*
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	3.23E+09	5.01E+00	1.25E+01	3.19E+02	3.54E+00					1.56E+02	3.90E+02	1.66E+05	1.11E+02	3.54E+00 ca*
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	3.23E+09	1.50E-03	3.76E-03	9.46E-02	1.06E-03					4.69E-02	1.17E-01	4.93E+01	3.35E-02	1.06E-03 ca*
Pentachlorocyclopentadiene	25329-35-5	3.23E+09													
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	3.23E+09	1.50E-04	1.75E-03	3.10E-02	1.38E-04					4.69E-03	5.47E-02	1.61E+01	4.32E-03	1.38E-04 ca*
Pentachloroethane	76-01-7	3.23E+09	2.17E+02			2.17E+02									2.17E+02 ca
Pentachloronitrobenzene	82-68-8	3.23E+09	7.52E+01			7.52E+01					2.01E+04			2.01E+04	7.52E+01 ca
Pentachlorophenol	87-86-5	3.23E+09	4.89E+01	6.84E+01	1.62E+08	2.85E+01					3.35E+04	4.69E+04		1.95E+04	2.85E+01 ca
Pentaerythritol tetranitrate (PETN)	78-11-5	3.23E+09	4.89E+03	1.71E+04		3.80E+03					1.34E+04	4.69E+04		1.04E+04	3.80E+03 ca**
Pentamethyl dipropylenetriamine	3855-32-1	3.23E+09													
Pentane, n-	109-66-0	3.23E+09											9.42E+04	9.42E+04	9.42E+04 sat
Pentyl Alcohol, N-	71-41-0	3.23E+09													
Perchlorate and Perchlorate Salts	14797-73-0	3.23E+09									4.69E+03			4.69E+03	4.69E+03 nc
Perfluorobutane Sulfonate	375-73-5	3.23E+09									1.34E+05			1.34E+05	1.34E+05 max
Perfluorooctane Sulphonic Acid	1763-23-1	3.23E+09													
Perfluorooctanoic acid	335-67-1	3.23E+09													
Permethrin	52645-53-1	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Perylene	198-55-0	3.23E+09													
Pesticides (total)	NA	3.23E+09													
Pesticides, organochlorinated (each)	NA	3.23E+09													
Pesticides, organochlorinated (total)	NA	3.23E+09													
Phenacetin	62-44-2	3.23E+09	8.89E+03	3.11E+04	1.31E+09	6.91E+03									6.91E+03 ca
Phenanthrene	85-01-8	3.23E+09													
Phenmedipham	13684-63-4	3.23E+09									1.68E+06	5.86E+06		1.30E+06	1.30E+06 max
Phenol	108-95-2	3.23E+09									2.01E+06	7.03E+06	5.66E+10	1.56E+06	1.56E+06 max
Phenothiazine	92-84-2	3.23E+09									3.35E+03	1.17E+04		2.61E+03	2.61E+03 nc
Phenyl Isothiocyanate	103-72-0	3.23E+09													
Phenylenediamine, m-	108-45-2	3.23E+09									4.02E+04	1.41E+05		3.13E+04	3.13E+04 nc
Phenylenediamine, o-	95-54-5	3.23E+09	4.16E+02	1.46E+03		3.23E+02									3.23E+02 ca
Phenylenediamine, p-	106-50-3	3.23E+09									1.27E+06	4.46E+06		9.90E+05	9.90E+05 max
Phenylmercuric Acetate	62-38-4	3.23E+09									5.36E+02	1.88E+03		4.17E+02	4.17E+02 nc
Phenylphenol, 2-	90-43-7	3.23E+09	1.01E+04	3.53E+04		7.84E+03									7.84E+03 ca
Phorate	298-02-2	3.23E+09									1.34E+03	4.69E+03		1.04E+03	1.04E+03 nc
Phosgene	75-44-5	3.23E+09											3.56E+01	3.56E+01	3.56E+01 nc
Phosmet	732-11-6	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Phosphine	7803-51-2	3.23E+09									2.01E+03		8.50E+07	2.01E+03	2.01E+03 nc
Phosphoric Acid	7664-38-2	3.23E+09									3.26E+08		2.83E+09	2.92E+08	2.92E+08 max
Phosphorus (total)	NA	3.23E+09													
Phosphorus pentoxide	1314-56-3	3.23E+09													
Phosphorus, White	7723-14-0	3.23E+09									1.34E+02			1.34E+02	1.34E+02 nc
Phthalates (total)	NA	3.23E+09													
Phthalic Acid, P-	100-21-0	3.23E+09									6.70E+06	2.34E+07		5.21E+06	5.21E+06 max
Phthalic Acid, m-	121-91-5	3.23E+09													
Phthalic Acid, o-	88-99-3	3.23E+09													
Phthalic Anhydride	85-44-9	3.23E+09									1.34E+07	4.69E+07	5.66E+09	1.04E+07	1.04E+07 max
Picloram	1918-02-1	3.23E+09									4.69E+05	1.64E+06		3.65E+05	3.65E+05 max
Picoline, 2-	109-06-8	3.23E+09													
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	3.23E+09									6.70E+02	2.34E+03		5.21E+02	5.21E+02 nc
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	3.23E+09													
Piperidine	110-89-4	3.23E+09													
Pirimiphos, Methyl	29232-93-7	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Polybrominated Biphenyls	59536-65-1	3.23E+09	6.52E-01	2.28E+00	9.61E+04	5.07E-01					4.69E+01	1.64E+02		3.65E+01	5.07E-01 ca*
Polychlorinated Biphenyls (high risk)	1336-36-3	3.23E+09	9.77E+00	2.44E+01	4.85E+02	6.88E+00									6.88E+00 ca
Polycyclic aromatic hydrocarbons (PAH), Total	NA	3.23E+09													
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	3.23E+09													

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	No	No									1	0.13	1		
Polycyclic chlorinated hydrocarbons (total)	NA	No	No									1	0.1	1		
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	No	No							6.00E-04	U	1	0.1	1		
Polyphosphoric acid	8017-16-1	No	No					4.86E+01	U			1		1		
Potassium	7440-09-7	No	No									1		1		
Potassium Cyanide	151-50-8	No	No					2.00E-03	U			1		1		
Potassium Perchlorate	7778-74-7	No	No					7.00E-04	U			1		1		
Potassium Perfluorobutane Sulfonate	29420-49-3	No	No					2.00E-02	U			1	0.1	1		
Potassium Silver Cyanide	506-61-6	No	No					5.00E-03	U			0.04		1		
Potassium chlorate	3811-04-9	No	No									1		1		
Potassium tripolyphosphate	13845-36-8	No	No					4.86E+01	U			1		1		
Praseodymium	7440-10-0	No	No									1		1		
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	No	No									1		1		
Prochloraz	67747-09-5	No	No	1.50E-01	U			9.00E-03	U			1	0.1	1		
Profluralin	26399-36-0	No	Yes					6.00E-03	U			1		1	5.78E+05	
Promethium	7440-12-2	No	No									1		1		
Prometon	1610-18-0	No	No					1.50E-02	U			1	0.1	1		
Prometryn	7287-19-6	No	No					4.00E-03	U			1	0.1	1		
Propachlor	1918-16-7	No	No					1.30E-02	U			1	0.1	1		
Propanil	709-98-8	No	No					5.00E-03	U			1	0.1	1		
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	No	No									1	0.1	1		
Propargite	2312-35-8	No	No					2.00E-02	U			1	0.1	1		
Propargyl Alcohol	107-19-7	No	Yes					2.00E-03	U			1		1	8.66E+04	1.11E+05
Propazine	139-40-2	No	No					2.00E-02	U			1	0.1	1		
Propham	122-42-9	No	No					2.00E-02	U			1	0.1	1		
Propiconazole	60207-90-1	No	No					1.30E-02	U			1	0.1	1		
Propionaldehyde	123-38-6	No	Yes							8.00E-03	U	1		1	1.24E+04	3.26E+04
Propionitrile	107-12-0	No	Yes									1		1	2.07E+04	1.56E+04
Propionitrile, 3-(NN-dimethylamino)	1738-25-6	No	Yes									1		1	2.62E+05	1.60E+05
Propyl Alcohol, n-	71-23-8	No	Yes									1		1	4.01E+04	1.11E+05
Propyl benzene	103-65-1	No	Yes					1.00E-01	U	1.00E+00	U	1		1	9.64E+03	2.64E+02
Propylene	115-07-1	No	Yes							3.00E+00	U	1		1	9.70E+02	3.49E+02
Propylene Glycol	57-55-6	No	No					2.00E+01	U			1	0.1	1		
Propylene Glycol Dinitrate	6423-43-4	No	No							2.72E-04	U	1	0.1	1		
Propylene Glycol Monoethyl Ether	1569-02-4	No	Yes					7.00E-01	U			1		1	2.14E+05	8.52E+04
Propylene Glycol Monomethyl Ether	107-98-2	No	Yes					7.00E-01	U	2.00E+00	U	1		1	1.08E+05	1.06E+05
Propylene Oxide	75-56-9	No	Yes	2.40E-01	U	3.70E-06	U			3.00E-02	U	1		1	1.42E+04	7.77E+04
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	No	No									1	0.1	1		
Pursuit	81335-77-5	No	No					2.50E-01	U			1	0.1	1		
Pydrin	51630-58-1	No	No					2.50E-02	U			1	0.1	1		
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	No	No									1	0.1	1		
Pyrene	129-00-0	No	Yes					3.00E-02	U			1	0.13	1	3.28E+06	
Pyridine	110-86-1	No	Yes					1.00E-03	U			1		1	7.64E+04	5.30E+05
Quinalphos	13593-03-8	No	No					5.00E-04	U			1	0.1	1		
Quinoline	91-22-5	No	No	3.00E+00	U							1	0.1	1		
Refractory Ceramic Fibers	NA	No	No							3.00E-02	U	1		1		
Resmethrin	10453-86-8	No	No					3.00E-02	U			1	0.1	1		
Resorcinol	108-46-3	No	No									1	0.1	1		
Ronnel	299-84-3	No	Yes					5.00E-02	U			1		1	6.40E+05	
Rotenone	83-79-4	No	No					4.00E-03	U			1	0.1	1		
Safrole	94-59-7	Yes	No	2.20E-01	U	6.30E-05	U					1	0.1	1		
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	No	No									1		1		
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	No	No									1		1		
Savey	78587-05-0	No	No					2.50E-02	U			1	0.1	1		
Scandium	7440-20-2	No	No									1		1		
Selenious Acid	7783-00-8	No	No					5.00E-03	U			1		1		
Selenite	14124-67-5	No	No									1		1		
Selenium	7782-49-2	No	No					5.00E-03	U	2.00E-02	U	1		1		
Selenium Sulfide	7446-34-6	No	No					5.00E-03	U	2.00E-02	U	1		1		
Selenourea	630-10-4	No	No									1	0.1	1		
Sethoxydim	74051-80-2	No	No					9.00E-02	U			1	0.1	1		
Silica (crystalline, respirable)	7631-86-9	No	No							3.00E-03	U	1		1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	3.23E+09													
Polycyclic chlorinated hydrocarbons (total)	NA	3.23E+09													
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	3.23E+09											1.70E+08	1.70E+08	1.70E+08 max
Polyphosphoric acid	8017-16-1	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Potassium	7440-09-7	3.23E+09													
Potassium Cyanide	151-50-8	3.23E+09									1.34E+04			1.34E+04	1.34E+04 nc
Potassium Perchlorate	7778-74-7	3.23E+09									4.69E+03			4.69E+03	4.69E+03 nc
Potassium Perfluorobutane Sulfonate	29420-49-3	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Potassium Silver Cyanide	506-61-6	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Potassium chlorate	3811-04-9	3.23E+09													
Potassium tripolyphosphate	13845-36-8	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Praseodymium	7440-10-0	3.23E+09													
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	3.23E+09													
Prochloraz	67747-09-5	3.23E+09	1.30E+02	4.56E+02		1.01E+02					6.03E+04	2.11E+05		4.69E+04	1.01E+02 ca
Profluralin	26399-36-0	3.23E+09									4.02E+04			4.02E+04	4.02E+04 nc
Promethium	7440-12-2	3.23E+09													
Prometon	1610-18-0	3.23E+09									1.01E+05	3.52E+05		7.82E+04	7.82E+04 nc
Prometryn	7287-19-6	3.23E+09									2.68E+04	9.38E+04		2.08E+04	2.08E+04 nc
Propachlor	1918-16-7	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Propanil	709-98-8	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	3.23E+09													
Propargite	2312-35-8	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Propargyl Alcohol	107-19-7	3.23E+09									1.34E+04			1.34E+04	1.34E+04 nc
Propazine	139-40-2	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Propham	122-42-9	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Propiconazole	60207-90-1	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Propionaldehyde	123-38-6	3.23E+09											8.66E+03	8.66E+03	8.66E+03 nc
Propionitrile	107-12-0	3.23E+09													
Propionitrile, 3-(NN-dimethylamino)	1738-25-6	3.23E+09													
Propyl Alcohol, n-	71-23-8	3.23E+09													
Propyl benzene	103-65-1	3.23E+09									6.70E+05		8.45E+05	3.74E+05	3.74E+05 sat
Propylene	115-07-1	3.23E+09											2.55E+05	2.55E+05	2.55E+05 sat
Propylene Glycol	57-55-6	3.23E+09									1.34E+08	4.69E+08		1.04E+08	1.04E+08 max
Propylene Glycol Dinitrate	6423-43-4	3.23E+09											7.70E+07	7.70E+07	7.70E+07 max
Propylene Glycol Monoethyl Ether	1569-02-4	3.23E+09									4.69E+06			4.69E+06	4.69E+06 sat
Propylene Glycol Monomethyl Ether	107-98-2	3.23E+09									4.69E+06		1.89E+07	3.76E+06	3.76E+06 sat
Propylene Oxide	75-56-9	3.23E+09	8.14E+01		9.77E+02	7.52E+01							3.72E+04	3.72E+04	7.52E+01 ca
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	3.23E+09													
Pursuit	81335-77-5	3.23E+09									1.68E+06	5.86E+06		1.30E+06	1.30E+06 max
Pydrin	51630-58-1	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	3.23E+09													
Pyrene	129-00-0	3.23E+09									2.01E+05	5.41E+05		1.47E+05	1.47E+05 max
Pyridine	110-86-1	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Quinalphos	13593-03-8	3.23E+09									3.35E+03	1.17E+04		2.61E+03	2.61E+03 nc
Quinoline	91-22-5	3.23E+09	6.52E+00	2.28E+01		5.07E+00									5.07E+00 ca
Refractory Ceramic Fibers	NA	3.23E+09											8.50E+09	8.50E+09	8.50E+09 max
Resmethrin	10453-86-8	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Resorcinol	108-46-3	3.23E+09													
Ronnel	299-84-3	3.23E+09									3.35E+05			3.35E+05	3.35E+05 max
Rotenone	83-79-4	3.23E+09									2.68E+04	9.38E+04		2.08E+04	2.08E+04 nc
Safrole	94-59-7	3.23E+09	3.02E+01	2.05E+02	7.15E+06	2.63E+01									2.63E+01 ca
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	3.23E+09													
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	3.23E+09													
Savey	78587-05-0	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Scandium	7440-20-2	3.23E+09													
Selenious Acid	7783-00-8	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Selenite	14124-67-5	3.23E+09													
Selenium	7782-49-2	3.23E+09									3.35E+04		5.66E+09	3.35E+04	3.35E+04 nc
Selenium Sulfide	7446-34-6	3.23E+09									3.35E+04		5.66E+09	3.35E+04	3.35E+04 nc
Selenourea	630-10-4	3.23E+09													
Sethoxydim	74051-80-2	3.23E+09									6.03E+05	2.11E+06		4.69E+05	4.69E+05 max
Silica (crystalline, respirable)	7631-86-9	3.23E+09											8.50E+08	8.50E+08	8.50E+08 max

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Silicon	7440-21-3	No	No									1		1		
Silver	7440-22-4	No	No					5.00E-03	U			0.04		1		
Silver Cyanide	506-64-9	No	No					1.00E-01	U			0.04		1		
Simazine	122-34-9	No	No	1.20E-01	U			5.00E-03	U			1	0.1	1		
Sodium	7440-23-5	No	No									1		1		
Sodium Acifluorfen	62476-59-9	No	No					1.30E-02	U			1	0.1	1		
Sodium Azide	26628-22-8	No	No					4.00E-03	U			1		1		
Sodium Chlorate	7775-09-9	No	No									1		1		
Sodium Cyanide	143-33-9	No	No					1.00E-03	U			1		1		
Sodium Dichromate	10588-01-9	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025		1		
Sodium Diethyldithiocarbamate	148-18-5	No	No	2.70E-01	U			3.00E-02	U			1	0.1	1		
Sodium Fluoride	7681-49-4	No	No					5.00E-02	U	1.30E-02	U	1		1		
Sodium Fluoroacetate	62-74-8	No	No					2.00E-05	U			1	0.1	1		
Sodium Hydroxide	1310-73-2	No	No									1		1		
Sodium Metavanadate	13718-26-8	No	No					1.00E-03	U			1		1		
Sodium Perchlorate	7601-89-0	No	No					7.00E-04	U			1		1		
Sodium acid pyrophosphate	7758-16-9	No	No					4.86E+01	U			1		1		
Sodium aluminum phosphate (acidic)	7785-88-8	No	No					4.86E+01	U			1		1		
Sodium aluminum phosphate (anhydrous)	10279-59-1	No	No					4.86E+01	U			1		1		
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	No	No					4.86E+01	U			1		1		
Sodium hexametaphosphate	10124-56-8	No	No					4.86E+01	U			1		1		
Sodium polyphosphate	68915-31-1	No	No					4.86E+01	U			1		1		
Sodium trimetaphosphate	7785-84-4	No	No					4.86E+01	U			1		1		
Sodium tripolyphosphate	7758-29-4	No	No					4.86E+01	U			1		1		
Stearyl Acetate	822-23-1	No	Yes									1		1	8.92E+04	
Stirofos (Tetrachlorovinphos)	961-11-5	No	No	2.40E-02	U			3.00E-02	U			1	0.1	1		
Strontium Chromate	7789-06-2	Yes	No	5.00E-01	U	1.50E-01	U	2.00E-02	U	2.00E-04	U	0.025		1		
Strontium, Stable	7440-24-6	No	No					6.00E-01	U			1		1		
Strychnine	57-24-9	No	No					3.00E-04	U			1	0.1	1		
Styrene	100-42-5	No	Yes					2.00E-01	U	1.00E+00	U	1		1	1.29E+04	8.67E+02
Styrene-Acrylonitrile (SAN) Trimer	NA	No	No					3.00E-03	U			1	0.1	1		
Sulfate	14808-79-8	No	No									1		1		
Sulfide	18496-25-8	No	No									1		1		
Sulfolane	126-33-0	No	No					1.00E-03	U	2.00E-03	U	1	0.1	1		
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	No	No					8.00E-04	U			1	0.1	1		
Sulfur	7704-34-9	No	No									1		1		
Sulfur Dioxide	7446-09-5	No	Yes									1		1		
Sulfur Mustard	505-60-2	No	Yes									1		1	1.21E+05	1.08E+03
Sulfur Trioxide	7446-11-9	No	Yes							1.00E-03	U	1		1		
Sulfuric Acid	7664-93-9	No	No							1.00E-03	U	1		1		
Systhane	88671-89-0	No	No					2.50E-02	U			1	0.1	1		
TCDD, 2,3,7,8-	1746-01-6	No	Yes	1.30E+05	U	3.80E+01	U	7.00E-10	U	4.00E-08	U	1	0.03	1	2.71E+06	
TCDF, 2,3,7,8-	51207-31-9	No	Yes	1.30E+04	U	3.80E+00	U	7.00E-09	U	4.00E-07	U	1	0.03	1	4.72E+06	
TCMTB	21564-17-0	No	No					3.00E-02	U			1	0.1	1		
Tebuthiuron	34014-18-1	No	No					7.00E-02	U			1	0.1	1		
Technetium	7440-26-8	No	No									1		1		
Tellurium	13494-80-9	No	No									1		1		
Temephos	3383-96-8	No	No					2.00E-02	U			1	0.1	1		
Terbacil	5902-51-2	No	No					1.30E-02	U			1	0.1	1		
Terbufos	13071-79-9	No	Yes					2.50E-05	U			1		1	3.64E+05	3.09E+01
Terbutryn	886-50-0	No	No					1.00E-03	U			1	0.1	1		
Tetrabutyl Lead	1920-90-7	No	Yes									1		1	6.41E+03	
Tetrachloroaniline, 2,3,5,6-	3481-20-7	No	No									1	0.1	1		
Tetrachlorobenzene, 1,2,3,4-	634-66-2	No	Yes									1		1	8.26E+04	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	No	Yes					3.00E-04	U			1		1	6.99E+04	
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	No	No	1.30E+01	U	3.80E-03	U	7.00E-06	U	4.00E-04	U	1	0.14	1		
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	No	Yes	3.90E+01	U	1.14E-02	U	2.33E-06	U	1.33E-04	U	1	0.14	1	1.00E+06	
Tetrachloroethane, 1,1,1,2-	630-20-6	No	Yes	2.60E-02	U	7.40E-06	U	3.00E-02	U			1		1	7.83E+03	6.80E+02
Tetrachloroethane, 1,1,2,2-	79-34-5	No	Yes	2.00E-01	U	5.80E-05	U	2.00E-02	U			1		1	2.08E+04	1.90E+03
Tetrachloroethylene	127-18-4	No	Yes	2.10E-03	U	2.60E-07	U	6.00E-03	U	4.00E-02	U	1		1	3.24E+03	1.66E+02
Tetrachlorophenol, 2,3,4,5-	4901-51-3	No	No									1	0.1	1		
Tetrachlorophenol, 2,3,4,6-	58-90-2	No	No					3.00E-02	U			1	0.1	1		
Tetrachlorophenols (total)	25167-83-3	No	No									1	0.1	1		
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	No	No									1	0.1	1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Silicon	7440-21-3	3.23E+09													
Silver	7440-22-4	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Silver Cyanide	506-64-9	3.23E+09									6.70E+05			6.70E+05	6.70E+05 max
Simazine	122-34-9	3.23E+09	1.63E+02	5.70E+02		1.27E+02					3.35E+04	1.17E+05		2.61E+04	1.27E+02 ca
Sodium	7440-23-5	3.23E+09													
Sodium Acifluorfen	62476-59-9	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Sodium Azide	26628-22-8	3.23E+09									2.68E+04			2.68E+04	2.68E+04 nc
Sodium Chlorate	7775-09-9	3.23E+09													
Sodium Cyanide	143-33-9	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Sodium Dichromate	10588-01-9	3.23E+09	1.33E+01		3.00E+03	1.32E+01					1.34E+05		5.66E+07	1.34E+05	1.32E+01 ca
Sodium Diethyldithiocarbamate	148-18-5	3.23E+09	7.24E+01	2.53E+02		5.63E+01					2.01E+05	7.03E+05		1.56E+05	5.63E+01 ca
Sodium Fluoride	7681-49-4	3.23E+09									3.35E+05		3.68E+09	3.35E+05	3.35E+05 max
Sodium Fluoroacetate	62-74-8	3.23E+09									1.34E+02	4.69E+02		1.04E+02	1.04E+02 nc
Sodium Hydroxide	1310-73-2	3.23E+09													
Sodium Metavanadate	13718-26-8	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Sodium Perchlorate	7601-89-0	3.23E+09									4.69E+03			4.69E+03	4.69E+03 nc
Sodium acid pyrophosphate	7758-16-9	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium aluminum phosphate (acidic)	7785-88-8	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium aluminum phosphate (anhydrous)	10279-59-1	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium hexametaphosphate	10124-56-8	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium polyphosphate	68915-31-1	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium trimetaphosphate	7785-84-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Sodium tripolyphosphate	7758-29-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Stearyl Acetate	822-23-1	3.23E+09													
Stirofos (Tetrachlorovinphos)	961-11-5	3.23E+09	8.14E+02	2.85E+03		6.33E+02					2.01E+05	7.03E+05		1.56E+05	6.33E+02 ca
Strontium Chromate	7789-06-2	3.23E+09	1.33E+01		3.00E+03	1.32E+01					1.34E+05		5.66E+07	1.34E+05	1.32E+01 ca
Strontium, Stable	7440-24-6	3.23E+09									4.02E+06			4.02E+06	4.02E+06 max
Strychnine	57-24-9	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Styrene	100-42-5	3.23E+09									1.34E+06		1.13E+06	6.14E+05	6.14E+05 sat
Styrene-Acrylonitrile (SAN) Trimer	NA	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Sulfate	14808-79-8	3.23E+09													
Sulfide	18496-25-8	3.23E+09													
Sulfolane	126-33-0	3.23E+09									6.70E+03	2.34E+04	5.66E+08	5.21E+03	5.21E+03 nc
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	3.23E+09									5.36E+03	1.88E+04		4.17E+03	4.17E+03 nc
Sulfur	7704-34-9	3.23E+09													
Sulfur Dioxide	7446-09-5	3.23E+09													
Sulfur Mustard	505-60-2	3.23E+09													
Sulfur Trioxide	7446-11-9	3.23E+09											2.83E+08	2.83E+08	2.83E+08 max
Sulfuric Acid	7664-93-9	3.23E+09											2.83E+08	2.83E+08	2.83E+08 max
Systhane	88671-89-0	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
TCDD, 2,3,7,8-	1746-01-6	3.23E+09	1.50E-04	1.75E-03	1.82E-02	1.37E-04					4.69E-03	5.47E-02	9.48E+00	4.32E-03	1.37E-04 ca*
TCDF, 2,3,7,8-	51207-31-9	3.23E+09	1.50E-03	1.75E-02	3.17E-01	1.38E-03					4.69E-02	5.47E-01	1.65E+02	4.32E-02	1.38E-03 ca*
TCMTB	21564-17-0	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Tebuthiuron	34014-18-1	3.23E+09									4.69E+05	1.64E+06		3.65E+05	3.65E+05 max
Technetium	7440-26-8	3.23E+09													
Tellurium	13494-80-9	3.23E+09													
Temephos	3383-96-8	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Terbacil	5902-51-2	3.23E+09									8.71E+04	3.05E+05		6.78E+04	6.78E+04 nc
Terbufos	13071-79-9	3.23E+09									1.68E+02			1.68E+02	1.68E+02 sat
Terbutryn	886-50-0	3.23E+09									6.70E+03	2.34E+04		5.21E+03	5.21E+03 nc
Tetrabutyl Lead	1920-90-7	3.23E+09													
Tetrachloroaniline, 2,3,5,6-	3481-20-7	3.23E+09													
Tetrachlorobenzene, 1,2,3,4-	634-66-2	3.23E+09													
Tetrachlorobenzene, 1,2,4,5-	95-94-3	3.23E+09									2.01E+03			2.01E+03	2.01E+03 nc
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	3.23E+09	1.50E+00	3.76E+00	2.17E+05	1.07E+00					4.69E+01	1.17E+02	1.13E+08	3.35E+01	1.07E+00 ca*
Tetrachlorobiphenyl, 3,4,4'.5- (PCB 81)	70362-50-4	3.23E+09	5.01E-01	1.25E+00	2.24E+01	3.52E-01					1.56E+01	3.90E+01	1.17E+04	1.11E+01	3.52E-01 ca*
Tetrachloroethane, 1,1,1,2-	630-20-6	3.23E+09	7.52E+02		2.70E+02	1.99E+02					2.01E+05			2.01E+05	1.99E+02 ca
Tetrachloroethane, 1,1,2,2-	79-34-5	3.23E+09	9.77E+01		9.18E+01	4.73E+01					1.34E+05			1.34E+05	4.73E+01 ca
Tetrachloroethylene	127-18-4	3.23E+09	9.31E+03		3.18E+03	2.37E+03					4.02E+04		1.13E+04	8.85E+03	2.37E+03 sat
Tetrachlorophenol, 2,3,4,5-	4901-51-3	3.23E+09													
Tetrachlorophenol, 2,3,4,6-	58-90-2	3.23E+09									2.01E+05	7.03E+05		1.56E+05	1.56E+05 max
Tetrachlorophenols (total)	25167-83-3	3.23E+09													
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	3.23E+09													

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	No	Yes	2.00E+01	U							1		1	1.46E+05	
Tetraethyl Dithiopyrophosphate	3689-24-5	No	No					5.00E-04	U			1	0.1	1		
Tetraethyl Lead	78-00-2	No	Yes					1.00E-07	U			1		1	2.64E+03	2.43E+00
Tetrafluoroethane, 1,1,1,2-	811-97-2	No	Yes							8.00E+01	U	1		1	1.68E+03	1.09E+03
Tetrahydrofuran	109-99-9	No	Yes					9.00E-01	U	2.00E+00	U	1	0.03	1	1.69E+04	1.65E+05
Tetrahydrothiophene	110-01-0	No	Yes									1		1	1.81E+04	3.44E+03
Tetramethyl Lead	75-74-1	No	Yes									1		1	1.89E+03	3.64E+01
Tetramethylcyclohexane	30501-43-0	No	Yes									1		1		
Tetrapotassium phosphate	7320-34-5	No	No					4.86E+01	U			1		1		
Tetrapropyl Lead	3440-75-3	No	Yes									1		1	3.65E+03	
Tetrasodium pyrophosphate	7722-88-5	No	No					4.86E+01	U			1		1		
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	No	No					2.00E-03	U			1	0.00065	1		
Thallic Oxide	1314-32-5	No	No									1		1		
Thallium (I) Nitrate	10102-45-1	No	No					7.00E-06	U			1		1		
Thallium (Soluble Salts)	7440-28-0	No	No					1.00E-05	U			1		1		
Thallium Acetate	563-68-8	No	No					6.00E-06	U			1	0.1	1		
Thallium Carbonate	6533-73-9	No	No					2.00E-05	U			1	0.1	1		
Thallium Chloride	7791-12-0	No	No					6.00E-06	U			1		1		
Thallium Selenite	12039-52-0	No	No									1		1		
Thallium Sulfate	7446-18-6	No	No					2.00E-05	U			1		1		
Thiobencarb	28249-77-6	No	No					1.00E-02	U			1	0.1	1		
Thiocyanates	NA	No	No					2.00E-04	U			1		1		
Thiocyanic Acid	463-56-9	No	Yes					2.00E-04	U			1		1		
Thiodiglycol	111-48-8	No	No					7.00E-02	U			1	0.0075	1		
Thiofanox	39196-18-4	No	No					3.00E-04	U			1	0.1	1		
Thiophanate, Methyl	23564-05-8	No	No					8.00E-02	U			1	0.1	1		
Thiophene	110-02-1	No	Yes									1		1	5.77E+03	1.80E+03
Thiram	137-26-8	No	No					5.00E-03	U			1	0.1	1		
Thorium	NA	No	No									1		1		
Thymol	89-83-8	No	No									1	0.1	1		
Tin	7440-31-5	No	No					6.00E-01	U			1		1		
Titanium	7440-32-6	No	No									1		1		
Titanium Tetrachloride	7550-45-0	No	Yes							1.00E-04	U	1		1		
Toluene	108-88-3	No	Yes					8.00E-02	U	5.00E+00	U	1		1	5.92E+03	8.18E+02
Toluene-2,5-diamine	95-70-5	No	No	1.80E-01	U			2.00E-04	U			1	0.1	1		
Toluenediamine, 2,3-	2687-25-4	No	No									1	0.1	1		
Toluenediamine, 3,4-	496-72-0	No	No									1	0.1	1		
Toluidine, p-	106-49-0	No	No	3.00E-02	U			4.00E-03	U			1	0.1	1		
Total Petroleum Hydrocarbons (Aliphatic High)	NA	No	Yes					3.00E+00	U			1		1	1.46E+03	3.41E-01
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	No	Yes							6.00E-01	U	1		1	1.14E+03	1.41E+02
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	No	Yes					1.00E-02	U	1.00E-01	U	1		1	1.44E+03	6.86E+00
Total Petroleum Hydrocarbons (Aromatic High)	NA	No	No					4.00E-02	U			1	0.1	1		
Total Petroleum Hydrocarbons (Aromatic Low)	NA	No	Yes					4.00E-03	U	3.00E-02	U	1		1	4.88E+03	1.82E+03
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	No	Yes					4.00E-03	U	3.00E-03	U	1		1	7.23E+04	
Toxaphene	8001-35-2	No	No	1.10E+00	U	3.20E-04	U					1	0.1	1		
Tralomethrin	66841-25-6	No	No					7.50E-03	U			1	0.1	1		
Tri-n-butyltin	688-73-3	No	Yes					3.00E-04	U			1		1	4.63E+03	
Triacetin	102-76-1	No	No					8.00E+01	U			1	0.1	1		
Triallate	2303-17-5	No	Yes					1.30E-02	U			1		1	5.00E+05	
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	No	No					4.86E+01	U			1		1		
Triasulfuron	82097-50-5	No	No					1.00E-02	U			1	0.1	1		
Triaziquone	68-76-8	No	No									1	0.1	1		
Tribromobenzene, 1,2,4-	615-54-3	No	Yes					5.00E-03	U			1		1	6.24E+04	
Tribromochloromethane	594-15-0	No	Yes									1		1	5.65E+04	
Tribromodiphenyl Ether	49690-94-0	No	Yes									1		1	1.07E+06	
Tribromophenol, 2,4,6-	118-79-6	No	No									1	0.1	1		
Tributyl Phosphate	126-73-8	No	No	9.00E-03	U			1.00E-02	U			1	0.1	1		
Tributyltin	56573-85-4	No	Yes									1		1	4.95E+04	
Tributyltin Compounds	NA	No	No					3.00E-04	U			1	0.1	1		
Tributyltin Oxide	56-35-9	No	No					3.00E-04	U			1	0.1	1		
Tributyltin chloride	1461-22-9	No	Yes									1		1	5.94E+03	

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	3.23E+09	9.77E-01			9.77E-01									9.77E-01 ca
Tetraethyl Dithiopyrophosphate	3689-24-5	3.23E+09									3.35E+03	1.17E+04		2.61E+03	2.61E+03 nc
Tetraethyl Lead	78-00-2	3.23E+09									6.70E-01			6.70E-01	6.70E-01 nc
Tetrafluoroethane, 1,1,1,2-	811-97-2	3.23E+09											1.18E+07	1.18E+07	1.18E+07 sat
Tetrahydrofuran	109-99-9	3.23E+09									6.03E+06	7.03E+07	2.95E+06	1.93E+06	1.93E+06 sat
Tetrahydrothiophene	110-01-0	3.23E+09													
Tetramethyl Lead	75-74-1	3.23E+09													
Tetramethylcyclohexane	30501-43-0	3.23E+09													
Tetrapotassium phosphate	7320-34-5	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Tetrapropyl Lead	3440-75-3	3.23E+09													
Tetrasodium pyrophosphate	7722-88-5	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	3.23E+09									1.34E+04	7.22E+06		1.34E+04	1.34E+04 nc
Thallic Oxide	1314-32-5	3.23E+09													
Thallium (I) Nitrate	10102-45-1	3.23E+09									4.69E+01			4.69E+01	4.69E+01 nc
Thallium (Soluble Salts)	7440-28-0	3.23E+09									6.70E+01			6.70E+01	6.70E+01 nc
Thallium Acetate	563-68-8	3.23E+09									4.02E+01	1.41E+02		3.13E+01	3.13E+01 nc
Thallium Carbonate	6533-73-9	3.23E+09									1.34E+02	4.69E+02		1.04E+02	1.04E+02 nc
Thallium Chloride	7791-12-0	3.23E+09									4.02E+01			4.02E+01	4.02E+01 nc
Thallium Selenite	12039-52-0	3.23E+09													
Thallium Sulfate	7446-18-6	3.23E+09									1.34E+02			1.34E+02	1.34E+02 nc
Thiobencarb	28249-77-6	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Thiocyanates	NA	3.23E+09									1.34E+03			1.34E+03	1.34E+03 nc
Thiocyanic Acid	463-56-9	3.23E+09									1.34E+03			1.34E+03	1.34E+03 nc
Thiodiglycol	111-48-8	3.23E+09									4.69E+05	2.19E+07		4.59E+05	4.59E+05 max
Thiofanox	39196-18-4	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Thiophanate, Methyl	23564-05-8	3.23E+09									5.36E+05	1.88E+06		4.17E+05	4.17E+05 max
Thiophene	110-02-1	3.23E+09													
Thiram	137-26-8	3.23E+09									3.35E+04	1.17E+05		2.61E+04	2.61E+04 nc
Thorium	NA	3.23E+09													
Thymol	89-83-8	3.23E+09													
Tin	7440-31-5	3.23E+09									4.02E+06			4.02E+06	4.02E+06 max
Titanium	7440-32-6	3.23E+09													
Titanium Tetrachloride	7550-45-0	3.23E+09											2.83E+07	2.83E+07	2.83E+07 max
Toluene	108-88-3	3.23E+09									5.36E+05		2.59E+06	4.44E+05	4.44E+05 sat
Toluene-2,5-diamine	95-70-5	3.23E+09	1.09E+02	3.80E+02		8.45E+01					1.34E+03	4.69E+03		1.04E+03	8.45E+01 ca*
Toluenediamine, 2,3-	2687-25-4	3.23E+09													
Toluenediamine, 3,4-	496-72-0	3.23E+09													
Toluidine, p-	106-49-0	3.23E+09	6.52E+02	2.28E+03		5.07E+02					2.68E+04	9.38E+04		2.08E+04	5.07E+02 ca*
Total Petroleum Hydrocarbons (Aliphatic High)	NA	3.23E+09									2.01E+07			2.01E+07	2.01E+07 sat
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	3.23E+09											6.01E+04	6.01E+04	6.01E+04 sat
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	3.23E+09									6.70E+04		1.26E+04	1.06E+04	1.06E+04 sat
Total Petroleum Hydrocarbons (Aromatic High)	NA	3.23E+09									2.68E+05	9.38E+05		2.08E+05	2.08E+05 max
Total Petroleum Hydrocarbons (Aromatic Low)	NA	3.23E+09									2.68E+04		1.28E+04	8.67E+03	8.67E+03 sat
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	3.23E+09									2.68E+04		1.90E+04	1.11E+04	1.11E+04 nc
Toxaphene	8001-35-2	3.23E+09	1.78E+01	6.22E+01	2.58E+06	1.38E+01									1.38E+01 ca
Tralomethrin	66841-25-6	3.23E+09									5.03E+04	1.76E+05		3.91E+04	3.91E+04 nc
Tri-n-butyltin	688-73-3	3.23E+09									2.01E+03			2.01E+03	2.01E+03 nc
Triacetin	102-76-1	3.23E+09									5.36E+08	1.88E+09		4.17E+08	4.17E+08 max
Triallate	2303-17-5	3.23E+09									8.71E+04			8.71E+04	8.71E+04 nc
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Triasulfuron	82097-50-5	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Triaziquone	68-76-8	3.23E+09													
Tribromobenzene, 1,2,4-	615-54-3	3.23E+09									3.35E+04			3.35E+04	3.35E+04 nc
Tribromochloromethane	594-15-0	3.23E+09													
Tribromodiphenyl Ether	49690-94-0	3.23E+09													
Tribromophenol, 2,4,6-	118-79-6	3.23E+09													
Tributyl Phosphate	126-73-8	3.23E+09	2.17E+03	7.60E+03		1.69E+03					6.70E+04	2.34E+05		5.21E+04	1.69E+03 ca*
Tributyltin	56573-85-4	3.23E+09													
Tributyltin Compounds	NA	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Tributyltin Oxide	56-35-9	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Tributyltin chloride	1461-22-9	3.23E+09													

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Tributyltin fluoride	1983-10-4	No	Yes									1		1	8.59E+03	
Tributyltin linoleate	24124-25-2	No	Yes									1		1	1.67E+05	
Tributyltin methacrylate	2155-70-6	No	Yes									1		1	1.41E+04	
Tributyltin naphthenate	85409-17-2	No	No									1	0.1	1		
Tricaine Methanesulfonate	886-86-2	No	No									1	0.1	1		
Tricalcium phosphate	7758-87-4	No	No					4.86E+01	U			1		1		
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	No	Yes					3.00E+01	U	3.00E+01	U	1		1	1.77E+03	9.10E+02
Trichloro-2'-hydroxydiphenylether	3380-34-5	No	No									1	0.1	1		
Trichloroacetic Acid	76-03-9	No	No	7.00E-02	U			2.00E-02	U			1	0.1	1		
Trichloroaniline HCl, 2,4,6-	33663-50-2	No	No	2.90E-02	U							1	0.1	1		
Trichloroaniline, 2,4,5-	636-30-6	No	No									1	0.1	1		
Trichloroaniline, 2,4,6-	634-93-5	No	No	7.00E-03	U			3.00E-05	U			1	0.1	1		
Trichlorobenzene	12002-48-1	No	Yes									1		1	3.55E+04	
Trichlorobenzene, 1,2,3-	87-61-6	No	Yes					8.00E-04	U			1		1	4.44E+04	
Trichlorobenzene, 1,2,4-	120-82-1	No	Yes	2.90E-02	U			1.00E-02	U	2.00E-03	U	1		1	4.13E+04	4.05E+02
Trichloroethane, 1,1,1-	71-55-6	No	Yes					2.00E+00	U	5.00E+00	U	1		1	2.27E+03	6.40E+02
Trichloroethane, 1,1,2-	79-00-5	No	Yes	5.70E-02	U	1.60E-05	U	4.00E-03	U	2.00E-04	U	1		1	9.95E+03	2.16E+03
Trichloroethylene	79-01-6	Yes	Yes	4.60E-02	U	4.10E-06	U	5.00E-04	U	2.00E-03	U	1		1	3.04E+03	6.92E+02
Trichlorofluoromethane	75-69-4	No	Yes					3.00E-01	U	7.00E-01	U	1		1	1.43E+03	1.23E+03
Trichlorophenol, 2,4,5-	95-95-4	No	No					1.00E-01	U			1	0.1	1		
Trichlorophenol, 2,4,6-	88-06-2	No	No	1.10E-02	U	3.10E-06	U	1.00E-03	U			1	0.1	1		
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	No	No					1.00E-02	U			1	0.1	1		
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	No	No									1		1		
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	No	No					8.00E-03	U			1	0.1	1		
Trichloropropane, 1,1,2-	598-77-6	No	Yes					5.00E-03	U			1		1	2.07E+04	1.28E+03
Trichloropropane, 1,2,3-	96-18-4	Yes	Yes	3.00E+01	U			4.00E-03	U	3.00E-04	U	1		1	2.17E+04	1.40E+03
Trichloropropene, 1,2,3-	96-19-5	No	Yes					3.00E-03	U	3.00E-04	U	1		1	3.23E+03	4.51E+02
Trichlorotoluene, 2,3,6-	2077-46-5	No	Yes									1		1	5.83E+04	
Trichlorotoluene, alpha 2,6-	2014-83-7	No	Yes									1		1	9.70E+04	
Triclorophenols (total)	NA	No	No									1	0.1	1		
Tricresyl Phosphate (TCP)	1330-78-5	No	No					2.00E-02	U			1	0.1	1		
Tridiphane	58138-08-2	No	No					3.00E-03	U			1	0.1	1		
Tridymite	15468-32-3	Yes	No									1		1		
Triethyl Lead	5224-23-7	No	Yes									1		1	1.80E+03	5.67E+03
Triethyl phosphorothioate [O,O,O-]	126-68-1	No	Yes									1		1	3.87E+04	4.67E+02
Triethylamine	121-44-8	No	Yes							7.00E-03	U	1		1	2.18E+04	2.78E+04
Triethylene Glycol	112-27-6	No	No					2.00E+00	U			1	0.1	1		
Trifluralin	1582-09-8	No	Yes	7.70E-03	U			7.50E-03	U			1		1	7.07E+05	
Trimagnesium phosphate	7757-87-1	No	No					4.86E+01	U			1		1		
Trimethyl Lead	7442-13-9	No	Yes									1		1	1.54E+03	6.92E+04
Trimethyl Phosphate	512-56-1	No	No	2.00E-02	U			1.00E-02	U			1	0.1	1		
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1	No	Yes									1		1	6.96E+05	
Trimethylbenzene, 1,2,3-	526-73-8	No	Yes							5.00E-03	U	1		1	1.30E+04	2.93E+02
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes							7.00E-03	U	1		1	1.09E+04	2.18E+02
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes					1.00E-02	U			1		1	9.11E+03	1.82E+02
Trimethylethyl Lead	1762-26-1	No	Yes									1		1	1.98E+03	2.51E+04
Trimethylpentane, 2,2,4-	540-84-1	No	Yes									1		1	1.29E+03	6.10E+01
Trinitrobenzene, 1,3,5-	99-35-4	No	No					3.00E-02	U			1	0.019	1		
Trinitrotoluene, 2,4,6-	118-96-7	No	No	3.00E-02	U			5.00E-04	U			1	0.032	1		
Triphenylphosphine Oxide	791-28-6	No	No					2.00E-02	U			1	0.1	1		
Triphenyltin	668-34-8	No	Yes									1		1	2.79E+06	
Tripotassium phosphate	7778-53-2	No	No					4.86E+01	U			1		1		
Tripropyl Lead	6618-03-7	No	Yes									1		1	2.30E+03	5.57E+02
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	No	No					2.00E-02	U			1	0.1	1		
Tris(1-chloro-2-propyl)phosphate	13674-84-5	No	No					1.00E-02	U			1	0.1	1		
Tris(2,3-dibromopropyl)phosphate	126-72-7	No	Yes	2.30E+00	U	6.60E-04	U					1		1	1.25E+06	4.67E+02
Tris(2-chloroethyl)phosphate	115-96-8	No	No	2.00E-02	U			7.00E-03	U			1	0.1	1		
Tris(2-ethylhexyl)phosphate	78-42-2	No	No	3.20E-03	U			1.00E-01	U			1	0.1	1		
Trisbutoxyethyl Phosphate	78-51-3	No	No									1	0.1	1		
Trisodium phosphate	7601-54-9	No	No					4.86E+01	U			1		1		
Trithion	786-19-6	No	No									1	0.1	1		
Tungsten	7440-33-7	No	No									1		1		
Uranium (Soluble Salts)	NA	No	No					3.00E-03	U	4.00E-05	U	1		1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Tributyltin fluoride	1983-10-4	3.23E+09													
Tributyltin linoleate	24124-25-2	3.23E+09													
Tributyltin methacrylate	2155-70-6	3.23E+09													
Tributyltin naphthenate	85409-17-2	3.23E+09													
Tricaine Methanesulfonate	886-86-2	3.23E+09													
Tricalcium phosphate	7758-87-4	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	3.23E+09									2.01E+08		4.66E+06	4.55E+06	4.55E+06 sat
Trichloro-2'-hydroxydiphenylether	3380-34-5	3.23E+09													
Trichloroacetic Acid	76-03-9	3.23E+09	2.79E+02	9.77E+02		2.17E+02					1.34E+05	4.69E+05		1.04E+05	2.17E+02 ca
Trichloroaniline HCl, 2,4,6-	33663-50-2	3.23E+09	6.74E+02	2.36E+03		5.24E+02									5.24E+02 ca
Trichloroaniline, 2,4,5-	636-30-6	3.23E+09													
Trichloroaniline, 2,4,6-	634-93-5	3.23E+09	2.79E+03	9.77E+03		2.17E+03					2.01E+02	7.03E+02		1.56E+02	1.56E+02 nc
Trichlorobenzene	12002-48-1	3.23E+09													
Trichlorobenzene, 1,2,3-	87-61-6	3.23E+09									5.36E+03			5.36E+03	5.36E+03 nc
Trichlorobenzene, 1,2,4-	120-82-1	3.23E+09	6.74E+02			6.74E+02					6.70E+04		7.24E+03	6.53E+03	6.74E+02 sat
Trichloroethane, 1,1,1-	71-55-6	3.23E+09									1.34E+07		9.96E+05	9.27E+05	9.27E+05 sat
Trichloroethane, 1,1,2-	79-00-5	3.23E+09	3.43E+02		1.59E+02	1.09E+02					2.68E+04		1.74E+02	1.73E+02	1.09E+02 ca**
Trichloroethylene	79-01-6	3.23E+09	3.04E+02		1.58E+02	1.04E+02					3.35E+03		5.33E+02	4.60E+02	1.04E+02 ca**
Trichlorofluoromethane	75-69-4	3.23E+09									2.01E+06		8.76E+04	8.39E+04	8.39E+04 sat
Trichlorophenol, 2,4,5-	95-95-4	3.23E+09									6.70E+05	2.34E+06		5.21E+05	5.21E+05 max
Trichlorophenol, 2,4,6-	88-06-2	3.23E+09	1.78E+03	6.22E+03	2.66E+08	1.38E+03					6.70E+03	2.34E+04		5.21E+03	1.38E+03 ca**
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	3.23E+09													
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	3.23E+09									5.36E+04	1.88E+05		4.17E+04	4.17E+04 nc
Trichloropropane, 1,1,2-	598-77-6	3.23E+09									3.35E+04			3.35E+04	3.35E+04 sat
Trichloropropane, 1,2,3-	96-18-4	3.23E+09	2.21E-01			2.21E-01					2.68E+04		5.70E+02	5.58E+02	2.21E-01 ca
Trichloropropene, 1,2,3-	96-19-5	3.23E+09									2.01E+04		8.48E+01	8.44E+01	8.44E+01 nc
Trichlorotoluene, 2,3,6-	2077-46-5	3.23E+09													
Trichlorotoluene, alpha 2,6-	2014-83-7	3.23E+09													
Triclorophenols (total)	NA	3.23E+09													
Tricresyl Phosphate (TCP)	1330-78-5	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Tridiphane	58138-08-2	3.23E+09									2.01E+04	7.03E+04		1.56E+04	1.56E+04 nc
Tridymite	15468-32-3	3.23E+09													
Triethyl Lead	5224-23-7	3.23E+09													
Triethyl phosphorothioate [O,O,O-]	126-68-1	3.23E+09													
Triethylamine	121-44-8	3.23E+09											1.34E+04	1.34E+04	1.34E+04 nc
Triethylene Glycol	112-27-6	3.23E+09									1.34E+07	4.69E+07		1.04E+07	1.04E+07 max
Trifluralin	1582-09-8	3.23E+09	2.54E+03			2.54E+03					5.03E+04			5.03E+04	2.54E+03 ca*
Trimagnesium phosphate	7757-87-1	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Trimethyl Lead	7442-13-9	3.23E+09													
Trimethyl Phosphate	512-56-1	3.23E+09	9.77E+02	3.42E+03		7.60E+02					6.70E+04	2.34E+05		5.21E+04	7.60E+02 ca*
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1	3.23E+09													
Trimethylbenzene, 1,2,3-	526-73-8	3.23E+09											5.70E+03	5.70E+03	5.70E+03 sat
Trimethylbenzene, 1,2,4-	95-63-6	3.23E+09											6.69E+03	6.69E+03	6.69E+03 sat
Trimethylbenzene, 1,3,5-	108-67-8	3.23E+09									6.70E+04			6.70E+04	6.70E+04 sat
Trimethylethyl Lead	1762-26-1	3.23E+09													
Trimethylpentane, 2,2,4-	540-84-1	3.23E+09													
Trinitrobenzene, 1,3,5-	99-35-4	3.23E+09									2.01E+05	3.70E+06		1.91E+05	1.91E+05 max
Trinitrotoluene, 2,4,6-	118-96-7	3.23E+09	6.52E+02	7.12E+03		5.97E+02					3.35E+03	3.66E+04		3.07E+03	5.97E+02 ca**
Triphenylphosphine Oxide	791-28-6	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Triphenyltin	668-34-8	3.23E+09													
Tripotassium phosphate	7778-53-2	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Tripropyl Lead	6618-03-7	3.23E+09													
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	3.23E+09									1.34E+05	4.69E+05		1.04E+05	1.04E+05 max
Tris(1-chloro-2-propyl)phosphate	13674-84-5	3.23E+09									6.70E+04	2.34E+05		5.21E+04	5.21E+04 nc
Tris(2,3-dibromopropyl)phosphate	126-72-7	3.23E+09	8.50E+00		4.82E+02	8.35E+00									8.35E+00 ca
Tris(2-chloroethyl)phosphate	115-96-8	3.23E+09	9.77E+02	3.42E+03		7.60E+02					4.69E+04	1.64E+05		3.65E+04	7.60E+02 ca*
Tris(2-ethylhexyl)phosphate	78-42-2	3.23E+09	6.11E+03	2.14E+04		4.75E+03					6.70E+05	2.34E+06		5.21E+05	4.75E+03 ca
Trisbutoxyethyl Phosphate	78-51-3	3.23E+09													
Trisodium phosphate	7601-54-9	3.23E+09									3.26E+08			3.26E+08	3.26E+08 max
Trithion	786-19-6	3.23E+09													
Tungsten	7440-33-7	3.23E+09													
Uranium (Soluble Salts)	NA	3.23E+09									2.01E+04		1.13E+07	2.01E+04	2.01E+04 nc

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC ?	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Inhalation Unit Risk $(ug/m^3)^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m^3)	Chronic RfC Ref	GIABS	ABS	rba	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)
Urea	57-13-6	No	No									1	0.1	1		
Urethane	51-79-6	Yes	No	1.00E+00	U	2.90E-04	U					1	0.1	1		
Vanadium Pentoxide	1314-62-1	No	No			8.30E-03	U	9.00E-03	U	7.00E-06	U	0.026		1		
Vanadium Sulfate	36907-42-3	No	No									0.026		1		
Vanadium and Compounds	7440-62-2	No	No					5.04E-03	U	1.00E-04	U	0.026		1		
Vanadyl Sulfate	27774-13-6	No	No									1		1		
Vernolate	1929-77-7	No	Yes					1.00E-03	U			1		1	1.70E+05	
Vinclozolin	50471-44-8	No	No					2.50E-02	U			1	0.1	1		
Vinyl Acetate	108-05-4	No	Yes					1.00E+00	U	2.00E-01	U	1		1	6.06E+03	2.75E+03
Vinyl Bromide	593-60-2	No	Yes			3.20E-05	U			3.00E-03	U	1		1	1.89E+03	3.38E+03
Vinyl Chloride	75-01-4	Yes	Yes	7.20E-01	U	4.40E-06	U	3.00E-03	U	1.00E-01	U	1		1	1.32E+03	3.92E+03
Warfarin	81-81-2	No	No					3.00E-04	U			1	0.1	1		
Xylene, P-	106-42-3	No	Yes					2.00E-01	U	1.00E-01	U	1		1	7.70E+03	3.89E+02
Xylene, m-	108-38-3	No	Yes					2.00E-01	U	1.00E-01	U	1		1	7.54E+03	3.87E+02
Xylene, o-	95-47-6	No	Yes					2.00E-01	U	1.00E-01	U	1		1	8.90E+03	4.34E+02
Xylenes	1330-20-7	No	Yes					2.00E-01	U	1.00E-01	U	1		1	8.93E+03	2.58E+02
Ytterbium	7440-64-4	No	No									1		1		
Yttrium	7440-65-5	No	No									1		1		
Zinc Cyanide	557-21-1	No	No					5.00E-02	U			1		1		
Zinc Phosphide	1314-84-7	No	No					3.00E-04	U			1		1		
Zinc and Compounds	7440-66-6	No	No					3.00E-01	U			1		1		
Zineb	12122-67-7	No	No					5.00E-02	U			1	0.1	1		
Zirconium	7440-67-7	No	No					8.00E-05	U			1		1		

Site-specific

Recreator Screening Levels (RSL) for Soil - Modified for site-specific recreational user
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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Gu
Smax=Soil SL exceeds ceiling limit and has been substituted with the max valu
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL (Child) HQ=1 (mg/kg)	Dermal SL (Child) HQ=1 (mg/kg)	Inhalation SL (Child) HQ=1 (mg/kg)	Noncarcinogenic SL (Child) HI=1 (mg/kg)	Ingestion SL (Adult) HQ=1 (mg/kg)	Dermal SL (Adult) HQ=1 (mg/kg)	Inhalation SL (Adult) HQ=1 (mg/kg)	Noncarcinogenic SL (Adult) HI=1 (mg/kg)	Screening Level (mg/kg)
Urea	57-13-6	3.23E+09													
Urethane	51-79-6	3.23E+09	6.64E+00	4.50E+01	1.55E+06	5.79E+00									5.79E+00 ca
Vanadium Pentoxide	1314-62-1	3.23E+09			9.95E+04	9.95E+04					6.03E+04		1.98E+06	5.85E+04	5.85E+04 nc
Vanadium Sulfate	36907-42-3	3.23E+09													
Vanadium and Compounds	7440-62-2	3.23E+09									3.38E+04		2.83E+07	3.37E+04	3.37E+04 nc
Vanadyl Sulfate	27774-13-6	3.23E+09													
Vernolate	1929-77-7	3.23E+09									6.70E+03			6.70E+03	6.70E+03 nc
Vinclozolin	50471-44-8	3.23E+09									1.68E+05	5.86E+05		1.30E+05	1.30E+05 max
Vinyl Acetate	108-05-4	3.23E+09									6.70E+06		1.06E+05	1.05E+05	1.05E+05 sat
Vinyl Bromide	593-60-2	3.23E+09			1.51E+01	1.51E+01							4.96E+02	4.96E+02	1.51E+01 ca*
Vinyl Chloride	75-01-4	3.23E+09	2.71E+01		2.98E-01	2.95E-01					2.01E+04		1.15E+04	7.33E+03	2.95E-01 ca
Warfarin	81-81-2	3.23E+09									2.01E+03	7.03E+03		1.56E+03	1.56E+03 nc
Xylene, P-	106-42-3	3.23E+09									1.34E+06		6.75E+04	6.42E+04	6.42E+04 sat
Xylene, m-	108-38-3	3.23E+09									1.34E+06		6.60E+04	6.29E+04	6.29E+04 sat
Xylene, o-	95-47-6	3.23E+09									1.34E+06		7.80E+04	7.37E+04	7.37E+04 sat
Xylenes	1330-20-7	3.23E+09									1.34E+06		7.82E+04	7.39E+04	7.39E+04 sat
Ytterbium	7440-64-4	3.23E+09													
Yttrium	7440-65-5	3.23E+09													
Zinc Cyanide	557-21-1	3.23E+09									3.35E+05			3.35E+05	3.35E+05 max
Zinc Phosphide	1314-84-7	3.23E+09									2.01E+03			2.01E+03	2.01E+03 nc
Zinc and Compounds	7440-66-6	3.23E+09									2.01E+06			2.01E+06	2.01E+06 max
Zineb	12122-67-7	3.23E+09									3.35E+05	1.17E+06		2.61E+05	2.61E+05 max
Zirconium	7440-67-7	3.23E+09									5.36E+02			5.36E+02	5.36E+02 nc

Site-specific
Recreator Equation Inputs for Surface Water
MODIFIED FOR UTILITY WORKER

Variable	Value
TR (target cancer risk) unitless	0.000001
ED_{recw} (exposure duration - recreator) year	1
ED_{recwa} (exposure duration - adult) year	1
ED_{recwc} (exposure duration - child) year	0
ED_{0-2} (mutagenic exposure duration) year	0
ED_{2-6} (mutagenic exposure duration) year	0
ED_{6-16} (mutagenic exposure duration) year	0
ED_{16-30} (mutagenic exposure duration) year	1
THQ (target hazard quotient) unitless	1
LT (lifetime - recreator) year	70
EF (exposure frequency) day/year	30
EF_{recwa} (adult exposure frequency) day/year	30
EF_{recwc} (child exposure frequency) day/year	0
EF_{0-2} (mutagenic exposure frequency) day/year	
EF_{2-6} (mutagenic exposure frequency) day/year	
EF_{6-16} (mutagenic exposure frequency) day/year	0
EF_{16-30} (mutagenic exposure frequency) day/year	30
$ET_{recw-adj}$ (age-adjusted exposure time) hour/event	2
$ET_{recw-madj}$ (mutagenic age-adjusted exposure time) hour/event	2
ET_{recwa} (adult exposure time) hour/event	2
ET_{recwc} (child exposure time) hour/event	0
$ET_{recw0-2}$ (mutagenic exposure time) hour/event	
$ET_{recw2-6}$ (mutagenic exposure time) hour/event	
$ET_{recw6-16}$ (mutagenic exposure time) hour/event	0
$ET_{recw16-30}$ (mutagenic exposure time) hour/event	2
EV_{recwa} (adult) events/day	1
EV_{recwc} (child) events/day	0
EV_{0-2} (mutagenic) events/day	0

EV_{2-6} (mutagenic) events/day	0
EV_{6-16} (mutagenic) events/day	0
EV_{16-30} (mutagenic) events/day	1
BW_{recwc} (body weight - child) kg	0
BW_{recwa} (body weight - adult) kg	80
BW_{0-2} (mutagenic body weight) kg	15
BW_{2-6} (mutagenic body weight) kg	15
BW_{6-16} (mutagenic body weight) kg	80
BW_{16-30} (mutagenic body weight) kg	80
SA_{recwc} (skin surface area - child) cm^2	0
SA_{recwa} (skin surface area - adult) cm^2	4840
SA_{0-2} (skin surface area - mutagenic) cm^2	4840
SA_{2-6} (skin surface area - mutagenic) cm^2	4840
SA_{6-16} (skin surface area - mutagenic) cm^2	4840
SA_{16-30} (skin surface area - mutagenic) cm^2	4840
SA_{0-2} (mutagenic skin surface area) cm^2	4840
SA_{2-6} (mutagenic skin surface area) cm^2	4840
SA_{6-16} (mutagenic skin surface area) cm^2	4840
SA_{16-30} (mutagenic skin surface area) cm^2	4840
$IFW_{rec-adj}$ (age-adjusted water intake rate) L/kg	0.008
$IFWM_{rec-adj}$ (mutagenic age-adjusted water intake rate) L/kg	0.008
$DFW_{rec-adj}$ (age-adjusted dermal factor) cm^2-event/kg	1815
$DFWM_{rec-adj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	1815
IRW_{recwa} (water intake rate - adult) L/hr	0.01
IRW_{recwc} (water intake rate - child) L/hr	0
IRW_{0-2} (mutagenic water intake rate) L/hr	0.05
IRW_{2-6} (mutagenic water intake rate) L/hr	0.05
IRW_{6-16} (mutagenic water intake rate) L/hr	0.05
IRW_{16-30} (mutagenic water intake rate) L/hr	0.01
l_{sc} (apparent thickness of stratum corneum) cm	0.001

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Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
ALAR	1596-84-5	No	No	Organics	1.80E-02	U	1.50E-01	U	1	0.0000199	160.17	1	Yes	0.7820631
Acenaphthene	83-32-9	No	Yes	Organics			6.00E-02	U	1	0.086	154.21	1	Yes	
Acenaphthylene	208-96-8	No	Yes	Organics					1	0.0911	152.2	1	Yes	
Acephate	30560-19-1	No	No	Organics	8.70E-03	U	4.00E-03	U	1	0.00004	183.16	1	Yes	1.6180615
Acetaldehyde	75-07-0	No	Yes	Organics					1	0.000527	44.05	1	Yes	
Acetochlor	34256-82-1	No	No	Organics			2.00E-02	U	1	0.00495	269.77	0.9	Yes	
Acetone	67-64-1	No	Yes	Organics			9.00E-01	U	1	0.000512	58.08	1	Yes	
Acetone Cyanohydrin	75-86-5	No	Yes	Organics					1	0.000495	85.11	1	Yes	
Acetonitrile	75-05-8	No	Yes	Organics					1	0.000548	41.05	1	Yes	
Acetophenone	98-86-2	No	Yes	Organics			1.00E-01	U	1	0.00372	120.15	1	Yes	
Acetylaminofluorene, 2-	53-96-3	No	No	Organics	3.80E+00	U			1	0.0125	223.28	1	Yes	0.0037045
Acifluorofen	50594-66-6	No	No	Organics					1	0.00421	361.66	0.9	Yes	
Acridine	260-94-6	No	No	Organics					1	0.0281	179.22	1	Yes	
Acrolein	107-02-8	No	Yes	Organics			5.00E-04	U	1	0.000748	56.06	1	Yes	
Acrylamide	79-06-1	Yes	No	Organics	5.00E-01	U	2.00E-03	U	1	0.000224	71.08	1	Yes	0.0281543
Acrylic Acid	79-10-7	No	Yes	Organics			5.00E-01	U	1	0.00105	72.06	1	Yes	
Acrylonitrile	107-13-1	No	Yes	Organics	5.40E-01	U	4.00E-02	U	1	0.00116	53.06	1	Yes	0.0260688
Adiponitrile	111-69-3	No	No	Organics					1	0.000237	108.14	1	Yes	
Alachlor	15972-60-8	No	No	Organics	5.60E-02	U	1.00E-02	U	1	0.0105	269.77	0.9	Yes	0.2513774
Aldicarb	116-06-3	No	No	Organics			1.00E-03	U	1	0.000755	190.26	1	Yes	
Aldicarb Sulfone	1646-88-4	No	No	Organics			1.00E-03	U	1	0.0000371	222.26	1	Yes	
Aldicarb sulfoxide	1646-87-3	No	No	Organics					1	0.0000329	206.26	1	Yes	
Aldrin	309-00-2	No	Yes	Organics	1.70E+01	U	3.00E-05	U	1	0.293	364.92	1	No	
Aliphatic Chlorinated Hydrocarbons (each)	NA	No	No	Organics					1				No	
Aliphatic Chlorinated Hydrocarbons (total)	NA	No	No	Organics					1				No	
Alizarin Red Compounds	NA	No	No	Organics					1				No	
Ally	74223-64-6	No	No	Organics			2.50E-01	U	1	0.000329	381.37	1	Yes	
Allyl Alcohol	107-18-6	No	Yes	Organics			5.00E-03	U	1	0.000959	58.08	1	Yes	
Allyl Chloride	107-05-1	No	Yes	Organics	2.10E-02	U			1	0.0112	76.53	1	Yes	0.6703398
Aluminum	7429-90-5	No	No	Inorganics			1.00E+00	U	1	0.001	26.982	1	Yes	
Aluminum Phosphide	20859-73-8	No	No	Inorganics			4.00E-04	U	1	0.001	57.96	1	Yes	
Aluminum metaphosphate	13776-88-0	No	No	Inorganics			4.86E+01	U	1	0.001	263.9	1	Yes	
Amdro	67485-29-4	No	No	Organics			3.00E-04	U	1	0.0000902	494.49	1	Yes	
Ametryn	834-12-8	No	No	Organics			9.00E-03	U	1	0.00794	227.33	1	Yes	
Amino-4-chlorobenzotrifluoride, 3-	121-50-6	No	Yes	Organics					1	0.0135	195.57	1	Yes	
Aminoazobenzene, p-	60-09-3	No	No	Organics					1	0.00677	197.24	1	Yes	
Aminobiphenyl, 4-	92-67-1	No	No	Organics	2.10E+01	U			1	0.014	169.23	1	Yes	0.0006703
Aminophenol, m-	591-27-5	No	No	Organics			8.00E-02	U	1	0.000527	109.13	1	Yes	
Aminophenol, o-	95-55-6	No	No	Organics					1	0.000988	109.13	1	Yes	
Aminophenol, p-	123-30-8	No	No	Organics			2.00E-02	U	1	0.000407	109.13	1	Yes	
Aminopyridine, 4-	504-24-5	No	No	Organics					1	0.000758	94.12	1	Yes	
Amitraz	33089-61-1	No	No	Organics			2.50E-03	U	1	0.16	293.42	0.9	Yes	
Ammonium Perchlorate	7790-98-9	No	No	Inorganics			7.00E-04	U	1	0.001	117.49	1	Yes	
Ammonium Sulfamate	7773-06-0	No	No	Inorganics			2.00E-01	U	1	0.001	114.124	1	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
ALAR	1596-84-5		30.165289	1.77E+05	1.07E+07	1.75E+05				7.30E+06	4.14E+08	7.17E+06	1.75E+05 ca*
Acenaphthene	83-32-9		12.066116							2.92E+06	3.97E+04	3.92E+04	3.92E+04 nc
Acenaphthylene	208-96-8												
Acephate	30560-19-1		0.8044077	3.67E+05	9.80E+06	3.54E+05				1.95E+05	4.87E+06	1.87E+05	1.87E+05 nc
Acetaldehyde	75-07-0												
Acetochlor	34256-82-1		4.0220386							9.73E+05	1.25E+05	1.11E+05	1.11E+05 nc
Acetone	67-64-1		180.99174							4.38E+07	1.45E+08	3.36E+07	3.36E+07 nc
Acetone Cyanohydrin	75-86-5												
Acetonitrile	75-05-8												
Acetophenone	98-86-2		20.110193							4.87E+06	1.82E+06	1.32E+06	1.32E+06 nc
Acetylaminofluorene, 2-	53-96-3			8.40E+02	5.54E+01	5.20E+01							5.20E+01 ca
Acifluorofen	50594-66-6												
Acridine	260-94-6												
Acrolein	107-02-8		0.100551							2.43E+04	5.53E+04	1.69E+04	1.69E+04 nc
Acrylamide	79-06-1		0.4022039	6.39E+03	4.98E+04	5.66E+03				9.73E+04	7.11E+05	8.56E+04	5.66E+03 ca*
Acrylic Acid	79-10-7		100.55096							2.43E+07	3.79E+07	1.48E+07	1.48E+07 nc
Acrylonitrile	107-13-1		8.0440771	5.91E+03	9.32E+03	3.62E+03				1.95E+06	2.88E+06	1.16E+06	3.62E+03 ca
Adiponitrile	111-69-3												
Alachlor	15972-60-8		2.0110193	5.70E+04	3.69E+03	3.46E+03				4.87E+05	2.95E+04	2.78E+04	3.46E+03 ca**
Aldicarb	116-06-3		0.2011019							4.87E+04	6.16E+04	2.72E+04	2.72E+04 nc
Aldicarb Sulfone	1646-88-4		0.2011019							4.87E+04	1.02E+06	4.65E+04	4.65E+04 nc
Aldicarb sulfoxide	1646-87-3												
Aldrin	309-00-2			1.88E+02		1.88E+02				1.46E+03		1.46E+03	1.88E+02 ca**
Aliphatic Chlorinated Hydrocarbons (each)	NA												
Aliphatic Chlorinated Hydrocarbons (total)	NA												
Alizarin Red Compounds	NA												
Ally	74223-64-6		50.275482							1.22E+07	1.03E+07	5.58E+06	5.58E+06 nc
Allyl Alcohol	107-18-6		1.0055096							2.43E+05	4.30E+05	1.55E+05	1.55E+05 nc
Allyl Chloride	107-05-1			1.52E+05	2.38E+04	2.06E+04							2.06E+04 ca
Aluminum	7429-90-5		201.10193							4.87E+07	1.01E+08	3.28E+07	3.28E+07 nc
Aluminum Phosphide	20859-73-8		0.0804408							1.95E+04	4.02E+04	1.31E+04	1.31E+04 nc
Aluminum metaphosphate	13776-88-0		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Amdro	67485-29-4		0.0603306							1.46E+04	2.18E+04	8.74E+03	8.74E+03 nc
Ametryn	834-12-8		1.8099174							4.38E+05	4.15E+04	3.79E+04	3.79E+04 nc
Amino-4-chlorobenzotrifluoride, 3-	121-50-6												
Aminoazobenzene, p-	60-09-3												
Aminobiphenyl, 4-	92-67-1			1.52E+02	1.27E+01	1.17E+01							1.17E+01 ca
Aminophenol, m-	591-27-5		16.088154							3.89E+06	1.07E+07	2.85E+06	2.85E+06 nc
Aminophenol, o-	95-55-6												
Aminophenol, p-	123-30-8		4.0220386							9.73E+05	3.46E+06	7.60E+05	7.60E+05 nc
Aminopyridine, 4-	504-24-5												
Amitraz	33089-61-1		0.5027548							1.22E+05	4.15E+02	4.14E+02	4.14E+02 nc
Ammonium Perchlorate	7790-98-9		0.1407713							3.41E+04	7.04E+04	2.30E+04	2.30E+04 nc
Ammonium Sulfamate	7773-06-0		40.220386							9.73E+06	2.01E+07	6.56E+06	6.56E+06 nc

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Ammonium polyphosphate	68333-79-9	No	No	Inorganics			4.86E+01	U	1	0.001			Yes	
Amyl Alcohol, tert-	75-85-4	No	Yes	Organics					1	0.00196	88.15	1	Yes	
Aniline	62-53-3	No	No	Organics	5.70E-03	U	7.00E-03	U	1	0.00186	93.13	1	Yes	2.4696728
Anilinobenzothiazole	1843-21-6	No	No	Organics					1				No	
Anthracene	120-12-7	No	Yes	Organics			3.00E-01	U	1	0.142	178.24	1	Yes	
Anthraquinone, 9,10-	84-65-1	No	No	Organics	4.00E-02	U	2.00E-03	U	1	0.019	208.22	0.9	Yes	0.3519284
Antimony (metallic)	7440-36-0	No	No	Inorganics			4.00E-04	U	0.15	0.001	121.76	1	Yes	
Antimony Pentoxide	1314-60-9	No	No	Inorganics			5.00E-04	U	0.15	0.001	323.517	1	Yes	
Antimony Potassium Tartrate	11071-15-1	No	No	Inorganics			9.00E-04	U	0.15	0.001	614.84	0.9	Yes	
Antimony Tetroxide	1332-81-6	No	No	Inorganics			4.00E-04	U	0.15	0.001	307.52	1	Yes	
Antimony Trichloride	10025-91-9	No	No	Inorganics					1	0.001	228.12	1	Yes	
Antimony Trioxide	1309-64-4	No	No	Inorganics					0.15	0.001	291.52	1	Yes	
Apollo	74115-24-5	No	No	Organics			1.30E-02	U	1	0.00358	303.15	0.9	Yes	
Aramite	140-57-8	No	No	Organics	2.50E-02	U	5.00E-02	U	1	0.0328	334.86	0.8	Yes	0.5630854
Aroclor 1016	12674-11-2	No	Yes	Organics	7.00E-02	U	7.00E-05	U	1	0.305	257.55	0.9	No	
Aroclor 1221	11104-28-2	No	Yes	Organics	2.00E+00	U			1	0.168	188.66	1	Yes	0.0070386
Aroclor 1232	11141-16-5	No	Yes	Organics	2.00E+00	U			1	0.168	188.66	1	Yes	0.0070386
Aroclor 1242	53469-21-9	No	Yes	Organics	2.00E+00	U			1	0.545	291.99	0.7	No	
Aroclor 1248	12672-29-6	No	Yes	Organics	2.00E+00	U			1	0.475	291.99	0.7	No	
Aroclor 1254	11097-69-1	No	Yes	Organics	2.00E+00	U	2.00E-05	U	1	0.751	326.44	0.5	No	
Aroclor 1260	11096-82-5	No	Yes	Organics	2.00E+00	U			1	0.986	395.33	0	No	
Aroclor 5460	11126-42-4	No	Yes	Organics			6.00E-04	U	1	0.584	291.99	0.7	No	
Arsenic Salts	NA	No	No	Inorganics					1	0.001			Yes	
Arsenic, Inorganic	7440-38-2	No	No	Inorganics	1.50E+00	U	3.00E-04	U	1	0.001	74.922	1	Yes	0.0093848
Arsine	7784-42-1	No	No	Inorganics			3.50E-06	U	1	0.001	77.95	1	Yes	
Assure	76578-14-8	No	No	Organics			9.00E-03	U	1	0.00886	372.81	0.9	Yes	
Asulam	3337-71-1	No	No	Organics			5.00E-02	U	1	0.0000529	230.24	1	Yes	
Atrazine	1912-24-9	No	No	Organics	2.30E-01	U	3.50E-02	U	1	0.00524	215.69	1	Yes	0.0612049
Auramine	492-80-8	No	No	Organics	8.80E-01	U			1	0.0111	267.38	0.9	Yes	0.0159967
Avermectin B1	65195-55-3	No	No	Organics			4.00E-04	U	1	0.0000181	875.12	1	No	
Azobenzene	103-33-3	No	Yes	Organics	1.10E-01	U			1	0.0514	182.23	1	Yes	0.127974
Azodicarbonamide	123-77-3	No	No	Organics			1.00E+00	U	1	0.0000259	116.08	1	Yes	
Barium	7440-39-3	No	No	Inorganics			2.00E-01	U	0.07	0.001	137.33	1	Yes	
Barium Chromate	10294-40-3	Yes	No	Inorganics	5.00E-01	U	2.00E-02	U	0.025	0.001	253.321	1	Yes	0.0007039
Barium Cyanide	542-62-1	No	No	Inorganics					0.07	0.001	189.36	1	Yes	
Baygon	114-26-1	No	No	Organics			4.00E-03	U	1	0.00107	209.25	1	Yes	
Bayleton	43121-43-3	No	No	Organics			3.00E-02	U	1	0.00244	293.76	1	Yes	
Baythroid	68359-37-5	No	No	Organics			2.50E-02	U	1	0.0515	434.3	0.7	Yes	
Benefin	1861-40-1	No	Yes	Organics			3.00E-01	U	1	0.0675	335.29	0.8	Yes	
Benomyl	17804-35-2	No	No	Organics			5.00E-02	U	1	0.000943	290.32	1	Yes	
Bentazon	25057-89-0	No	No	Organics			3.00E-02	U	1	0.00252	240.28	1	Yes	
Benz[a]anthracene	56-55-3	Yes	Yes	Organics	7.30E-01	U			1	0.552	228.3	1	No	
Benzaldehyde	100-52-7	No	Yes	Organics			1.00E-01	U	1	0.00383	106.13	1	Yes	
Benzene	71-43-2	No	Yes	Organics	5.50E-02	U	4.00E-03	U	1	0.0149	78.11	1	Yes	0.2559479

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Ammonium polyphosphate	68333-79-9		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Amyl Alcohol, tert-	75-85-4												
Aniline	62-53-3		1.4077135	5.60E+05	4.94E+05	2.62E+05				3.41E+05	2.81E+05	1.54E+05	1.54E+05 nc
Anilinobenzothiazole	1843-21-6												
Anthracene	120-12-7		60.330579							1.46E+07	1.06E+05	1.05E+05	1.05E+05 nc
Anthraquinone, 9,10-	84-65-1		0.4022039	7.98E+04	4.24E+03	4.03E+03				9.73E+04	4.85E+03	4.62E+03	4.03E+03 ca**
Antimony (metallic)	7440-36-0		0.0120661							1.95E+04	6.03E+03	4.61E+03	4.61E+03 nc
Antimony Pentoxide	1314-60-9		0.0150826							2.43E+04	7.54E+03	5.76E+03	5.76E+03 nc
Antimony Potassium Tartrate	11071-15-1		0.0271488							4.38E+04	1.36E+04	1.04E+04	1.04E+04 nc
Antimony Tetroxide	1332-81-6		0.0120661							1.95E+04	6.03E+03	4.61E+03	4.61E+03 nc
Antimony Trichloride	10025-91-9												
Antimony Trioxide	1309-64-4												
Apollo	74115-24-5		2.6143251							6.33E+05	9.07E+04	7.93E+04	7.93E+04 nc
Aramite	140-57-8		10.055096	1.28E+05	1.95E+03	1.93E+03				2.43E+06	3.49E+04	3.44E+04	1.93E+03 ca*
Aroclor 1016	12674-11-2			4.56E+04		4.56E+04				3.41E+03		3.41E+03	3.41E+03 nc
Aroclor 1221	11104-28-2			1.60E+03	9.79E+00	9.73E+00							9.73E+00 ca
Aroclor 1232	11141-16-5			1.60E+03	9.79E+00	9.73E+00							9.73E+00 ca
Aroclor 1242	53469-21-9			1.60E+03		1.60E+03							1.60E+03 ca
Aroclor 1248	12672-29-6			1.60E+03		1.60E+03							1.60E+03 ca
Aroclor 1254	11097-69-1			1.60E+03		1.60E+03				9.73E+02		9.73E+02	9.73E+02 nc
Aroclor 1260	11096-82-5			1.60E+03		1.60E+03							1.60E+03 ca
Aroclor 5460	11126-42-4									2.92E+04		2.92E+04	2.92E+04 nc
Arsenic Salts	NA												
Arsenic, Inorganic	7440-38-2		0.0603306	2.13E+03	4.69E+03	1.46E+03				1.46E+04	3.02E+04	9.84E+03	1.46E+03 ca**
Arsine	7784-42-1		0.0007039							1.70E+02	3.52E+02	1.15E+02	1.15E+02 nc
Assure	76578-14-8		1.8099174							4.38E+05	1.62E+04	1.56E+04	1.56E+04 nc
Asulam	3337-71-1		10.055096							2.43E+06	3.40E+07	2.27E+06	2.27E+06 nc
Atrazine	1912-24-9		7.0385675	1.39E+04	2.29E+03	1.97E+03				1.70E+06	2.64E+05	2.28E+05	1.97E+03 ca
Auramine	492-80-8			3.63E+03	2.25E+02	2.12E+02							2.12E+02 ca
Avermectin B1	65195-55-3									1.95E+04		1.95E+04	1.95E+04 nc
Azobenzene	103-33-3			2.90E+04	6.07E+02	5.94E+02							5.94E+02 ca
Azodicarbonamide	123-77-3		201.10193							4.87E+07	2.64E+09	4.78E+07	4.78E+07 nc
Barium	7440-39-3		2.815427							9.73E+06	1.41E+06	1.23E+06	1.23E+06 nc
Barium Chromate	10294-40-3		0.100551	6.39E+03	3.52E+02	3.34E+02				9.73E+05	5.03E+04	4.78E+04	3.34E+02 ca
Barium Cyanide	542-62-1												
Baygon	114-26-1		0.8044077							1.95E+05	1.54E+05	8.59E+04	8.59E+04 nc
Bayleton	43121-43-3		6.0330579							1.46E+06	2.94E+05	2.44E+05	2.44E+05 nc
Baythroid	68359-37-5		5.0275482							1.22E+06	6.69E+03	6.65E+03	6.65E+03 nc
Benefin	1861-40-1		60.330579							1.46E+07	1.01E+05	1.01E+05	1.01E+05 nc
Benomyl	17804-35-2		10.055096							2.43E+06	1.29E+06	8.45E+05	8.45E+05 nc
Bentazon	25057-89-0		6.0330579							1.46E+06	4.01E+05	3.15E+05	3.15E+05 nc
Benz[a]anthracene	56-55-3			4.38E+03		4.38E+03							4.38E+03 ca
Benzaldehyde	100-52-7		20.110193							4.87E+06	1.87E+06	1.35E+06	1.35E+06 nc
Benzene	71-43-2		0.8044077	5.81E+04	6.85E+03	6.13E+03				1.95E+05	2.15E+04	1.94E+04	6.13E+03 ca**

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Benzene, Ethyldimethyl	29224-55-3	No	Yes	Organics					1	0.212	134.22	1	Yes	
Benzene, Ethylmethyl	25550-14-5	No	Yes	Organics					1	0.0857	120.2	1	Yes	
Benzene, Methylpropenyl	768-00-3	No	Yes	Organics					1	0.103	132.21	1	Yes	
Benzene, Methylpropyl	28729-54-6	No	No	Organics					1				No	
Benzene, Trimethyl	25551-13-7	No	Yes	Organics					1	0.0621	120.2	1	Yes	
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	No	No	Organics	1.00E-01	U	3.00E-04	U	1	3.04E-07	220.24	1	No	
Benzenethiol	108-98-5	No	Yes	Organics			1.00E-03	U	1	0.0178	110.17	1	Yes	
Benzidine	92-87-5	Yes	No	Organics	2.30E+02	U	3.00E-03	U	1	0.00113	184.24	1	Yes	0.0000612
Benzo(j)fluoranthene	205-82-3	No	No	Organics	1.20E+00	U			1	0.69	252.32	0.9	No	
Benzo[a]pyrene	50-32-8	Yes	No	Organics	7.30E+00	U			1	0.713	252.32	1	No	
Benzo[b]fluoranthene	205-99-2	Yes	No	Organics	7.30E-01	U			1	0.417	252.32	1	No	
Benzo[g,h,i]perylene	191-24-2	No	No	Organics					1	1.12	276.34	0.7	No	
Benzo[k]fluoranthene	207-08-9	Yes	No	Organics	7.30E-02	U			1	0.691	252.32	0.9	No	
Benzofluoranthenes, total	NA	No	No	Organics					1				No	
Benzofluorene, 2,3-	243-17-4	No	No	Organics					1	0.654	216.28	1	No	
Benzoic Acid	65-85-0	No	No	Organics			4.00E+00	U	1	0.00565	122.12	1	Yes	
Benzoic acid, 3,5-dichloro-	51-36-5	No	No	Organics					1	0.0131	191.01	1	Yes	
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3	No	No	Organics					1	0.0044	152.15	1	Yes	
Benzothiazole	95-16-9	No	No	Organics					1	0.00592	135.18	1	Yes	
Benzotrichloride	98-07-7	No	Yes	Organics	1.30E+01	U			1	0.0487	195.48	1	Yes	0.0010829
Benzyl Alcohol	100-51-6	No	No	Organics			1.00E-01	U	1	0.00209	108.14	1	Yes	
Benzyl Chloride	100-44-7	No	Yes	Organics	1.70E-01	U	2.00E-03	U	1	0.0103	126.59	1	Yes	0.0828067
Beryllium and compounds	7440-41-7	No	No	Inorganics			2.00E-03	U	0.007	0.001	9.01	1	Yes	
Bidrin	141-66-2	No	No	Organics			1.00E-04	U	1	0.0000731	237.19	1	Yes	
Bifenox	42576-02-3	No	No	Organics			9.00E-03	U	1	0.0179	342.14	0.9	Yes	
Biphenthrin	82657-04-3	No	No	Organics			1.50E-02	U	1	1.74	422.88	0	No	
Biphenyl, 1,1'-	92-52-4	No	Yes	Organics	8.00E-03	U	5.00E-01	U	1	0.0943	154.21	1	Yes	1.7596419
Bis(2-chloro-1-methylethyl) ether	108-60-1	No	Yes	Organics	7.00E-02	U	4.00E-02	U	1	0.00764	171.07	1	Yes	0.2011019
Bis(2-chloroethoxy)methane	111-91-1	No	No	Organics			3.00E-03	U	1	0.00122	173.04	1	Yes	
Bis(2-chloroethyl)ether	111-44-4	No	Yes	Organics	1.10E+00	U			1	0.00178	143.01	1	Yes	0.0127974
Bis(2-ethylhexyl)phthalate	117-81-7	No	No	Organics	1.40E-02	U	2.00E-02	U	1	1.13	390.57	0.8	No	
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5	No	Yes	Organics					1	0.0547	519.36	0.6	No	
Bis(chloromethyl)ether	542-88-1	No	Yes	Organics	2.20E+02	U			1	0.000855	114.96	1	Yes	0.000064
Bis(oleoyloxy)dibutyl tin	13323-62-1	No	Yes	Organics					1	2680	795.87	0	No	
Bisphenol A	80-05-7	No	No	Organics			5.00E-02	U	1	0.0132	228.29	1	Yes	
Boron And Borates Only	7440-42-8	No	No	Inorganics			2.00E-01	U	1	0.001	13.84	1	Yes	
Boron Trichloride	10294-34-5	No	Yes	Inorganics			2.00E+00	U	1	0.001	117.17	1	Yes	
Boron Trifluoride	7637-07-2	No	Yes	Inorganics			4.00E-02	U	1	0.001	67.81	1	Yes	
Bromacil	314-40-9	No	No	Organics					1	0.00135	261.12	1	Yes	
Bromate	15541-45-4	No	No	Inorganics	7.00E-01	U	4.00E-03	U	1	0.001	79.9	1	Yes	0.0201102
Bromine	7726-95-6	No	Yes	Inorganics					1	0.001	159.81	1	Yes	
Bromo-2-chloroethane, 1-	107-04-0	No	Yes	Organics	2.00E+00	U			1	0.00464	143.41	1	Yes	0.0070386
Bromo-3-fluorobenzene, 1-	1073-06-9	No	Yes	Organics					1	0.0142	175	1	Yes	
Bromo-4-Ethylbenzene, 1-	1585-07-5	No	Yes	Organics					1	0.0579	185.06	1	Yes	

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater
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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Benzene, Ethyldimethyl	29224-55-3												
Benzene, Ethylmethyl	25550-14-5												
Benzene, Methylpropenyl	768-00-3												
Benzene, Methylpropyl	28729-54-6												
Benzene, Trimethyl	25551-13-7												
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1			3.19E+04		3.19E+04				1.46E+04		1.46E+04	1.46E+04 nc
Benzenethiol	108-98-5		0.2011019							4.87E+04	4.04E+03	3.73E+03	3.73E+03 nc
Benzidine	92-87-5		0.6033058	1.39E+01	1.30E+01	6.72E+00				1.46E+05	1.28E+05	6.83E+04	6.72E+00 ca
Benzo(j)fluoranthene	205-82-3			2.66E+03		2.66E+03							2.66E+03 ca
Benzo[a]pyrene	50-32-8			4.38E+02		4.38E+02							4.38E+02 ca
Benzo[b]fluoranthene	205-99-2			4.38E+03		4.38E+03							4.38E+03 ca
Benzo[g,h,i]perylene	191-24-2												
Benzo[k]fluoranthene	207-08-9			4.38E+04		4.38E+04							4.38E+04 ca
Benzofluoranthenes, total	NA												
Benzofluorene, 2,3-	243-17-4												
Benzoic Acid	65-85-0		804.40771							1.95E+08	4.76E+07	3.82E+07	3.82E+07 nc
Benzoic acid, 3,5-dichloro-	51-36-5												
Benzoic acid, 4-hydroxy-, methyl ester	99-76-3												
Benzothiazole	95-16-9												
Benzotrichloride	98-07-7			2.46E+02	4.97E+00	4.88E+00							4.88E+00 ca
Benzyl Alcohol	100-51-6		20.110193							4.87E+06	3.39E+06	2.00E+06	2.00E+06 nc
Benzyl Chloride	100-44-7		0.4022039	1.88E+04	2.65E+03	2.32E+03				9.73E+04	1.29E+04	1.14E+04	2.32E+03 ca**
Beryllium and compounds	7440-41-7		0.0028154							9.73E+04	1.41E+03	1.39E+03	1.39E+03 nc
Bidrin	141-66-2		0.0201102							4.87E+03	4.70E+04	4.41E+03	4.41E+03 nc
Bifenox	42576-02-3		1.8099174							4.38E+05	9.76E+03	9.55E+03	9.55E+03 nc
Biphenthrin	82657-04-3									7.30E+05		7.30E+05	7.30E+05 nc
Biphenyl, 1,1'-	92-52-4		100.55096	3.99E+05	5.27E+03	5.20E+03				2.43E+07	3.01E+05	2.97E+05	5.20E+03 ca*
Bis(2-chloro-1-methylethyl) ether	108-60-1		8.0440771	4.56E+04	6.89E+03	5.99E+03				1.95E+06	2.76E+05	2.41E+05	5.99E+03 ca*
Bis(2-chloroethoxy)methane	111-91-1		0.6033058							1.46E+05	1.28E+05	6.82E+04	6.82E+04 nc
Bis(2-chloroethyl)ether	111-44-4			2.90E+03	2.16E+03	1.24E+03							1.24E+03 ca
Bis(2-ethylhexyl)phthalate	117-81-7			2.28E+05		2.28E+05				9.73E+05		9.73E+05	2.28E+05 ca**
Bis(Octanoyloxy)Di-N-Butyl Stannane	4731-77-5												
Bis(chloromethyl)ether	542-88-1			1.45E+01	2.56E+01	9.27E+00							9.27E+00 ca
Bis(oleoyloxy)dibutyl tin	13323-62-1												
Bisphenol A	80-05-7		10.055096							2.43E+06	1.38E+05	1.31E+05	1.31E+05 nc
Boron And Borates Only	7440-42-8		40.220386							9.73E+06	2.01E+07	6.56E+06	6.56E+06 nc
Boron Trichloride	10294-34-5		402.20386							9.73E+07	2.01E+08	6.56E+07	6.56E+07 nc
Boron Trifluoride	7637-07-2		8.0440771							1.95E+06	4.02E+06	1.31E+06	1.31E+06 nc
Bromacil	314-40-9												
Bromate	15541-45-4		0.8044077	4.56E+03	1.01E+04	3.14E+03				1.95E+05	4.02E+05	1.31E+05	3.14E+03 ca*
Bromine	7726-95-6												
Bromo-2-chloroethane, 1-	107-04-0			1.60E+03	4.56E+02	3.55E+02							3.55E+02 ca
Bromo-3-fluorobenzene, 1-	1073-06-9												
Bromo-4-Ethylbenzene, 1-	1585-07-5												

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Bromoacetic acid	79-08-3	No	No	Organics					1	0.000487	138.95	1	Yes	
Bromoacetophenone, 3-	2142-63-4	No	No	Organics					1	0.00524	199.05	1	Yes	
Bromobenzene	108-86-1	No	Yes	Organics			8.00E-03	U	1	0.02	157.01	1	Yes	
Bromochloromethane	74-97-5	No	Yes	Organics					1	0.00255	129.38	1	Yes	
Bromodichloromethane	75-27-4	No	Yes	Organics	6.20E-02	U	2.00E-02	U	1	0.00402	163.83	1	Yes	0.2270506
Bromodiphenyl Ether, p-	101-55-3	No	Yes	Organics					1	0.12	249.11	0.9	Yes	
Bromofluorobenzene, p-	460-00-4	No	Yes	Organics					1	0.0182	175	1	Yes	
Bromoform	75-25-2	No	Yes	Organics	7.90E-03	U	2.00E-02	U	1	0.00235	252.73	1	Yes	1.7819158
Bromomethane	74-83-9	No	Yes	Organics			1.40E-03	U	1	0.00284	94.94	1	Yes	
Bromophenol, p-	106-41-2	No	No	Organics					1	0.00882	173.01	1	Yes	
Bromophenyl-phenyl phthalate, 4-	NA	No	No	Organics					1				No	
Bromophos	2104-96-3	No	Yes	Organics			5.00E-03	U	1	0.0401	365.99	0.8	Yes	
Bromopyridine, 2-	109-04-6	No	No	Organics					1	0.00179	158	1	Yes	
Bromotrichloromethane	75-62-7	No	Yes	Organics					1	0.00582	198.27	1	Yes	
Bromoxynil	1689-84-5	No	No	Organics			2.00E-02	U	1	0.00783	276.92	0.9	Yes	
Bromoxynil Octanoate	1689-99-2	No	Yes	Organics			2.00E-02	U	1	0.0332	403.12	0.8	Yes	
Butadiene, 1,3-	106-99-0	No	Yes	Organics	3.40E+00	U			1	0.0164	54.09	1	Yes	0.0041403
Butanediol, 2,3-	513-85-9	No	No	Organics					1	0.00012	90.12	1	Yes	
Butanol	35296-72-1	No	Yes	Organics					1	0.00153	74.12	1	Yes	
Butanol, N-	71-36-3	No	Yes	Organics			1.00E-01	U	1	0.00231	74.12	1	Yes	
Butanone-2, 4-chloro-4,4-difluoro	NA	No	No	Organics					1				No	
Butyl Alcohol, t-	75-65-0	No	Yes	Organics					1	0.00103	74.12	1	Yes	
Butyl Benzyl Phthlate	85-68-7	No	No	Organics	1.90E-03	U	2.00E-01	U	1	0.0385	312.37	0.9	Yes	7.4090184
Butyl Formate, tert-	762-75-4	No	Yes	Organics					1	0.00258	102.13	1	Yes	
Butyl alcohol, sec-	78-92-2	No	Yes	Organics			2.00E+00	U	1	0.00153	74.12	1	Yes	
Butylacetate	123-86-4	No	Yes	Organics					1	0.00532	116.16	1	Yes	
Butylate	2008-41-5	No	Yes	Organics			5.00E-02	U	1	0.0541	217.37	1	Yes	
Butylated hydroxyanisole	25013-16-5	No	No	Organics	2.00E-04	U			1	0.0325	180.25	1	Yes	70.385675
Butylated hydroxytoluene	128-37-0	No	No	Organics	3.60E-03	U	3.00E-01	U	1	0.223	220.36	1	Yes	3.9103153
Butylbenzene, n-	104-51-8	No	Yes	Organics			5.00E-02	U	1	0.225	134.22	1	No	
Butylbenzene, sec-	135-98-8	No	Yes	Organics			1.00E-01	U	1	0.301	134.22	1	No	
Butylbenzene, tert-	98-06-6	No	Yes	Organics			1.00E-01	U	1	0.149	134.22	1	Yes	
Butylchloride, t-	507-20-0	No	Yes	Organics					1	0.0201	92.57	1	Yes	
Butylphthalyl Butylglycolate	85-70-1	No	No	Organics			1.00E+00	U	1	0.0116	336.39	0.9	Yes	
Butyltin	NA	No	No	Organics					1				No	
Cacodylic Acid	75-60-5	No	No	Organics			2.00E-02	U	1	0.00046	138	1	Yes	
Cadmium (Water)	7440-43-9	No	No	Inorganics			5.00E-04	U	0.05	0.001	112.41	1	Yes	
Calcium	7440-70-2	No	No	Inorganics					1	0.001	40.078	1	Yes	
Calcium Chlorate	10137-74-3	No	No	Inorganics					1	0.001	206.98	1	Yes	
Calcium Chromate	13765-19-0	Yes	No	Inorganics	5.00E-01	U	2.00E-02	U	0.025	0.001	156.072	1	Yes	0.0007039
Calcium Cyanide	592-01-8	No	No	Inorganics			1.00E-03	U	1	0.001	92.11	1	Yes	
Calcium pyrophosphate	7790-76-3	No	No	Inorganics			4.86E+01	U	1	0.001	254.1	1	Yes	
Caprolactam	105-60-2	No	No	Organics			5.00E-01	U	1	0.001	113.16	1	Yes	
Captafol	2425-06-1	No	No	Organics	1.50E-01	U	2.00E-03	U	1	0.00577	349.06	0.9	Yes	0.0938476

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Bromoacetic acid	79-08-3												
Bromoacetophenone, 3-	2142-63-4												
Bromobenzene	108-86-1		1.6088154							3.89E+05	2.25E+04	2.13E+04	2.13E+04 nc
Bromochloromethane	74-97-5												
Bromodichloromethane	75-27-4		4.0220386	5.15E+04	1.55E+04	1.19E+04				9.73E+05	2.74E+05	2.14E+05	1.19E+04 ca*
Bromodiphenyl Ether, p-	101-55-3												
Bromofluorobenzene, p-	460-00-4												
Bromoform	75-25-2		4.0220386	4.04E+05	1.17E+05	9.09E+04				9.73E+05	2.65E+05	2.08E+05	9.09E+04 ca**
Bromomethane	74-83-9		0.2815427							6.81E+04	3.67E+04	2.38E+04	2.38E+04 nc
Bromophenol, p-	106-41-2												
Bromophenyl-phenyl phthalate, 4-	NA												
Bromophos	2104-96-3		1.0055096							2.43E+05	2.34E+03	2.31E+03	2.31E+03 nc
Bromopyridine, 2-	109-04-6												
Bromotrichloromethane	75-62-7												
Bromoxynil	1689-84-5		4.0220386							9.73E+05	7.55E+04	7.01E+04	7.01E+04 nc
Bromoxynil Octanoate	1689-99-2		4.0220386							9.73E+05	8.88E+03	8.80E+03	8.80E+03 nc
Butadiene, 1,3-	106-99-0			9.39E+02	1.07E+02	9.63E+01							9.63E+01 ca
Butanediol, 2,3-	513-85-9												
Butanol	35296-72-1												
Butanol, N-	71-36-3		20.110193							4.87E+06	3.43E+06	2.01E+06	2.01E+06 nc
Butanone-2, 4-chloro-4,4-difluoro	NA												
Butyl Alcohol, t-	75-65-0												
Butyl Benzyl Phthlate	85-68-7		40.220386	1.68E+06	2.25E+04	2.22E+04				9.73E+06	1.22E+05	1.21E+05	2.22E+04 ca**
Butyl Formate, tert-	762-75-4												
Butyl alcohol, sec-	78-92-2		402.20386							9.73E+07	1.04E+08	5.02E+07	5.02E+07 nc
Butylacetate	123-86-4												
Butylate	2008-41-5		10.055096							2.43E+06	3.61E+04	3.56E+04	3.56E+04 nc
Butylated hydroxyanisole	25013-16-5			1.60E+07	5.34E+05	5.17E+05							5.17E+05 ca
Butylated hydroxytoluene	128-37-0		60.330579	8.87E+05	3.34E+03	3.33E+03				1.46E+07	5.16E+04	5.14E+04	3.33E+03 ca*
Butylbenzene, n-	104-51-8									2.43E+06		2.43E+06	2.43E+06 nc
Butylbenzene, sec-	135-98-8									4.87E+06		4.87E+06	4.87E+06 nc
Butylbenzene, tert-	98-06-6		20.110193							4.87E+06	4.48E+04	4.44E+04	4.44E+04 nc
Butylchloride, t-	507-20-0												
Butylphthalyl Butylglycolate	85-70-1		201.10193							4.87E+07	1.74E+06	1.68E+06	1.68E+06 nc
Butyltin	NA												
Cacodylic Acid	75-60-5		4.0220386							9.73E+05	2.69E+06	7.15E+05	7.15E+05 nc
Cadmium (Water)	7440-43-9		0.0050275							2.43E+04	2.51E+03	2.28E+03	2.28E+03 nc
Calcium	7440-70-2												
Calcium Chlorate	10137-74-3												
Calcium Chromate	13765-19-0		0.100551	6.39E+03	3.52E+02	3.34E+02				9.73E+05	5.03E+04	4.78E+04	3.34E+02 ca
Calcium Cyanide	592-01-8		0.2011019							4.87E+04	1.01E+05	3.28E+04	3.28E+04 nc
Calcium pyrophosphate	7790-76-3		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Caprolactam	105-60-2		100.55096							2.43E+07	3.47E+07	1.43E+07	1.43E+07 nc
Captafol	2425-06-1		0.4022039	2.13E+04	1.50E+03	1.40E+03				9.73E+04	6.44E+03	6.04E+03	1.40E+03 ca**

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Captan	133-06-2	No	No	Organics	2.30E-03	U	1.30E-01	U	1	0.00234	300.59	1	Yes	6.1204935
Carbaryl	63-25-2	No	No	Organics			1.00E-01	U	1	0.00431	201.23	1	Yes	
Carbazole	86-74-8	No	No	Organics					1	0.0536	167.21	1	Yes	
Carbofuran	1563-66-2	No	No	Organics			5.00E-03	U	1	0.00313	221.26	1	Yes	
Carbon Disulfide	75-15-0	No	Yes	Organics			1.00E-01	U	1	0.0114	76.13	1	Yes	
Carbon Tetrachloride	56-23-5	No	Yes	Organics	7.00E-02	U	4.00E-03	U	1	0.0163	153.82	1	Yes	0.2011019
Carbosulfan	55285-14-8	No	No	Organics			1.00E-02	U	1	0.0579	380.55	0.8	Yes	
Carboxin	5234-68-4	No	No	Organics			1.00E-01	U	1	0.00198	235.3	1	Yes	
Catechol	120-80-9	No	No	Organics					1	0.00145	110.11	1	Yes	
Ceric oxide	1306-38-3	No	No	Inorganics					1	0.001	172.115	1	Yes	
Cerium, Stable	7440-45-1	No	No	Inorganics					1	0.001	140.12	1	Yes	
Chloral	75-87-6	No	Yes	Organics					1	0.00106	147.39	1	Yes	
Chloral Hydrate	302-17-0	No	Yes	Organics			1.00E-01	U	1	0.000841	165.4	1	Yes	
Chloramben	133-90-4	No	No	Organics			1.50E-02	U	1	0.00201	206.03	1	Yes	
Chloramine	127-65-1	No	No	Inorganics					1	0.0000344	227.64	1	Yes	
Chloranil	118-75-2	No	No	Organics	4.03E-01	U			1	0.00194	245.88	1	Yes	0.0349309
Chlorate (ClO3) as	14866-68-3	No	No	Inorganics					1	0.001			Yes	
Chlordane	12789-03-6	No	Yes	Organics	3.50E-01	U	5.00E-04	U	1	0.107	409.78	0.7	No	
Chlordane (alpha)	5103-71-9	No	Yes	Organics					1	0.0338	409.78	0.7	Yes	
Chlordane (gamma)	5103-74-2	No	Yes	Organics					1	0.0338	409.78	0.7	No	
Chlordecone (Kepone)	143-50-0	No	No	Organics	1.00E+01	U	3.00E-04	U	1	0.0109	490.64	0.8	Yes	0.0014077
Chlorfenvinphos	470-90-6	No	No	Organics			7.00E-04	U	1	0.00512	359.58	0.9	Yes	
Chloride	16887-00-6	No	No	Inorganics					1	0.001	35.45	1	Yes	
Chlorimuron, Ethyl-	90982-32-4	No	No	Organics			2.00E-02	U	1	0.000338	414.82	1	Yes	
Chlorinated Hydrocarbons (total)	NA	No	No	Organics					1				No	
Chlorine	7782-50-5	No	Yes	Inorganics			1.00E-01	U	1	0.001	70.91	1	Yes	
Chlorine Dioxide	10049-04-4	No	Yes	Inorganics			3.00E-02	U	1	0.001	67.45	1	Yes	
Chlorite	14998-27-7	No	No	Inorganics					1	0.001			Yes	
Chlorite (Sodium Salt)	7758-19-2	No	No	Inorganics			3.00E-02	U	1	0.001	90.44	1	Yes	
Chloro-1,1-difluoroethane, 1-	75-68-3	No	Yes	Organics					1	0.00989	100.5	1	Yes	
Chloro-1,3-butadiene, 2-	126-99-8	No	Yes	Organics			2.00E-02	U	1	0.0238	88.54	1	Yes	
Chloro-2-methylaniline HCl, 4-	3165-93-3	No	No	Organics	4.60E-01	U			1	0.000018	178.06	1	Yes	0.0306025
Chloro-2-methylaniline, 4-	95-69-2	No	No	Organics	1.00E-01	U	3.00E-03	U	1	0.00808	141.6	1	Yes	0.1407713
Chloro-2-methylphenol, 4-	1570-64-5	No	No	Organics					1	0.0175	142.59	1	Yes	
Chloro-4-methylphenol	35421-08-0	No	No	Organics					1				No	
Chloro-6-fluorophenol, 2-	2040-90-6	No	No	Organics					1		146.55		No	
Chloroacetaldehyde, 2-	107-20-0	No	Yes	Organics	2.70E-01	U			1	0.00065	78.5	1	Yes	0.0521375
Chloroacetamide	79-07-2	No	No	Organics					1	0.000208	93.51	1	Yes	
Chloroacetic Acid	79-11-8	No	No	Organics			2.00E-03	U	1	0.000647	94.5	1	Yes	
Chloroacetophenone, 2-	532-27-4	No	No	Organics					1	0.00406	154.6	1	Yes	
Chloroaniline	27134-26-5	No	No	Organics					1	0.00552	127.57	1	Yes	
Chloroaniline, 3-	108-42-9	No	No	Organics					1	0.00535	127.57	1	Yes	
Chloroaniline, p-	106-47-8	No	No	Organics	2.00E-01	U	4.00E-03	U	1	0.00496	127.57	1	Yes	0.0703857
Chlorobenzene	108-90-7	No	Yes	Organics			2.00E-02	U	1	0.0282	112.56	1	Yes	

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Captan	133-06-2		26.143251	1.39E+06	2.97E+05	2.45E+05				6.33E+06	1.27E+06	1.06E+06	2.45E+05 ca**
Carbaryl	63-25-2		20.110193							4.87E+06	1.01E+06	8.34E+05	8.34E+05 nc
Carbazole	86-74-8												
Carbofuran	1563-66-2		1.0055096							2.43E+05	6.09E+04	4.87E+04	4.87E+04 nc
Carbon Disulfide	75-15-0		20.110193							4.87E+06	7.03E+05	6.14E+05	6.14E+05 nc
Carbon Tetrachloride	56-23-5		0.8044077	4.56E+04	3.52E+03	3.27E+03				1.95E+05	1.41E+04	1.31E+04	3.27E+03 ca**
Carbosulfan	55285-14-8		2.0110193							4.87E+05	2.95E+03	2.93E+03	2.93E+03 nc
Carboxin	5234-68-4		20.110193							4.87E+06	1.76E+06	1.29E+06	1.29E+06 nc
Catechol	120-80-9												
Ceric oxide	1306-38-3												
Cerium, Stable	7440-45-1												
Chloral	75-87-6												
Chloral Hydrate	302-17-0		20.110193							4.87E+06	6.49E+06	2.78E+06	2.78E+06 nc
Chloramben	133-90-4		3.0165289							7.30E+05	3.14E+05	2.19E+05	2.19E+05 nc
Chloramine	127-65-1												
Chloranil	118-75-2			7.92E+03	2.91E+03	2.13E+03							2.13E+03 ca
Chlorate (ClO3) as	14866-68-3												
Chlordane	12789-03-6			9.13E+03		9.13E+03				2.43E+04		2.43E+04	9.13E+03 ca**
Chlordane (alpha)	5103-71-9												
Chlordane (gamma)	5103-74-2												
Chlordecone (Kepone)	143-50-0		0.0603306	3.19E+02	5.39E+00	5.30E+00				1.46E+04	2.31E+02	2.27E+02	5.30E+00 ca*
Chlorfenvinphos	470-90-6		0.1407713							3.41E+04	2.37E+03	2.22E+03	2.22E+03 nc
Chloride	16887-00-6												
Chlorimuron, Ethyl-	90982-32-4		4.0220386							9.73E+05	6.47E+05	3.89E+05	3.89E+05 nc
Chlorinated Hydrocarbons (total)	NA												
Chlorine	7782-50-5		20.110193							4.87E+06	1.01E+07	3.28E+06	3.28E+06 nc
Chlorine Dioxide	10049-04-4		6.0330579							1.46E+06	3.02E+06	9.84E+05	9.84E+05 nc
Chlorite	14998-27-7												
Chlorite (Sodium Salt)	7758-19-2		6.0330579							1.46E+06	3.02E+06	9.84E+05	9.84E+05 nc
Chloro-1,1-difluoroethane, 1-	75-68-3												
Chloro-1,3-butadiene, 2-	126-99-8		4.0220386							9.73E+05	6.61E+04	6.19E+04	6.19E+04 nc
Chloro-2-methylaniline HCl, 4-	3165-93-3			6.94E+03	4.26E+05	6.83E+03							6.83E+03 ca
Chloro-2-methylaniline, 4-	95-69-2		0.6033058	3.19E+04	5.31E+03	4.55E+03				1.46E+05	2.27E+04	1.97E+04	4.55E+03 ca**
Chloro-2-methylphenol, 4-	1570-64-5												
Chloro-4-methylphenol	35421-08-0												
Chloro-6-fluorophenol, 2-	2040-90-6												
Chloroacetaldehyde, 2-	107-20-0			1.18E+04	3.11E+04	8.57E+03							8.57E+03 ca
Chloroacetamide	79-07-2												
Chloroacetic Acid	79-11-8		0.4022039							9.73E+04	2.30E+05	6.84E+04	6.84E+04 nc
Chloroacetophenone, 2-	532-27-4												
Chloroaniline	27134-26-5												
Chloroaniline, 3-	108-42-9												
Chloroaniline, p-	106-47-8		0.8044077	1.60E+04	4.62E+03	3.58E+03				1.95E+05	5.28E+04	4.15E+04	3.58E+03 ca*
Chlorobenzene	108-90-7		4.0220386							9.73E+05	5.11E+04	4.85E+04	4.85E+04 nc

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Chlorobenzene sulfonic acid, p-	98-66-8	No	No	Organics					1	0.0000586	192.62	1	Yes	
Chlorobenzenes (total)	NA	No	No	Organics					1				No	
Chlorobenzilate	510-15-6	No	No	Organics	1.10E-01	U	2.00E-02	U	1	0.0331	325.19	0.8	Yes	0.127974
Chlorobenzoic Acid, p-	74-11-3	No	No	Organics			3.00E-02	U	1	0.012	156.57	1	Yes	
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5	No	Yes	Organics					1	0.0159	225.56	0.9	Yes	
Chlorobenzotrifluoride, 4-	98-56-6	No	Yes	Organics			3.00E-03	U	1	0.0375	180.56	1	Yes	
Chlorobiphenyl, p-	2051-62-9	No	Yes	Organics					1	0.752	188.66	0.6	Yes	
Chlorobutane, 1-	109-69-3	No	Yes	Organics			4.00E-02	U	1	0.0269	92.57	1	Yes	
Chlorobutane, 2-	78-86-4	No	Yes	Organics					1	0.0167	92.57	1	Yes	
Chlorocyclopentadiene	41851-50-7	No	Yes	Organics					1	0.0177	100.55	1	Yes	
Chlorodibromoethane	73506-94-2	No	No	Organics					1				No	
Chlorodifluoromethane	75-45-6	No	Yes	Organics					1	0.00268	86.47	1	Yes	
Chloroethanol, 2-	107-07-3	No	Yes	Organics			2.00E-02	U	1	0.000579	80.51	1	Yes	
Chloroethylvinyl ether, 2-	110-75-8	No	Yes	Organics					1	0.00236	106.55	1	Yes	
Chloroform	67-66-3	No	Yes	Organics	3.10E-02	U	1.00E-02	U	1	0.00683	119.38	1	Yes	0.4541011
Chloromethane	74-87-3	No	Yes	Organics					1	0.00328	50.49	1	Yes	
Chloromethyl Methyl Ether	107-30-2	No	Yes	Organics	2.40E+00	U			1	0.000905	80.51	1	Yes	0.0058655
Chloronaphthalene, Beta-	91-58-7	No	Yes	Organics			8.00E-02	U	1	0.0749	162.62	1	Yes	
Chloronaphthalene, alpha-	90-13-1	No	Yes	Organics					1	0.0872	162.62	1	Yes	
Chloronitrobenzene, o-	88-73-3	No	No	Organics	3.00E-01	U	3.00E-03	U	1	0.0063	157.56	1	Yes	0.0469238
Chloronitrobenzene, p-	100-00-5	No	No	Organics	6.30E-03	U	1.00E-03	U	1	0.00793	157.56	1	Yes	2.2344659
Chlorophenol, 2-	95-57-8	No	Yes	Organics			5.00E-03	U	1	0.00799	128.56	1	Yes	
Chlorophenol, 3-	108-43-0	No	No	Organics					1	0.0136	128.56	1	Yes	
Chlorophenol, 4-	106-48-9	No	No	Organics					1	0.0115	128.56	1	Yes	
Chlorophenols (each)	NA	No	No	Organics					1				No	
Chlorophenols (total)	NA	No	No	Organics					1				No	
Chlorophenyl Methyl Sulfide, p-	123-09-1	No	Yes	Organics					1	0.0286	158.65	1	Yes	
Chlorophenyl Methyl Sulfoxide	934-73-6	No	No	Organics					1	0.000849	174.65	1	Yes	
Chlorophenyl phenyl ether, 4-	7005-72-3	No	Yes	Organics					1	0.148	204.66	1	Yes	
Chloropicrin	76-06-2	No	Yes	Organics					1	0.00459	164.38	1	Yes	
Chloropropane, 2-	75-29-6	No	Yes	Organics					1	0.0104	78.54	1	Yes	
Chlorothalonil	1897-45-6	No	No	Organics	3.10E-03	U	1.50E-02	U	1	0.00537	265.91	0.9	Yes	4.5410113
Chlorotoluene, o-	95-49-8	No	Yes	Organics			2.00E-02	U	1	0.0572	126.59	1	Yes	
Chlorotoluene, p-	106-43-4	No	Yes	Organics			2.00E-02	U	1	0.0498	126.59	1	Yes	
Chlorozotocin	54749-90-5	No	No	Organics	2.40E+02	U			1	9.91E-06	313.7	1	Yes	0.0000587
Chlorpropham	101-21-3	No	No	Organics			2.00E-01	U	1	0.0213	213.67	0.9	Yes	
Chlorpyrifos	2921-88-2	No	No	Organics			1.00E-03	U	1	0.0334	350.59	0.8	Yes	
Chlorpyrifos Methyl	5598-13-0	No	No	Organics			1.00E-02	U	1	0.0178	322.53	0.9	Yes	
Chlorsulfuron	64902-72-3	No	No	Organics			5.00E-02	U	1	0.000328	357.77	1	Yes	
Chlorthiophos	60238-56-4	No	No	Organics			8.00E-04	U	1	0.106	361.24	0.8	Yes	
Chromium(III), Insoluble Salts	16065-83-1	No	No	Inorganics			1.50E+00	U	0.013	0.001	52	1	Yes	
Chromium(VI)	18540-29-9	Yes	No	Inorganics	5.00E-01	U	3.00E-03	U	0.025	0.002	52	1	Yes	0.0007039
Chromium, Total	7440-47-3	No	No	Inorganics					0.013	0.001	52	1	Yes	
Chrysene	218-01-9	Yes	No	Organics	7.30E-03	U			1	0.596	228.3	1	No	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Chlorobenzene sulfonic acid, p-	98-66-8												
Chlorobenzenes (total)	NA												
Chlorobenzilate	510-15-6		4.0220386	2.90E+04	4.68E+02	4.61E+02				9.73E+05	1.47E+04	1.45E+04	4.61E+02 ca*
Chlorobenzoic Acid, p-	74-11-3		6.0330579							1.46E+06	1.41E+05	1.29E+05	1.29E+05 nc
Chlorobenzotrifluoride, 3-nitro-4-	121-17-5												
Chlorobenzotrifluoride, 4-	98-56-6		0.6033058							1.46E+05	3.96E+03	3.86E+03	3.86E+03 nc
Chlorobiphenyl, p-	2051-62-9												
Chlorobutane, 1-	109-69-3		8.0440771							1.95E+06	1.16E+05	1.09E+05	1.09E+05 nc
Chlorobutane, 2-	78-86-4												
Chlorocyclopentadiene	41851-50-7												
Chlorodibromoethane	73506-94-2												
Chlorodifluoromethane	75-45-6												
Chloroethanol, 2-	107-07-3		4.0220386							9.73E+05	2.68E+06	7.14E+05	7.14E+05 nc
Chloroethylvinyl ether, 2-	110-75-8												
Chloroform	67-66-3		2.0110193	1.03E+05	2.25E+04	1.85E+04				4.87E+05	9.97E+04	8.28E+04	1.85E+04 ca**
Chloromethane	74-87-3												
Chloromethyl Methyl Ether	107-30-2			1.33E+03	2.50E+03	8.69E+02							8.69E+02 ca
Chloronaphthalene, Beta-	91-58-7		16.088154							3.89E+06	5.94E+04	5.85E+04	5.85E+04 nc
Chloronaphthalene, alpha-	90-13-1												
Chloronitrobenzene, o-	88-73-3		0.6033058	1.06E+04	2.07E+03	1.73E+03				1.46E+05	2.66E+04	2.25E+04	1.73E+03 ca*
Chloronitrobenzene, p-	100-00-5		0.2011019	5.07E+05	7.85E+04	6.79E+04				4.87E+04	7.06E+03	6.17E+03	6.17E+03 nc
Chlorophenol, 2-	95-57-8		1.0055096							2.43E+05	4.09E+04	3.50E+04	3.50E+04 nc
Chlorophenol, 3-	108-43-0												
Chlorophenol, 4-	106-48-9												
Chlorophenols (each)	NA												
Chlorophenols (total)	NA												
Chlorophenyl Methyl Sulfide, p-	123-09-1												
Chlorophenyl Methyl Sulfoxide	934-73-6												
Chlorophenyl phenyl ether, 4-	7005-72-3												
Chloropicrin	76-06-2												
Chloropropane, 2-	75-29-6												
Chlorothalonil	1897-45-6		3.0165289	1.03E+06	1.33E+05	1.18E+05				7.30E+05	8.87E+04	7.91E+04	7.91E+04 nc
Chlorotoluene, o-	95-49-8		4.0220386							9.73E+05	2.40E+04	2.34E+04	2.34E+04 nc
Chlorotoluene, p-	106-43-4		4.0220386							9.73E+05	2.74E+04	2.67E+04	2.67E+04 nc
Chlorozotocin	54749-90-5			1.33E+01	6.18E+02	1.30E+01							1.30E+01 ca
Chlorpropham	101-21-3		40.220386							9.73E+06	4.17E+05	4.00E+05	4.00E+05 nc
Chlorpyrifos	2921-88-2		0.2011019							4.87E+04	6.19E+02	6.12E+02	6.12E+02 nc
Chlorpyrifos Methyl	5598-13-0		2.0110193							4.87E+05	1.24E+04	1.21E+04	1.21E+04 nc
Chlorsulfuron	64902-72-3		10.055096							2.43E+06	2.41E+06	1.21E+06	1.21E+06 nc
Chlorthiophos	60238-56-4		0.1608815							3.89E+04	1.46E+02	1.45E+02	1.45E+02 nc
Chromium(III), Insoluble Salts	16065-83-1		3.9214876							7.30E+07	1.96E+06	1.91E+06	1.91E+06 nc
Chromium(VI)	18540-29-9		0.0150826	6.39E+03	1.76E+02	1.71E+02				1.46E+05	3.77E+03	3.68E+03	1.71E+02 ca*
Chromium, Total	7440-47-3												
Chrysene	218-01-9			4.38E+05		4.38E+05							4.38E+05 ca

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Cobalt	7440-48-4	No	No	Inorganics			3.00E-04	U	1	0.0004	58.93	1	Yes	
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA	No	No	Organics					1				No	
Copper	7440-50-8	No	No	Inorganics			4.00E-02	U	1	0.001	63.55	1	Yes	
Copper Cyanide	544-92-3	No	No	Inorganics			5.00E-03	U	1	0.001	89.56	1	Yes	
Coronene	191-07-1	No	No	Organics					1	3.86	300.36	0.3	No	
Creosote	8001-58-9	No	No	Organics					1				No	
Cresol, m-	108-39-4	No	No	Organics			5.00E-02	U	1	0.00777	108.14	1	Yes	
Cresol, o-	95-48-7	No	No	Organics			5.00E-02	U	1	0.00766	108.14	1	Yes	
Cresol, p-	106-44-5	No	No	Organics			1.00E-01	U	1	0.00754	108.14	1	Yes	
Cresol, p-chloro-m-	59-50-7	No	No	Organics			1.00E-01	U	1	0.0285	142.59	1	Yes	
Cresols	1319-77-3	No	No	Organics			1.00E-01	U	1	0.00766	108.14	1	Yes	
Crotonaldehyde	4170-30-3	No	Yes	Organics					1	0.00159	70.09	1	Yes	
Crotonaldehyde, trans-	123-73-9	No	Yes	Organics	1.90E+00	U	1.00E-03	U	1	0.00159	70.09	1	Yes	0.007409
Cumene	98-82-8	No	Yes	Organics			1.00E-01	U	1	0.0897	120.2	1	Yes	
Cupferron	135-20-6	No	No	Organics	2.20E-01	U			1	1.67E-06	155.16	1	No	
Cyanazine	21725-46-2	No	No	Organics	8.40E-01	U	2.00E-03	U	1	0.00209	240.7	1	Yes	0.0167585
Cyanide (CN-)	57-12-5	No	Yes	Inorganics			6.00E-04	U	1	0.001	26.018	1	Yes	
Cyanide (total complex)	NA	No	No	Inorganics					1	0.001			Yes	
Cyanogen	460-19-5	No	Yes	Inorganics			1.00E-03	U	1	0.00089	52.04	1	Yes	
Cyanogen Bromide	506-68-3	No	Yes	Inorganics			9.00E-02	U	1	0.000255	105.92	1	Yes	
Cyanogen Chloride	506-77-4	No	Yes	Inorganics			5.00E-02	U	1	0.000394	61.47	1	Yes	
Cyclohexane	110-82-7	No	Yes	Organics					1	0.102	84.16	1	Yes	
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	No	No	Organics	2.30E-02	U			1	0.00283	513.09	0.9	Yes	0.6120493
Cyclohexanone	108-94-1	No	Yes	Organics			5.00E+00	U	1	0.00152	98.15	1	Yes	
Cyclohexene	110-83-8	No	Yes	Organics			5.00E-03	U	1	0.0431	82.15	1	Yes	
Cyclohexylamine	108-91-8	No	Yes	Organics			2.00E-01	U	1	0.00425	99.18	1	Yes	
Cyclopentadiene	542-92-7	No	Yes	Organics					1	0.021	66.1	1	Yes	
Cyhalothrin/karate	68085-85-8	No	No	Organics			5.00E-03	U	1	0.21	449.86	0.5	No	
Cypermethrin	52315-07-8	No	No	Organics			1.00E-02	U	1	0.0769	416.31	0.7	No	
Cyromazine	66215-27-8	No	No	Organics			7.50E-03	U	1	0.000797	166.19	1	Yes	
DDD	72-54-8	No	No	Organics	2.40E-01	U			1	0.251	320.05	0.8	Yes	0.0586547
DDD, o,p'-	53-19-0	No	No	Organics					1	0.201	320.05	0.8	Yes	
DDE, p,p'-	72-55-9	No	Yes	Organics	3.40E-01	U			1	0.545	318.03	0.8	No	
DDT	50-29-3	No	No	Organics	3.40E-01	U	5.00E-04	U	1	0.628	354.49	0.7	No	
DDT, o,p'-	789-02-6	No	No	Organics					1	0.526	354.49	0.4	No	
DDT/DDE/DDD (total)	NA	No	No	Organics					1				No	
Dacthal	1861-32-1	No	No	Organics			1.00E-02	U	1	0.015	331.97	0.9	Yes	
Dalapon	75-99-0	No	No	Organics			3.00E-02	U	1	0.000815	142.97	1	Yes	
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	No	No	Organics	7.00E-04	U	7.00E-03	U	1	0.725	959.17	0	No	
Decane	124-18-5	No	Yes	Organics					1	0.532	142.29	1	No	
Decanol, n-	112-30-1	No	Yes	Organics					1	0.221	158.29	1	No	
Deltamethrin	52918-63-5	No	No	Organics					1	0.0302	505.21	0.7	No	

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Cobalt	7440-48-4		0.0603306							1.46E+04	7.54E+04	1.22E+04	1.22E+04 nc
Complex Mixtures of Aliphatic and Aromatic Hydrocarbons	NA												
Copper	7440-50-8		8.0440771							1.95E+06	4.02E+06	1.31E+06	1.31E+06 nc
Copper Cyanide	544-92-3		1.0055096							2.43E+05	5.03E+05	1.64E+05	1.64E+05 nc
Coronene	191-07-1												
Creosote	8001-58-9												
Cresol, m-	108-39-4		10.055096							2.43E+06	4.60E+05	3.87E+05	3.87E+05 nc
Cresol, o-	95-48-7		10.055096							2.43E+06	4.66E+05	3.91E+05	3.91E+05 nc
Cresol, p-	106-44-5		20.110193							4.87E+06	9.47E+05	7.93E+05	7.93E+05 nc
Cresol, p-chloro-m-	59-50-7		20.110193							4.87E+06	2.16E+05	2.07E+05	2.07E+05 nc
Cresols	1319-77-3		20.110193							4.87E+06	9.33E+05	7.83E+05	7.83E+05 nc
Crotonaldehyde	4170-30-3												
Crotonaldehyde, trans-	123-73-9		0.2011019	1.68E+03	1.86E+03	8.82E+02				4.87E+04	5.04E+04	2.47E+04	8.82E+02 ca*
Cumene	98-82-8		20.110193							4.87E+06	8.04E+04	7.91E+04	7.91E+04 nc
Cupferron	135-20-6			1.45E+04		1.45E+04							1.45E+04 ca
Cyanazine	21725-46-2		0.4022039	3.80E+03	1.34E+03	9.91E+02				9.73E+04	3.22E+04	2.42E+04	9.91E+02 ca*
Cyanide (CN-)	57-12-5		0.1206612							2.92E+04	6.03E+04	1.97E+04	1.97E+04 nc
Cyanide (total complex)	NA												
Cyanogen	460-19-5		0.2011019							4.87E+04	1.13E+05	3.40E+04	3.40E+04 nc
Cyanogen Bromide	506-68-3		18.099174							4.38E+06	3.55E+07	3.90E+06	3.90E+06 nc
Cyanogen Chloride	506-77-4		10.055096							2.43E+06	1.28E+07	2.04E+06	2.04E+06 nc
Cyclohexane	110-82-7												
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3			1.39E+05	6.94E+03	6.61E+03							6.61E+03 ca
Cyclohexanone	108-94-1		1005.5096							2.43E+08	2.42E+08	1.21E+08	1.21E+08 nc
Cyclohexene	110-83-8		1.0055096							2.43E+05	9.58E+03	9.22E+03	9.22E+03 nc
Cyclohexylamine	108-91-8		40.220386							9.73E+06	3.46E+06	2.55E+06	2.55E+06 nc
Cyclopentadiene	542-92-7												
Cyhalothrin/karate	68085-85-8									2.43E+05		2.43E+05	2.43E+05 nc
Cypermethrin	52315-07-8									4.87E+05		4.87E+05	4.87E+05 nc
Cyromazine	66215-27-8		1.5082645							3.65E+05	5.11E+05	2.13E+05	2.13E+05 nc
DDD	72-54-8			1.33E+04	2.93E+01	2.92E+01							2.92E+01 ca
DDD, o,p'-	53-19-0												
DDE, p,p'-	72-55-9			9.39E+03		9.39E+03							9.39E+03 ca
DDT	50-29-3			9.39E+03		9.39E+03				2.43E+04		2.43E+04	9.39E+03 ca**
DDT, o,p'-	789-02-6												
DDT/DDE/DDD (total)	NA												
Dacthal	1861-32-1		2.0110193							4.87E+05	1.38E+04	1.34E+04	1.34E+04 nc
Dalapon	75-99-0		6.0330579							1.46E+06	2.23E+06	8.82E+05	8.82E+05 nc
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5			4.56E+06		4.56E+06				3.41E+05		3.41E+05	3.41E+05 nc
Decane	124-18-5												
Decanol, n-	112-30-1												
Deltamethrin	52918-63-5												

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Demeton	8065-48-3	No	No	Organics			4.00E-05	U	1	0.00761	258.33	0.9	Yes	
Di(2-ethylhexyl)adipate	103-23-1	No	No	Organics	1.20E-03	U	6.00E-01	U	1	3.23	370.58	0	No	
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4	No	Yes	Organics					1	0.0772	533.39	0.5	No	
Di-n-butyltin bis(methyl maleate)	15546-11-9	No	No	Organics					1	0.000125	491.13	1	Yes	
Di-n-butyltin bis(n-butyl maleate)	15546-16-4	No	No	Organics					1	0.00382	575.29	0.8	No	
Di-n-butyltin dilaurate	77-58-7	No	Yes	Organics					1	0.000053	631.57	1	Yes	
Di-n-butyltin distearate	5847-55-2	No	Yes	Organics					1	4910	799.9	0	No	
Di-n-hexylphthalate	84-75-3	No	Yes	Organics					1	0.709	334.46	0.4	No	
Diallate	2303-16-4	No	No	Organics	6.10E-02	U			1	0.046	270.22	0.9	Yes	0.2307727
Diammonium phosphate	7783-28-0	No	No	Inorganics			4.86E+01	U	1	0.001	132.06	1	Yes	
Diazinon	333-41-5	No	No	Organics			7.00E-04	U	1	0.0104	304.35	0.9	Yes	
Dibenz[a,h]anthracene	53-70-3	Yes	No	Organics	7.30E+00	U			1	0.953	278.36	0.6	No	
Dibenzo(a,e)pyrene	192-65-4	No	No	Organics	1.20E+01	U			1	4.19	302.38	0.3	No	
Dibenzofuran	132-64-9	No	Yes	Organics			1.00E-03	U	1	0.0975	168.2	1	Yes	
Dibenzothiophene	132-65-0	No	Yes	Organics			1.00E-02	U	1	0.118	184.26	1	Yes	
Dibromo-3-chloropropane, 1,2-	96-12-8	Yes	Yes	Organics	8.00E-01	U	2.00E-04	U	1	0.00685	236.33	1	Yes	0.0175964
Dibromoacetic acid	631-64-1	No	No	Organics					1	0.000274	217.85	1	Yes	
Dibromobenzene, 1,3-	108-36-1	No	Yes	Organics			4.00E-04	U	1	0.0231	235.91	0.9	Yes	
Dibromobenzene, 1,4-	106-37-6	No	Yes	Organics			1.00E-02	U	1	0.0245	235.91	0.9	Yes	
Dibromochloromethane	124-48-1	No	Yes	Organics	8.40E-02	U	2.00E-02	U	1	0.00289	208.28	1	Yes	0.1675849
Dibromodichloromethane	594-18-3	No	Yes	Organics					1	0.00376	242.73	1	Yes	
Dibromodiphenyl Ether, p,p'-	2050-47-7	No	Yes	Organics					1	0.169	328	0.8	Yes	
Dibromoethane, 1,2-	106-93-4	No	Yes	Organics	2.00E+00	U	9.00E-03	U	1	0.00278	187.86	1	Yes	0.0070386
Dibromomethane (Methylene Bromide)	74-95-3	No	Yes	Organics			1.00E-02	U	1	0.00223	173.84	1	Yes	
Dibutoxy di-n-butyltin	3349-36-8	No	Yes	Organics					1	0.00144	379.17	0.9	Yes	
Dibutyl Phthalate	84-74-2	No	No	Organics			1.00E-01	U	1	0.042	278.35	0.9	Yes	
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5	No	No	Organics					1				No	
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2	No	Yes	Organics					1	797	787.8	0	No	
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3	No	No	Organics					1				No	
Dibutylbis(palmitoyloxy)stannane	13323-63-2	No	Yes	Organics					1	502	743.79	0	No	
Dibutyltin Compounds	NA	No	No	Organics			3.00E-04	U	1				No	
Dibutyltin diacetate	1067-33-0	No	Yes	Organics					1	0.0000583	351.03	1	Yes	
Dibutyltin dichloride	683-18-1	No	Yes	Organics					1	0.000336	303.85	1	Yes	
Dibutyltin oxide	818-08-6	No	Yes	Organics					1	0.219	248.94	0.9	Yes	
Dicalcium phosphate	7757-93-9	No	No	Inorganics			4.86E+01	U	1	0.001	136.06	1	Yes	
Dicamba	1918-00-9	No	No	Organics			3.00E-02	U	1	0.00265	221.04	1	Yes	
Dichloro-2-butene, 1,4-	764-41-0	No	Yes	Organics					1	0.0166	125	1	Yes	
Dichloro-2-butene, cis-1,4-	1476-11-5	No	Yes	Organics					1	0.0166	125	1	Yes	
Dichloro-2-butene, trans-1,4-	110-57-6	No	Yes	Organics					1	0.0166	125	1	Yes	
Dichloroacetic Acid	79-43-6	No	No	Organics	5.00E-02	U	4.00E-03	U	1	0.00121	128.94	1	Yes	0.2815427
Dichloroaniline, 2,4-	554-00-7	No	No	Organics					1	0.0136	162.02	1	Yes	
Dichloroaniline, 3,4-	95-76-1	No	Yes	Organics					1	0.0118	162.02	1	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Demeton	8065-48-3		0.0080441							1.95E+03	1.75E+02	1.61E+02	1.61E+02 nc
Di(2-ethylhexyl)adipate	103-23-1			2.66E+06		2.66E+06				2.92E+07		2.92E+07	2.66E+06 ca*
Di-n-butyltin bis(2-ethylhexanoate)	2781-10-4												
Di-n-butyltin bis(methyl maleate)	15546-11-9												
Di-n-butyltin bis(n-butyl maleate)	15546-16-4												
Di-n-butyltin dilaurate	77-58-7												
Di-n-butyltin distearate	5847-55-2												
Di-n-hexylphthalate	84-75-3												
Diallate	2303-16-4			5.24E+04	7.70E+02	7.59E+02							7.59E+02 ca
Diammonium phosphate	7783-28-0		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Diazinon	333-41-5		0.1407713							3.41E+04	1.67E+03	1.59E+03	1.59E+03 nc
Dibenz[a,h]anthracene	53-70-3			4.38E+02		4.38E+02							4.38E+02 ca
Dibenzo(a,e)pyrene	192-65-4			2.66E+02		2.66E+02							2.66E+02 ca
Dibenzofuran	132-64-9		0.2011019							4.87E+04	5.50E+02	5.44E+02	5.44E+02 nc
Dibenzothiophene	132-65-0		2.0110193							4.87E+05	4.10E+03	4.06E+03	4.06E+03 nc
Dibromo-3-chloropropane, 1,2-	96-12-8		0.0402204	3.99E+03	4.42E+02	3.98E+02				9.73E+03	1.01E+03	9.15E+02	3.98E+02 ca**
Dibromoacetic acid	631-64-1												
Dibromobenzene, 1,3-	108-36-1		0.0804408							1.95E+04	6.67E+02	6.45E+02	6.45E+02 nc
Dibromobenzene, 1,4-	106-37-6		2.0110193							4.87E+05	1.57E+04	1.52E+04	1.52E+04 nc
Dibromochloromethane	124-48-1		4.0220386	3.80E+04	1.19E+04	9.09E+03				9.73E+05	2.87E+05	2.21E+05	9.09E+03 ca*
Dibromodichloromethane	594-18-3												
Dibromodiphenyl Ether, p,p'-	2050-47-7												
Dibromoethane, 1,2-	106-93-4		1.8099174	1.60E+03	5.95E+02	4.33E+02				4.38E+05	1.53E+05	1.13E+05	4.33E+02 ca
Dibromomethane (Methylene Bromide)	74-95-3		2.0110193							4.87E+05	2.32E+05	1.57E+05	1.57E+05 nc
Dibutoxy di-n-butyltin	3349-36-8												
Dibutyl Phthalate	84-74-2		20.110193							4.87E+06	6.98E+04	6.88E+04	6.88E+04 nc
Dibutylbis((1-oxoisooctyl)oxy)stannane	85702-74-5												
Dibutylbis(octadeca-9(Z),12(Z),15(Z)-trienoyloxy)stannane	95873-60-2												
Dibutylbis(octadeca-9(Z),12(Z)-dienoyloxy)stannane	85391-79-3												
Dibutylbis(palmitoyloxy)stannane	13323-63-2												
Dibutyltin Compounds	NA									1.46E+04		1.46E+04	1.46E+04 nc
Dibutyltin diacetate	1067-33-0												
Dibutyltin dichloride	683-18-1												
Dibutyltin oxide	818-08-6												
Dicalcium phosphate	7757-93-9		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Dicamba	1918-00-9		6.0330579							1.46E+06	4.32E+05	3.33E+05	3.33E+05 nc
Dichloro-2-butene, 1,4-	764-41-0												
Dichloro-2-butene, cis-1,4-	1476-11-5												
Dichloro-2-butene, trans-1,4-	110-57-6												
Dichloroacetic Acid	79-43-6		0.8044077	6.39E+04	7.50E+04	3.45E+04				1.95E+05	2.14E+05	1.02E+05	3.45E+04 ca**
Dichloroaniline, 2,4-	554-00-7												
Dichloroaniline, 3,4-	95-76-1												

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Dichlorobenzene	25321-22-6	No	Yes	Organics					1	0.0446	147	1	Yes	
Dichlorobenzene, 1,2-	95-50-1	No	Yes	Organics			9.00E-02	U	1	0.0446	147	1	Yes	
Dichlorobenzene, 1,3-	541-73-1	No	Yes	Organics					1	0.052	147	1	Yes	
Dichlorobenzene, 1,4-	106-46-7	No	Yes	Organics	5.40E-03	U	7.00E-02	U	1	0.0453	147	1	Yes	2.6068768
Dichlorobenzidine, 3,3'-	91-94-1	No	No	Organics	4.50E-01	U			1	0.0128	253.13	1	Yes	0.0312825
Dichlorobenzoic acid, -3,5	51-36-5	No	No	Organics					1	0.0131	191.01	1	Yes	
Dichlorobenzophenone, 4,4'-	90-98-2	No	No	Organics			9.00E-03	U	1	0.0542	251.11	0.9	Yes	
Dichlorobenzotrifluoride, 3,4-	328-84-7	No	Yes	Organics					1	0.0645	215	1	Yes	
Dichlorodifluoromethane	75-71-8	No	Yes	Organics			2.00E-01	U	1	0.00895	120.91	1	Yes	
Dichlorodiisopropyl ether, 2,2'-	39638-32-9	No	Yes	Organics					1	0.0515	171.07	1	Yes	
Dichloroethane, 1,1-	75-34-3	No	Yes	Organics	5.70E-03	U	2.00E-01	U	1	0.00675	98.96	1	Yes	2.4696728
Dichloroethane, 1,2-	107-06-2	No	Yes	Organics	9.10E-02	U	6.00E-03	U	1	0.0042	98.96	1	Yes	0.1546938
Dichloroethylene, 1,1-	75-35-4	No	Yes	Organics			5.00E-02	U	1	0.0117	96.94	1	Yes	
Dichloroethylene, 1,2-cis-	156-59-2	No	Yes	Organics			2.00E-03	U	1	0.011	96.94	1	Yes	
Dichloroethylene, 1,2-trans-	156-60-5	No	Yes	Organics			2.00E-02	U	1	0.011	96.94	1	Yes	
Dichlorophenol, 2,3-	576-24-9	Yes	No	Organics					1	0.0147	163	1	Yes	
Dichlorophenol, 2,4-	120-83-2	No	No	Organics			3.00E-03	U	1	0.0206	163	1	Yes	
Dichlorophenol, 2,5-	583-78-8	No	No	Organics					1	0.0206	163	1	Yes	
Dichlorophenol, 2,6-	87-65-0	No	No	Organics					1	0.0128	163	1	Yes	
Dichlorophenol, 3,4-	95-77-2	No	No	Organics					1	0.0311	163	1	Yes	
Dichlorophenols (total)	NA	No	No	Organics					1				No	
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	No	No	Organics			1.00E-02	U	1	0.00664	221.04	1	Yes	
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6	No	No	Organics			8.00E-03	U	1	0.0139	249.1	0.9	Yes	
Dichloropropane, 1,2-	78-87-5	No	Yes	Organics	3.60E-02	U	9.00E-02	U	1	0.00753	112.99	1	Yes	0.3910315
Dichloropropane, 1,3-	142-28-9	No	Yes	Organics			2.00E-02	U	1	0.00776	112.99	1	Yes	
Dichloropropane, 2,2-	594-20-7	No	Yes	Organics					1	0.0316	112.99	1	Yes	
Dichloropropanol, 2,3-	616-23-9	No	No	Organics			3.00E-03	U	1	0.000983	128.99	1	Yes	
Dichloropropene, 1,3-	542-75-6	No	Yes	Organics	1.00E-01	U	3.00E-02	U	1	0.00834	110.97	1	Yes	0.1407713
Dichloropropene, 2,3-	78-88-6	No	Yes	Organics					1	0.0153	110.97	1	Yes	
Dichloropropene, cis-1,3-	10061-01-5	No	Yes	Organics					1	0.00834	110.97	1	Yes	
Dichloropropene, trans-1,3-	10061-02-6	No	Yes	Organics					1	0.00834	110.97	1	Yes	
Dichlorvos	62-73-7	No	No	Organics	2.90E-01	U	5.00E-04	U	1	0.000804	220.98	1	Yes	0.0485418
Diclofop-methyl	51338-27-3	No	No	Organics					1	0.0224	341.19	0.8	Yes	
Dicofol	115-32-2	No	No	Organics					1	0.0283	370.49	0.8	Yes	
Dicyclohexylamine	101-83-7	No	Yes	Organics					1	0.12	181.32	1	Yes	
Dicyclopentadiene	77-73-6	No	Yes	Organics			8.00E-02	U	1	0.036	132.21	1	Yes	
Didecyl dimethyl ammonium chloride	7173-51-5	No	No	Organics					1	0.0181	362.09	0.8	Yes	
Dieldrin	60-57-1	No	No	Organics	1.60E+01	U	5.00E-05	U	1	0.0326	380.91	0.8	Yes	0.0008798
Diepoxybutane	1464-53-5	No	Yes	Organics					1	0.0000308	86.09	1	Yes	
Diethanolamine	111-42-2	No	No	Organics			2.00E-03	U	1	0.0000451	105.14	1	Yes	
Diethyl Phthalate	84-66-2	No	No	Organics			8.00E-01	U	1	0.0036	222.24	1	Yes	
Diethyl sulfate	64-67-5	No	No	Organics					1	0.00123	154.18	1	Yes	
Diethyl-p-nitrophenylphosphate	311-45-5	No	No	Organics					1	0.000926	275.2	1	Yes	
Diethylene Glycol Dinitrate (DEGDN)	693-21-0	No	No	Organics					1	0.000557	196.12	1	Yes	

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Dichlorobenzene	25321-22-6												
Dichlorobenzene, 1,2-	95-50-1		18.099174							4.38E+06	1.22E+05	1.18E+05	1.18E+05 nc
Dichlorobenzene, 1,3-	541-73-1												
Dichlorobenzene, 1,4-	106-46-7		14.077135	5.91E+05	1.72E+04	1.68E+04				3.41E+06	9.31E+04	9.06E+04	1.68E+04 ca**
Dichlorobenzidine, 3,3'-	91-94-1			7.10E+03	3.77E+02	3.58E+02							3.58E+02 ca
Dichlorobenzoic acid, -3,5	51-36-5												
Dichlorobenzophenone, 4,4'-	90-98-2		1.8099174							4.38E+05	5.80E+03	5.72E+03	5.72E+03 nc
Dichlorobenzotrifluoride, 3,4-	328-84-7												
Dichlorodifluoromethane	75-71-8		40.220386							9.73E+06	1.52E+06	1.31E+06	1.31E+06 nc
Dichlorodiisopropyl ether, 2,2'-	39638-32-9												
Dichloroethane, 1,1-	75-34-3		40.220386	5.60E+05	1.34E+05	1.08E+05				9.73E+06	2.19E+06	1.79E+06	1.08E+05 ca*
Dichloroethane, 1,2-	107-06-2		1.2066116	3.51E+04	1.35E+04	9.74E+03				2.92E+05	1.05E+05	7.73E+04	9.74E+03 ca**
Dichloroethylene, 1,1-	75-35-4		10.055096							2.43E+06	3.20E+05	2.83E+05	2.83E+05 nc
Dichloroethylene, 1,2-cis-	156-59-2		0.4022039							9.73E+04	1.36E+04	1.19E+04	1.19E+04 nc
Dichloroethylene, 1,2-trans-	156-60-5		4.0220386							9.73E+05	1.36E+05	1.19E+05	1.19E+05 nc
Dichlorophenol, 2,3-	576-24-9												
Dichlorophenol, 2,4-	120-83-2		0.6033058							1.46E+05	8.08E+03	7.65E+03	7.65E+03 nc
Dichlorophenol, 2,5-	583-78-8												
Dichlorophenol, 2,6-	87-65-0												
Dichlorophenol, 3,4-	95-77-2												
Dichlorophenols (total)	NA												
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7		2.0110193							4.87E+05	5.75E+04	5.14E+04	5.14E+04 nc
Dichlorophenoxy)butyric Acid, 4-(2,4-	94-82-6		1.6088154							3.89E+05	2.04E+04	1.93E+04	1.93E+04 nc
Dichloropropane, 1,2-	78-87-5		18.099174	8.87E+04	1.81E+04	1.50E+04				4.38E+06	8.37E+05	7.03E+05	1.50E+04 ca*
Dichloropropane, 1,3-	142-28-9		4.0220386							9.73E+05	1.81E+05	1.52E+05	1.52E+05 nc
Dichloropropane, 2,2-	594-20-7												
Dichloropropanol, 2,3-	616-23-9		0.6033058							1.46E+05	1.98E+05	8.40E+04	8.40E+04 nc
Dichloropropene, 1,3-	542-75-6		6.0330579	3.19E+04	5.94E+03	5.00E+03				1.46E+06	2.54E+05	2.17E+05	5.00E+03 ca*
Dichloropropene, 2,3-	78-88-6												
Dichloropropene, cis-1,3-	10061-01-5												
Dichloropropene, trans-1,3-	10061-02-6												
Dichlorvos	62-73-7		0.100551	1.10E+04	1.15E+04	5.62E+03				2.43E+04	2.37E+04	1.20E+04	5.62E+03 ca**
Diclofop-methyl	51338-27-3												
Dicofol	115-32-2												
Dicyclohexylamine	101-83-7												
Dicyclopentadiene	77-73-6		16.088154							3.89E+06	1.46E+05	1.41E+05	1.41E+05 nc
Didecyl dimethyl ammonium chloride	7173-51-5												
Dieldrin	60-57-1		0.0100551	2.00E+02	2.28E+00	2.26E+00				2.43E+03	2.61E+01	2.58E+01	2.26E+00 ca*
Diepoxybutane	1464-53-5												
Diethanolamine	111-42-2		0.4022039							9.73E+04	3.17E+06	9.44E+04	9.44E+04 nc
Diethyl Phthalate	84-66-2		160.88154							3.89E+07	8.41E+06	6.92E+06	6.92E+06 nc
Diethyl sulfate	64-67-5												
Diethyl-p-nitrophenylphosphate	311-45-5												
Diethylene Glycol Dinitrate (DEGDN)	693-21-0												

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Diethylene Glycol Monobutyl Ether	112-34-5	No	No	Organics			3.00E-02	U	1	0.000454	162.23	1	Yes	
Diethylene Glycol Monoethyl Ether	111-90-0	No	No	Organics			6.00E-02	U	1	0.000121	134.18	1	Yes	
Diethylene-glycol	111-46-6	No	No	Organics					1	0.0000417	106.12	1	Yes	
Diethylformamide	617-84-5	No	Yes	Organics			1.00E-03	U	1	0.000457	101.15	1	Yes	
Diethylphosphorodithioate	298-06-6	No	Yes	Organics					1	0.00436	186.23	1	Yes	
Diethylstilbestrol	56-53-1	No	No	Organics	3.50E+02	U			1	0.114	268.36	0.9	Yes	0.0000402
Difenzoquat	43222-48-6	No	No	Organics			8.00E-02	U	1	0.0000402	360.43	1	Yes	
Diflubenzuron	35367-38-5	No	No	Organics			2.00E-02	U	1	0.0107	310.69	0.9	Yes	
Difluoroethane, 1,1-	75-37-6	No	Yes	Organics					1	0.0021	66.05	1	Yes	
Difluoropropane, 2,2-	420-45-1	No	Yes	Organics					1	0.0185	80.08	1	Yes	
Dihydrosafrole	94-58-6	No	Yes	Organics	4.40E-02	U			1	0.0452	164.21	1	Yes	0.3199349
Diisopropyl Ether	108-20-3	No	Yes	Organics					1	0.00428	102.18	1	Yes	
Diisopropyl Methylphosphonate	1445-75-6	No	Yes	Organics			8.00E-02	U	1	0.000738	180.19	1	Yes	
Dimagnesium phosphate	7782-75-4	No	No	Inorganics			4.86E+01	U	1	0.001	174.33	1	Yes	
Dimethipin	55290-64-7	No	No	Organics			2.00E-02	U	1	0.0000798	210.26	1	Yes	
Dimethoate	60-51-5	No	No	Organics			2.00E-04	U	1	0.000267	229.25	1	Yes	
Dimethoxybenzidine, 3,3'-	119-90-4	No	No	Organics	1.60E+00	U			1	0.00106	244.3	1	Yes	0.0087982
Dimethyl Sulfate	77-78-1	No	No	Organics					1	0.000392	126.13	1	Yes	
Dimethyl Sulfide	75-18-3	No	Yes	Organics					1	0.00286	62.13	1	Yes	
Dimethyl methylphosphonate	756-79-6	No	No	Organics	1.70E-03	U	6.00E-02	U	1	0.000124	124.08	1	Yes	8.2806676
Dimethylamino azobenzene [p-]	60-11-7	No	No	Organics	4.60E+00	U			1	0.0943	225.3	1	Yes	0.0030602
Dimethylaniline HCl, 2,4-	21436-96-4	No	No	Organics	5.80E-01	U			1	0.0000202	157.64	1	Yes	0.0242709
Dimethylaniline, 2,4-	95-68-1	No	No	Organics	2.00E-01	U	2.00E-03	U	1	0.00428	121.18	1	Yes	0.0703857
Dimethylaniline, N,N-	121-69-7	No	Yes	Organics			2.00E-03	U	1	0.0112	121.18	1	Yes	
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	Organics	2.50E+02	U			1	0.408	256.35	0.9	No	
Dimethylbenzidine, 3,3'-	119-93-7	No	No	Organics	1.10E+01	U			1	0.00362	212.3	1	Yes	0.0012797
Dimethylcyclohexylamine, n,n-	98-94-2	No	Yes	Organics					1	0.0103	127.23	1	Yes	
Dimethylethyl Lead	107584-40-7	No	No	Organics					1				No	
Dimethylformamide	68-12-2	No	Yes	Organics			1.00E-01	U	1	0.00013	73.1	1	Yes	
Dimethylhydrazine, 1,1-	57-14-7	No	Yes	Organics			1.00E-04	U	1	0.0000727	60.1	1	Yes	
Dimethylhydrazine, 1,2-	540-73-8	No	Yes	Organics	5.50E+02	U			1	0.000317	60.1	1	Yes	0.0000256
Dimethylmercury	593-74-8	No	Yes	Organics					1	0.00419	230.66	1	Yes	
Dimethylphenethylamine	122-09-8	No	No	Organics					1	0.00417	149.24	1	Yes	
Dimethylphenol, 2,4-	105-67-9	No	No	Organics			2.00E-02	U	1	0.0109	122.17	1	Yes	
Dimethylphenol, 2,6-	576-26-1	No	No	Organics			6.00E-04	U	1	0.012	122.17	1	Yes	
Dimethylphenol, 3,4-	95-65-8	No	No	Organics			1.00E-03	U	1	0.0098	122.17	1	Yes	
Dimethylphthalate	131-11-3	No	No	Organics					1	0.00147	194.19	1	Yes	
Dimethylterephthalate	120-61-6	No	Yes	Organics			1.00E-01	U	1	0.00399	194.19	1	Yes	
Dimethylvinylchloride	513-37-1	No	Yes	Organics	4.50E-02	U			1	0.0253	90.55	1	Yes	0.3128252
Dinitro-o-cresol, 4,6-	534-52-1	No	No	Organics			8.00E-05	U	1	0.00315	198.14	1	Yes	
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	No	No	Organics			2.00E-03	U	1	0.0275	266.26	0.9	Yes	
Dinitroaniline, 3,5-	618-87-1	No	No	Organics					1	0.00265	183.12	1	Yes	
Dinitrobenzene, 1,2-	528-29-0	No	No	Organics			1.00E-04	U	1	0.00237	168.11	1	Yes	
Dinitrobenzene, 1,3-	99-65-0	No	No	Organics			1.00E-04	U	1	0.00174	168.11	1	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Diethylene Glycol Monobutyl Ether	112-34-5		6.0330579							1.46E+06	3.68E+06	1.05E+06	1.05E+06 nc
Diethylene Glycol Monoethyl Ether	111-90-0		12.066116							2.92E+06	3.13E+07	2.67E+06	2.67E+06 nc
Diethylene-glycol	111-46-6												
Diethylformamide	617-84-5		0.2011019							4.87E+04	1.59E+05	3.72E+04	3.72E+04 nc
Diethylphosphorodithioate	298-06-6												
Diethylstilbestrol	56-53-1			9.13E+00	5.48E-02	5.45E-02							5.45E-02 ca
Difenzoquat	43222-48-6		16.088154							3.89E+06	3.09E+07	3.46E+06	3.46E+06 nc
Diflubenzuron	35367-38-5		4.0220386							9.73E+05	4.45E+04	4.25E+04	4.25E+04 nc
Difluoroethane, 1,1-	75-37-6												
Difluoropropane, 2,2-	420-45-1												
Dihydrosafrole	94-58-6			7.26E+04	1.94E+03	1.89E+03							1.89E+03 ca
Diisopropyl Ether	108-20-3												
Diisopropyl Methylphosphonate	1445-75-6		16.088154							3.89E+06	5.38E+06	2.26E+06	2.26E+06 nc
Dimagnesium phosphate	7782-75-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Dimethipin	55290-64-7		4.0220386							9.73E+05	1.03E+07	8.89E+05	8.89E+05 nc
Dimethoate	60-51-5		0.0402204							9.73E+03	2.71E+04	7.16E+03	7.16E+03 nc
Dimethoxybenzidine, 3,3'-	119-90-4			2.00E+03	1.36E+03	8.07E+02							8.07E+02 ca
Dimethyl Sulfate	77-78-1												
Dimethyl Sulfide	75-18-3												
Dimethyl methylphosphonate	756-79-6		12.066116	1.88E+06	2.20E+07	1.73E+06				2.92E+06	3.20E+07	2.68E+06	1.73E+06 ca**
Dimethylamino azobenzene [p-]	60-11-7			6.94E+02	5.99E+00	5.94E+00							5.94E+00 ca
Dimethylaniline HCl, 2,4-	21436-96-4			5.51E+03	3.33E+05	5.42E+03							5.42E+03 ca
Dimethylaniline, 2,4-	95-68-1		0.4022039	1.60E+04	5.51E+03	4.10E+03				9.73E+04	3.15E+04	2.38E+04	4.10E+03 ca**
Dimethylaniline, N,N-	121-69-7		0.4022039							9.73E+04	1.21E+04	1.08E+04	1.08E+04 nc
Dimethylbenz(a)anthracene, 7,12-	57-97-6			1.28E+01		1.28E+01							1.28E+01 ca
Dimethylbenzidine, 3,3'-	119-93-7			2.90E+02	7.10E+01	5.70E+01							5.70E+01 ca
Dimethylcyclohexylamine, n,n-	98-94-2												
Dimethylethyl Lead	107584-40-7												
Dimethylformamide	68-12-2		20.110193							4.87E+06	6.09E+07	4.51E+06	4.51E+06 nc
Dimethylhydrazine, 1,1-	57-14-7		0.0201102							4.87E+03	1.13E+05	4.67E+03	4.67E+03 nc
Dimethylhydrazine, 1,2-	540-73-8			5.81E+00	3.29E+01	4.94E+00							4.94E+00 ca
Dimethylmercury	593-74-8												
Dimethylphenethylamine	122-09-8												
Dimethylphenol, 2,4-	105-67-9		4.0220386							9.73E+05	1.24E+05	1.10E+05	1.10E+05 nc
Dimethylphenol, 2,6-	576-26-1		0.1206612							2.92E+04	3.38E+03	3.03E+03	3.03E+03 nc
Dimethylphenol, 3,4-	95-65-8		0.2011019							4.87E+04	6.89E+03	6.04E+03	6.04E+03 nc
Dimethylphthalate	131-11-3												
Dimethylterephthalate	120-61-6		20.110193							4.87E+06	1.14E+06	9.22E+05	9.22E+05 nc
Dimethylvinylchloride	513-37-1			7.10E+04	4.81E+03	4.51E+03							4.51E+03 ca
Dinitro-o-cresol, 4,6-	534-52-1		0.0160882							3.89E+03	1.12E+03	8.72E+02	8.72E+02 nc
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5		0.4022039							9.73E+04	2.30E+03	2.25E+03	2.25E+03 nc
Dinitroaniline, 3,5-	618-87-1												
Dinitrobenzene, 1,2-	528-29-0		0.0201102							4.87E+03	2.26E+03	1.55E+03	1.55E+03 nc
Dinitrobenzene, 1,3-	99-65-0		0.0201102							4.87E+03	3.08E+03	1.89E+03	1.89E+03 nc

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Dinitrobenzene, 1,4-	100-25-4	No	No	Organics			1.00E-04	U	1	0.00167	168.11	1	Yes	
Dinitrophenol, 2,4-	51-28-5	No	No	Organics			2.00E-03	U	1	0.00187	184.11	1	Yes	
Dinitrophenols	25550-58-7	No	No	Organics					1	0.00118	184.11	1	Yes	
Dinitrosopentamethylenetetramine, N,N-	101-25-7	No	No	Organics					1	0.0000104	186.17	1	Yes	
Dinitrotoluene Mixture, 2,4/2,6-	NA	No	No	Organics	6.80E-01	U			1	0.00416	182.14	1	Yes	0.0207017
Dinitrotoluene, 2,4-	121-14-2	No	No	Organics	3.10E-01	U	2.00E-03	U	1	0.00308	182.14	1	Yes	0.0454101
Dinitrotoluene, 2,6-	606-20-2	No	No	Organics	1.50E+00	U	3.00E-04	U	1	0.0037	182.14	1	Yes	0.0093848
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	No	No	Organics			2.00E-03	U	1	0.00204	197.15	1	Yes	
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	No	No	Organics			2.00E-03	U	1	0.00204	197.15	1	Yes	
Dinitrotoluene, Technical grade	25321-14-6	No	No	Organics	4.50E-01	U	9.00E-04	U	1	0.00416	182.14	1	Yes	0.0312825
Dinoseb	88-85-7	No	No	Organics			1.00E-03	U	1	0.0163	240.22	0.9	Yes	
Dioxane, 1,4-	123-91-1	No	Yes	Organics	1.00E-01	U	3.00E-02	U	1	0.000332	88.11	1	Yes	0.1407713
Diphenamid	957-51-7	No	No	Organics			3.00E-02	U	1	0.00563	239.32	1	Yes	
Diphenyl Sulfone	127-63-9	No	No	Organics			8.00E-04	U	1	0.00367	218.27	1	Yes	
Diphenylamine	122-39-4	No	No	Organics			2.50E-02	U	1	0.0373	169.23	1	Yes	
Diphenylhydrazine, 1,2-	122-66-7	No	No	Organics	8.00E-01	U			1	0.013	184.24	1	Yes	0.0175964
Dipotassium phosphate	7758-11-4	No	No	Inorganics			4.86E+01	U	1	0.001	174.18	1	Yes	
Diquat	85-00-7	No	No	Organics			2.20E-03	U	1	2.44E-07	344.05	1	No	
Direct Black 38	1937-37-7	No	No	Organics	7.10E+00	U			1	0.000205	737.77	1	No	
Direct Blue 6	2602-46-2	No	No	Organics	7.40E+00	U			1	1.73E-09	821.67	1	No	
Direct Brown 95	16071-86-6	No	No	Organics	6.70E+00	U			1	3.87E-12	760.11	1	No	
Direct Sky Blue	2610-05-1	No	No	Organics					1	3.69E-07	730.75	1	No	
Disodium phosphate	7558-79-4	No	No	Inorganics			4.86E+01	U	1	0.001	141.96	1	Yes	
Disulfoton	298-04-4	No	No	Organics			4.00E-05	U	1	0.0212	274.39	0.9	Yes	
Dithiane, 1,4-	505-29-3	No	Yes	Organics			1.00E-02	U	1	0.00108	120.23	1	Yes	
Diuron	330-54-1	No	No	Organics			2.00E-03	U	1	0.00466	233.1	1	Yes	
Dodecyl benzenesulfonic acid	27176-87-0	No	No	Organics					1	0.0349	326.5	0.8	Yes	
Dodine	2439-10-3	No	No	Organics			4.00E-03	U	1	0.000222	287.45	1	Yes	
EPTC	759-94-4	No	Yes	Organics			2.50E-02	U	1	0.0184	189.32	1	Yes	
Endosulfan	115-29-7	No	Yes	Organics			6.00E-03	U	1	0.00286	406.92	0.9	Yes	
Endosulfan I	959-98-8	No	Yes	Organics					1	0.00286	406.92	0.9	Yes	
Endosulfan II	33213-65-9	No	Yes	Organics					1	0.00286	406.92	0.9	Yes	
Endosulfan Sulfate	1031-07-8	No	No	Organics					1	0.00179	422.92	0.9	Yes	
Endothall	145-73-3	No	No	Organics			2.00E-02	U	1	0.00263	186.17	1	Yes	
Endrin	72-20-8	No	No	Organics			3.00E-04	U	1	0.0326	380.91	0.8	Yes	
Endrin aldehyde	7421-93-4	No	No	Organics					1	0.0178	380.91	0.8	Yes	
Endrin ketone	53494-70-5	No	No	Organics					1	0.0235	380.91	0.8	Yes	
Epichlorohydrin	106-89-8	No	Yes	Organics	9.90E-03	U	6.00E-03	U	1	0.000944	92.53	1	Yes	1.4219328
Epoxybutane, 1,2-	106-88-7	No	Yes	Organics					1	0.00231	72.11	1	Yes	
Ethanol	64-17-5	No	Yes	Organics					1	0.000538	46.07	1	Yes	
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	No	No	Organics					1	0.000175	120.15	1	Yes	
Ethephon	16672-87-0	No	No	Organics			5.00E-03	U	1	0.000173	144.5	1	Yes	
Ethion	563-12-2	No	No	Organics			5.00E-04	U	1	0.0255	384.46	0.8	Yes	
Ethoxy Propanol	52125-53-8	No	Yes	Organics					1	0.000409	104.15	1	Yes	

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Dinitrobenzene, 1,4-	100-25-4		0.0201102							4.87E+03	3.21E+03	1.94E+03	1.94E+03 nc
Dinitrophenol, 2,4-	51-28-5		0.4022039							9.73E+04	5.18E+04	3.38E+04	3.38E+04 nc
Dinitrophenols	25550-58-7												
Dinitrosopentamethylenetetramine, N,N-	101-25-7												
Dinitrotoluene Mixture, 2,4/2,6-	NA			4.70E+03	1.21E+03	9.64E+02							9.64E+02 ca
Dinitrotoluene, 2,4-	121-14-2		0.4022039	1.03E+04	3.59E+03	2.66E+03				9.73E+04	3.18E+04	2.40E+04	2.66E+03 ca**
Dinitrotoluene, 2,6-	606-20-2		0.0603306	2.13E+03	6.18E+02	4.79E+02				1.46E+04	3.98E+03	3.12E+03	4.79E+02 ca**
Dinitrotoluene, 2-Amino-4,6-	35572-78-2		0.4022039							9.73E+04	4.36E+04	3.01E+04	3.01E+04 nc
Dinitrotoluene, 4-Amino-2,6-	19406-51-0		0.4022039							9.73E+04	4.36E+04	3.01E+04	3.01E+04 nc
Dinitrotoluene, Technical grade	25321-14-6		0.1809917	7.10E+03	1.83E+03	1.46E+03				4.38E+04	1.06E+04	8.54E+03	1.46E+03 ca**
Dinoseb	88-85-7		0.2011019							4.87E+04	2.30E+03	2.19E+03	2.19E+03 nc
Dioxane, 1,4-	123-91-1		6.0330579	3.19E+04	1.60E+05	2.66E+04				1.46E+06	6.85E+06	1.20E+06	2.66E+04 ca*
Diphenamid	957-51-7		6.0330579							1.46E+06	1.81E+05	1.61E+05	1.61E+05 nc
Diphenyl Sulfone	127-63-9		0.1608815							3.89E+04	8.47E+03	6.95E+03	6.95E+03 nc
Diphenylamine	122-39-4		5.0275482							1.22E+06	3.57E+04	3.47E+04	3.47E+04 nc
Diphenylhydrazine, 1,2-	122-66-7			3.99E+03	3.26E+02	3.01E+02							3.01E+02 ca
Dipotassium phosphate	7758-11-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Diquat	85-00-7									1.07E+05		1.07E+05	1.07E+05 nc
Direct Black 38	1937-37-7			4.50E+02		4.50E+02							4.50E+02 ca
Direct Blue 6	2602-46-2			4.32E+02		4.32E+02							4.32E+02 ca
Direct Brown 95	16071-86-6			4.77E+02		4.77E+02							4.77E+02 ca
Direct Sky Blue	2610-05-1												
Disodium phosphate	7558-79-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Disulfoton	298-04-4		0.0080441							1.95E+03	5.67E+01	5.51E+01	5.51E+01 nc
Dithiane, 1,4-	505-29-3		2.0110193							4.87E+05	6.23E+05	2.73E+05	2.73E+05 nc
Diuron	330-54-1		0.4022039							9.73E+04	1.51E+04	1.31E+04	1.31E+04 nc
Dodecyl benzenesulfonic acid	27176-87-0												
Dodine	2439-10-3		0.8044077							1.95E+05	4.48E+05	1.36E+05	1.36E+05 nc
EPTC	759-94-4		5.0275482							1.22E+06	6.36E+04	6.04E+04	6.04E+04 nc
Endosulfan	115-29-7		1.2066116							2.92E+05	2.68E+04	2.46E+04	2.46E+04 nc
Endosulfan I	959-98-8												
Endosulfan II	33213-65-9												
Endosulfan Sulfate	1031-07-8												
Endothall	145-73-3		4.0220386							9.73E+05	3.63E+05	2.65E+05	2.65E+05 nc
Endrin	72-20-8		0.0603306							1.46E+04	1.57E+02	1.55E+02	1.55E+02 nc
Endrin aldehyde	7421-93-4												
Endrin ketone	53494-70-5												
Epichlorohydrin	106-89-8		1.2066116	3.23E+05	5.60E+05	2.05E+05				2.92E+05	4.75E+05	1.81E+05	1.81E+05 nc
Epoxybutane, 1,2-	106-88-7												
Ethanol	64-17-5												
Ethanol, 2-(2-methoxyethoxy)-	111-77-3												
Ethephon	16672-87-0		1.0055096							2.43E+05	1.73E+06	2.13E+05	2.13E+05 nc
Ethion	563-12-2		0.100551							2.43E+04	3.26E+02	3.22E+02	3.22E+02 nc
Ethoxy Propanol	52125-53-8												

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Ethoxyethanol Acetate, 2-	111-15-9	No	Yes	Organics			1.00E-01	U	1	0.0007	132.16	1	Yes	
Ethoxyethanol, 2-	110-80-5	No	Yes	Organics			9.00E-02	U	1	0.0003	90.12	1	Yes	
Ethyl Acetate	141-78-6	No	Yes	Organics			9.00E-01	U	1	0.00153	88.11	1	Yes	
Ethyl Acrylate	140-88-5	No	Yes	Organics	4.80E-02	U	5.00E-03	U	1	0.00324	100.12	1	Yes	0.2932736
Ethyl Chloride	75-00-3	No	Yes	Organics					1	0.00607	64.52	1	Yes	
Ethyl Ether	60-29-7	No	Yes	Organics			2.00E-01	U	1	0.00235	74.12	1	Yes	
Ethyl Methacrylate	97-63-2	No	Yes	Organics			9.00E-02	U	1	0.00698	114.15	1	Yes	
Ethyl methane sulfonate	62-50-0	No	No	Organics					1	0.000244	124.16	1	Yes	
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	No	No	Organics			1.00E-05	U	1	0.0361	323.31	0.8	Yes	
Ethylbenzene	100-41-4	No	Yes	Organics	1.10E-02	U	1.00E-01	U	1	0.0493	106.17	1	Yes	1.2797395
Ethylene Cyanohydrin	109-78-4	No	No	Organics			7.00E-02	U	1	0.000148	71.08	1	Yes	
Ethylene Diamine	107-15-3	No	Yes	Organics			9.00E-02	U	1	0.0000318	60.1	1	No	
Ethylene Glycol	107-21-1	No	No	Organics			2.00E+00	U	1	0.0000877	62.07	1	Yes	
Ethylene Glycol Monobutyl Ether	111-76-2	No	No	Organics			1.00E-01	U	1	0.00121	118.18	1	Yes	
Ethylene Oxide	75-21-8	No	Yes	Organics	3.10E-01	U			1	0.00056	44.05	1	Yes	0.0454101
Ethylene Thiourea	96-45-7	No	No	Organics	4.50E-02	U	8.00E-05	U	1	0.000152	102.15	1	Yes	0.3128252
Ethyleneimine	151-56-4	No	Yes	Organics	6.50E+01	U			1	0.000581	43.07	1	Yes	0.0002166
Ethylphenol, 4-	123-07-9	No	No	Organics					1	0.0167	122.17	1	Yes	
Ethylphthalyl Ethyl Glycolate	84-72-0	No	No	Organics			3.00E+00	U	1	0.00119	280.28	1	Yes	
Express	101200-48-0	No	No	Organics			8.00E-03	U	1	0.000468	395.39	1	Yes	
Famphur	52-85-7	No	No	Organics					1	0.00071	325.34	1	Yes	
Fenamiphos	22224-92-6	No	No	Organics			2.50E-04	U	1	0.00436	303.36	0.9	Yes	
Fenpropathrin	39515-41-8	No	No	Organics			2.50E-02	U	1	0.167	349.43	0.8	Yes	
Fluometuron	2164-17-2	No	No	Organics			1.30E-02	U	1	0.00316	232.21	1	Yes	
Fluoranthene	206-44-0	No	No	Organics			4.00E-02	U	1	0.308	202.26	1	No	
Fluorene	86-73-7	No	Yes	Organics			4.00E-02	U	1	0.11	166.22	1	Yes	
Fluoride	16984-48-8	No	No	Inorganics			4.00E-02	U	1	0.001	38	1	Yes	
Fluorine (Soluble Fluoride)	7782-41-4	No	No	Inorganics			6.00E-02	U	1	0.001	38	1	Yes	
Fluorobenzene	462-06-6	No	Yes	Organics					1	0.0146	96.11	1	Yes	
Fluorobiphenyl, 2-	321-60-8	No	Yes	Organics					1	0.0722	172.2	1	Yes	
Fluorophenol, 2-	367-12-4	No	Yes	Organics					1	0.00504	112.1	1	Yes	
Fluridone	59756-60-4	No	No	Organics			8.00E-02	U	1	0.0028	329.32	0.9	Yes	
Flurprimidol	56425-91-3	No	No	Organics			2.00E-02	U	1	0.00459	312.29	0.9	Yes	
Flutolanil	66332-96-5	No	No	Organics			6.00E-02	U	1	0.00691	323.32	0.9	Yes	
Fluvalinate	69409-94-5	No	No	Organics			1.00E-02	U	1	0.0792	502.92	0.6	No	
Folpet	133-07-3	No	No	Organics	3.50E-03	U	1.00E-01	U	1	0.00266	296.56	1	Yes	4.0220386
Fomesafen	72178-02-0	No	No	Organics	1.90E-01	U			1	0.000457	438.76	1	Yes	0.0740902
Fonofos	944-22-9	No	No	Organics			2.00E-03	U	1	0.027	246.32	0.9	Yes	
Formaldehyde	50-00-0	No	Yes	Organics			2.00E-01	U	1	0.00182	30.03	1	Yes	
Formic Acid	64-18-6	No	Yes	Organics			9.00E-01	U	1	0.000378	46.03	1	Yes	
Fosetyl-AL	39148-24-8	No	No	Organics			3.00E+00	U	1	4.10E-07	354.11	1	No	
Fuel Oil Number 2	68476-30-2	No	No	Organics					1				No	
Furan	110-00-9	No	Yes	Organics			1.00E-03	U	1	0.00505	68.08	1	Yes	
Furazolidone	67-45-8	No	No	Organics	3.80E+00	U			1	0.0000803	225.16	1	Yes	0.0037045

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Ethoxyethanol Acetate, 2-	111-15-9		20.110193							4.87E+06	9.11E+06	3.17E+06	3.17E+06 nc
Ethoxyethanol, 2-	110-80-5		18.099174							4.38E+06	2.26E+07	3.67E+06	3.67E+06 nc
Ethyl Acetate	141-78-6		180.99174							4.38E+07	4.47E+07	2.21E+07	2.21E+07 nc
Ethyl Acrylate	140-88-5		1.0055096	6.65E+04	3.29E+04	2.20E+04				2.43E+05	1.13E+05	7.71E+04	2.20E+04 ca**
Ethyl Chloride	75-00-3												
Ethyl Ether	60-29-7		40.220386							9.73E+06	6.75E+06	3.99E+06	3.99E+06 nc
Ethyl Methacrylate	97-63-2		18.099174							4.38E+06	8.98E+05	7.45E+05	7.45E+05 nc
Ethyl methane sulfonate	62-50-0												
Ethyl-p-nitrophenyl Phosphonate	2104-64-5		0.002011							4.87E+02	6.83E+00	6.74E+00	6.74E+00 nc
Ethylbenzene	100-41-4		20.110193	2.90E+05	9.77E+03	9.45E+03				4.87E+06	1.54E+05	1.49E+05	9.45E+03 ca*
Ethylene Cyanohydrin	109-78-4		14.077135							3.41E+06	3.77E+07	3.12E+06	3.12E+06 nc
Ethylene Diamine	107-15-3									4.38E+06		4.38E+06	4.38E+06 nc
Ethylene Glycol	107-21-1		402.20386							9.73E+07	1.86E+09	9.25E+07	9.25E+07 nc
Ethylene Glycol Monobutyl Ether	111-76-2		20.110193							4.87E+06	5.61E+06	2.61E+06	2.61E+06 nc
Ethylene Oxide	75-21-8			1.03E+04	3.42E+04	7.92E+03							7.92E+03 ca
Ethylene Thiourea	96-45-7		0.0160882	7.10E+04	7.39E+05	6.48E+04				3.89E+03	3.80E+04	3.53E+03	3.53E+03 nc
Ethyleneimine	151-56-4			4.91E+01	1.58E+02	3.75E+01							3.75E+01 ca
Ethylphenol, 4-	123-07-9												
Ethylphthalyl Ethyl Glycolate	84-72-0		603.30579							1.46E+08	6.57E+07	4.53E+07	4.53E+07 nc
Express	101200-48-0		1.6088154							3.89E+05	2.12E+05	1.37E+05	1.37E+05 nc
Famphur	52-85-7												
Fenamiphos	22224-92-6		0.0502755							1.22E+04	1.43E+03	1.28E+03	1.28E+03 nc
Fenpropathrin	39515-41-8		5.0275482							1.22E+06	3.12E+03	3.11E+03	3.11E+03 nc
Fluometuron	2164-17-2		2.6143251							6.33E+05	1.46E+05	1.19E+05	1.19E+05 nc
Fluoranthene	206-44-0									1.95E+06		1.95E+06	1.95E+06 nc
Fluorene	86-73-7		8.0440771							1.95E+06	1.98E+04	1.96E+04	1.96E+04 nc
Fluoride	16984-48-8		8.0440771							1.95E+06	4.02E+06	1.31E+06	1.31E+06 nc
Fluorine (Soluble Fluoride)	7782-41-4		12.066116							2.92E+06	6.03E+06	1.97E+06	1.97E+06 nc
Fluorobenzene	462-06-6												
Fluorobiphenyl, 2-	321-60-8												
Fluorophenol, 2-	367-12-4												
Fluridone	59756-60-4		16.088154							3.89E+06	6.03E+05	5.22E+05	5.22E+05 nc
Flurprimidol	56425-91-3		4.0220386							9.73E+05	1.03E+05	9.28E+04	9.28E+04 nc
Flutolanil	66332-96-5		12.066116							2.92E+06	1.90E+05	1.79E+05	1.79E+05 nc
Fluvalinate	69409-94-5									4.87E+05		4.87E+05	4.87E+05 nc
Folpet	133-07-3		20.110193	9.13E+05	1.76E+05	1.48E+05				4.87E+06	8.81E+05	7.46E+05	1.48E+05 ca**
Fomesafen	72178-02-0			1.68E+04	7.56E+03	5.21E+03							5.21E+03 ca
Fonofos	944-22-9		0.4022039							9.73E+04	2.67E+03	2.60E+03	2.60E+03 nc
Formaldehyde	50-00-0		40.220386							9.73E+06	9.59E+06	4.83E+06	4.83E+06 nc
Formic Acid	64-18-6		180.99174							4.38E+07	2.01E+08	3.60E+07	3.60E+07 nc
Fosetyl-AL	39148-24-8									1.46E+08		1.46E+08	1.46E+08 nc
Fuel Oil Number 2	68476-30-2												
Furan	110-00-9		0.2011019							4.87E+04	1.60E+04	1.21E+04	1.21E+04 nc
Furazolidone	67-45-8			8.40E+02	8.52E+03	7.65E+02							7.65E+02 ca

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater
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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Furfural	98-01-1	No	Yes	Organics			3.00E-03	U	1	0.000848	96.09	1	Yes	
Furium	531-82-8	No	No	Organics	1.50E+00	U			1	0.000935	253.23	1	Yes	0.0093848
Furmecyclox	60568-05-0	No	No	Organics	3.00E-02	U			1	0.0499	251.33	0.9	Yes	0.4692378
Gadolinium	7440-54-2	No	No	Inorganics					1	0.001	157.25	1	Yes	
Gallium	7440-55-3	No	No	Inorganics					1	0.001	69.72	1	Yes	
Germanium	7440-56-4	No	No	Inorganics					1	0.001	72.64	1	Yes	
Glufosinate, Ammonium	77182-82-2	No	No	Organics			4.00E-04	U	1	3.42E-08	198.16	1	No	
Glutaraldehyde	111-30-8	No	No	Organics					1	0.000325	100.12	1	Yes	
Glycerol	56-81-5	No	No	Organics					1	0.0000322	92.1	1	Yes	
Glycidyl	765-34-4	No	Yes	Organics			4.00E-04	U	1	0.000516	72.06	1	Yes	
Glyphosate	1071-83-6	No	No	Organics			1.00E-01	U	1	4.54E-08	169.07	1	No	
Goal	42874-03-3	No	No	Organics			3.00E-03	U	1	0.0204	361.71	0.8	Yes	
Guanidine	113-00-8	No	Yes	Organics			1.00E-02	U	1	0.0000603	59.07	1	Yes	
Guanidine Chloride	50-01-1	No	No	Organics			2.00E-02	U	1	3.86E-08	95.53	1	No	
Guanidine Nitrate	506-93-4	No	No	Organics					1	2.65E-08	122.08	1	No	
Guthion	86-50-0	No	No	Organics			3.00E-03	U	1	0.00175	317.32	1	Yes	
HCDD, 1,2,3,4,6,7,8,-	35822-46-9	No	Yes	Organics	1.30E+03	U	1.00E-06	U	1	1.33	425.31	0	No	
Haloacetic acids	NA	No	No	Organics					1				No	
Haloxyfop, Methyl	69806-40-2	No	No	Organics			5.00E-05	U	1	0.006	375.73	0.9	Yes	
Harmony	79277-27-3	No	No	Organics			1.30E-02	U	1	0.000114	387.39	1	Yes	
Heptachlor	76-44-8	No	Yes	Organics	4.50E+00	U	5.00E-04	U	1	0.143	373.32	0.8	Yes	0.0031283
Heptachlor Epoxide	1024-57-3	No	Yes	Organics	9.10E+00	U	1.30E-05	U	1	0.0209	389.32	0.8	Yes	0.0015469
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	2.96	395.33	0	No	
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4	No	Yes	Organics	1.30E+03	U	7.00E-08	U	1	1.45	409.31	0	No	
Heptanal, n-	111-71-7	No	Yes	Organics					1	0.0119	114.19	1	Yes	
Heptane, N-	142-82-5	No	Yes	Organics					1	0.537	100.21	1	No	
Heptanol, n-	111-70-6	No	Yes	Organics					1	0.0192	116.21	1	Yes	
Hexabromobenzene	87-82-1	No	Yes	Organics			2.00E-03	U	1	0.0136	551.49	0.7	No	
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	No	No	Organics			2.00E-04	U	1		643.58356		No	
Hexachlorobenzene	118-74-1	No	Yes	Organics	1.60E+00	U	8.00E-04	U	1	0.254	284.78	0.9	No	
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1.43	360.88	0	No	
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1.66	360.88	0	No	
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1.66	360.88	0	No	
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	No	Yes	Organics	3.90E+03	U	2.33E-08	U	1	1.24	360.88	0.1	No	
Hexachlorobutadiene	87-68-3	No	Yes	Organics	7.80E-02	U	1.00E-03	U	1	0.081	260.76	0.9	Yes	0.1804761
Hexachlorocyclohexane, Alpha-	319-84-6	No	No	Organics	6.30E+00	U	8.00E-03	U	1	0.0206	290.83	0.9	Yes	0.0022345
Hexachlorocyclohexane, Beta-	319-85-7	No	No	Organics	1.80E+00	U			1	0.0206	290.83	0.9	Yes	0.0078206
Hexachlorocyclohexane, Delta-	319-86-8	No	No	Organics					1	0.0206	290.83	0.9	Yes	
Hexachlorocyclohexane, Epsilon	6108-10-7	No	No	Organics					1	0.0206	290.83	0.9	Yes	
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	No	No	Organics	1.10E+00	U	3.00E-04	U	1	0.0206	290.83	0.9	Yes	0.0127974
Hexachlorocyclohexane, Technical	608-73-1	No	No	Organics	1.80E+00	U			1	0.0206	290.83	0.9	Yes	0.0078206
Hexachlorocyclopentadiene	77-47-4	No	Yes	Organics			6.00E-03	U	1	0.103	272.77	0.9	Yes	

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Furfural	98-01-1		0.6033058							1.46E+05	2.61E+05	9.37E+04	9.37E+04 nc
Furium	531-82-8			2.13E+03	1.55E+03	8.96E+02							8.96E+02 ca
Furmecyclox	60568-05-0			1.06E+05	1.63E+03	1.61E+03							1.61E+03 ca
Gadolinium	7440-54-2												
Gallium	7440-55-3												
Germanium	7440-56-4												
Glufosinate, Ammonium	77182-82-2									1.95E+04		1.95E+04	1.95E+04 nc
Glutaraldehyde	111-30-8												
Glycerol	56-81-5												
Glycidyl	765-34-4		0.0804408							1.95E+04	6.16E+04	1.48E+04	1.48E+04 nc
Glyphosate	1071-83-6									4.87E+06		4.87E+06	4.87E+06 nc
Goal	42874-03-3		0.6033058							1.46E+05	2.83E+03	2.78E+03	2.78E+03 nc
Guanidine	113-00-8		2.0110193							4.87E+05	1.36E+07	4.70E+05	4.70E+05 nc
Guanidine Chloride	50-01-1									9.73E+05		9.73E+05	9.73E+05 nc
Guanidine Nitrate	506-93-4												
Guthion	86-50-0		0.6033058							1.46E+05	3.52E+04	2.83E+04	2.83E+04 nc
HCDD, 1,2,3,4,6,7,8,-	35822-46-9			2.46E+00		2.46E+00				4.87E+01		4.87E+01	2.46E+00 ca*
Haloacetic acids	NA												
Haloxyfop, Methyl	69806-40-2		0.0100551							2.43E+03	1.30E+02	1.24E+02	1.24E+02 nc
Harmony	79277-27-3		2.6143251							6.33E+05	1.49E+06	4.44E+05	4.44E+05 nc
Heptachlor	76-44-8		0.100551	7.10E+02	1.94E+00	1.94E+00				2.43E+04	6.25E+01	6.23E+01	1.94E+00 ca*
Heptachlor Epoxide	1024-57-3		0.0026143	3.51E+02	5.93E+00	5.83E+00				6.33E+02	1.00E+01	9.87E+00	5.83E+00 ca**
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4			2.46E+00		2.46E+00				3.41E+00		3.41E+00	2.46E+00 ca**
Heptanal, n-	111-71-7												
Heptane, N-	142-82-5												
Heptanol, n-	111-70-6												
Hexabromobenzene	87-82-1									9.73E+04		9.73E+04	9.73E+04 nc
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2									9.73E+03		9.73E+03	9.73E+03 nc
Hexachlorobenzene	118-74-1			2.00E+03		2.00E+03				3.89E+04		3.89E+04	2.00E+03 ca*
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6			8.19E-01		8.19E-01				1.13E+00		1.13E+00	8.19E-01 ca**
Hexachlorobutadiene	87-68-3		0.2011019	4.09E+04	3.64E+02	3.60E+02				4.87E+04	4.05E+02	4.02E+02	3.60E+02 ca**
Hexachlorocyclohexane, Alpha-	319-84-6		1.6088154	5.07E+02	1.46E+01	1.42E+01				3.89E+05	1.05E+04	1.02E+04	1.42E+01 ca
Hexachlorocyclohexane, Beta-	319-85-7			1.77E+03	5.10E+01	4.96E+01							4.96E+01 ca
Hexachlorocyclohexane, Delta-	319-86-8												
Hexachlorocyclohexane, Epsilon	6108-10-7												
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9		0.0603306	2.90E+03	8.35E+01	8.12E+01				1.46E+04	3.94E+02	3.83E+02	8.12E+01 ca**
Hexachlorocyclohexane, Technical	608-73-1			1.77E+03	5.10E+01	4.96E+01							4.96E+01 ca
Hexachlorocyclopentadiene	77-47-4		1.2066116							2.92E+05	1.77E+03	1.76E+03	1.76E+03 nc

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Hexachlorodibenzo-p-dioxin	34465-46-8	No	No	Organics	1.30E+04	U	7.00E-09	U	1	2.86	390.87	0	No	
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	1.53	390.87	0	No	
Hexachlorodibenzo-p-dioxin, Mixture	NA	No	No	Organics	6.20E+03	U			1	2.86	390.87	0	No	
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	2.25	374.87	0	No	
Hexachloroethane	67-72-1	No	Yes	Organics	4.00E-02	U	7.00E-04	U	1	0.0415	236.74	1	Yes	0.3519284
Hexachlorophene	70-30-4	No	No	Organics			3.00E-04	U	1	0.836	406.91	0	No	
Hexachloropropene	1888-71-7	No	Yes	Organics					1	0.051	248.75	0.9	Yes	
Hexadecanoic Acid	57-10-3	No	Yes	Organics					1	3.32	256.43	0.8	No	
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	No	No	Organics	1.10E-01	U	3.00E-03	U	1	0.000336	222.12	1	Yes	0.127974
Hexamethylene Diisocyanate, 1,6-	822-06-0	No	Yes	Organics					1	0.0237	168.2	1	Yes	
Hexamethylphosphoramide	680-31-9	No	No	Organics			4.00E-04	U	1	0.000237	179.2	1	Yes	
Hexane, N-	110-54-3	No	Yes	Organics			6.00E-02	U	1	0.201	86.18	1	Yes	
Hexanedioic Acid	124-04-9	No	No	Organics			2.00E+00	U	1	0.000268	146.14	1	Yes	
Hexanol, n-	111-27-3	No	Yes	Organics					1	0.00935	102.18	1	Yes	
Hexanone, 2-	591-78-6	No	Yes	Organics			5.00E-03	U	1	0.00355	100.16	1	Yes	
Hexazinone	51235-04-2	No	No	Organics			3.30E-02	U	1	0.00102	252.32	1	Yes	
HpCDD, 2,3,7,8-	37871-00-4	No	Yes	Organics	1.30E+03	U	7.00E-08	U	1	1.33	425.31	0	No	
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	No	Yes	Organics	1.30E+03	U	7.00E-08	U	1	1.45	409.31	0	No	
HpCDF, 2,3,7,8-	38998-75-3	No	Yes	Organics	1.30E+03	U	7.00E-08	U	1	1.45	409.31	0	No	
HxCDD, 1,2,3,6,7,8-	57653-85-7	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	2.86	390.87	0	No	
HxCDD, 1,2,3,7,8,9-	19408-74-3	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	2.86	390.87	0	No	
HxCDF, 1,2,3,6,7,8-	57117-44-9	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	2.25	374.87	0	No	
HxCDF, 1,2,3,7,8,9-	72918-21-9	No	No	Organics	1.30E+04	U	7.00E-09	U	1	1.35	374.87	0	No	
HxCDF, 2,3,4,6,7,8-	60851-34-5	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	2.25	374.87	0	No	
HxCDF, 2,3,7,8-	55684-94-1	No	No	Organics	1.30E+04	U	7.00E-09	U	1	1.35	374.87	0	No	
Hydrazine	302-01-2	No	Yes	Inorganics	3.00E+00	U			1	0.0000436	32.05	1	Yes	0.0046924
Hydrazine Sulfate	10034-93-2	No	No	Inorganics	3.00E+00	U			1	0.001	128.1	1	Yes	0.0046924
Hydrogen Chloride	7647-01-0	No	Yes	Inorganics					1	0.001	35.45	1	Yes	
Hydrogen Cyanide	74-90-8	No	Yes	Inorganics			6.00E-04	U	1	0.001	27.03	1	Yes	
Hydrogen Fluoride	7664-39-3	No	Yes	Inorganics			4.00E-02	U	1	0.001	20.006	1	Yes	
Hydrogen Selenide	77830-70-5	No	No	Inorganics					1	0.001			Yes	
Hydrogen Sulfate	12143-45-2	No	No	Inorganics					1	0.001	128.1	1	Yes	
Hydrogen Sulfide	7783-06-4	No	Yes	Inorganics					1	0.001	34.081	1	Yes	
Hydroquinone	123-31-9	No	No	Organics	6.00E-02	U	4.00E-02	U	1	0.000931	110.11	1	Yes	0.2346189
Imazalil	35554-44-0	No	No	Organics			1.30E-02	U	1	0.0116	297.19	0.9	Yes	
Imazaquin	81335-37-7	No	No	Organics			2.50E-01	U	1	0.000483	311.34	1	Yes	
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	Organics	7.30E-01	U			1	1.04	276.34	0.6	No	
Indium	7440-74-6	No	No	Inorganics					1	0.001	114.82	1	Yes	
Iodide	20461-54-5	No	No	Inorganics					1	0.001	126.9	1	Yes	
Iodine	7553-56-2	No	No	Inorganics			1.00E-02	U	1	0.001	253.81	1	Yes	
Iodomethane	74-88-4	No	Yes	Organics					1	0.00252	141.94	1	Yes	
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6	No	No	Organics					1	0.00177	281.09	1	Yes	
Iprodione	36734-19-7	No	No	Organics			4.00E-02	U	1	0.00217	330.17	0.9	Yes	
Iron	7439-89-6	No	No	Inorganics			7.00E-01	U	1	0.001	55.85	1	Yes	

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Hexachlorodibenzo-p-dioxin	34465-46-8			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
Hexachlorodibenzo-p-dioxin, Mixture	NA			5.15E-01		5.15E-01							5.15E-01 ca
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
Hexachloroethane	67-72-1		0.1407713	7.98E+04	1.45E+03	1.43E+03				3.41E+04	5.82E+02	5.72E+02	5.72E+02 nc
Hexachlorophene	70-30-4									1.46E+04		1.46E+04	1.46E+04 nc
Hexachloropropene	1888-71-7												
Hexadecanoic Acid	57-10-3												
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4		0.6033058	2.90E+04	7.18E+04	2.07E+04				1.46E+05	3.38E+05	1.02E+05	2.07E+04 ca**
Hexamethylene Diisocyanate, 1,6-	822-06-0												
Hexamethylphosphoramide	680-31-9		0.0804408							1.95E+04	8.43E+04	1.58E+04	1.58E+04 nc
Hexane, N-	110-54-3		12.066116							2.92E+06	2.75E+04	2.73E+04	2.73E+04 nc
Hexanedioic Acid	124-04-9		402.20386							9.73E+07	4.44E+08	7.98E+07	7.98E+07 nc
Hexanol, n-	111-27-3												
Hexanone, 2-	591-78-6		1.0055096							2.43E+05	1.03E+05	7.24E+04	7.24E+04 nc
Hexazinone	51235-04-2		6.6363636							1.61E+06	1.01E+06	6.20E+05	6.20E+05 nc
HpCDD, 2,3,7,8-	37871-00-4			2.46E+00		2.46E+00				3.41E+00		3.41E+00	2.46E+00 ca**
HpCDF, 1,2,3,4,7,8,9-	55673-89-7			2.46E+00		2.46E+00				3.41E+00		3.41E+00	2.46E+00 ca**
HpCDF, 2,3,7,8-	38998-75-3			2.46E+00		2.46E+00				3.41E+00		3.41E+00	2.46E+00 ca**
HxCDD, 1,2,3,6,7,8-	57653-85-7			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
HxCDD, 1,2,3,7,8,9-	19408-74-3			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
HxCDF, 1,2,3,6,7,8-	57117-44-9			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
HxCDF, 1,2,3,7,8,9-	72918-21-9			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
HxCDF, 2,3,4,6,7,8-	60851-34-5			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
HxCDF, 2,3,7,8-	55684-94-1			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
Hydrazine	302-01-2			1.06E+03	5.38E+04	1.04E+03							1.04E+03 ca
Hydrazine Sulfate	10034-93-2			1.06E+03	2.35E+03	7.32E+02							7.32E+02 ca
Hydrogen Chloride	7647-01-0												
Hydrogen Cyanide	74-90-8		0.1206612							2.92E+04	6.03E+04	1.97E+04	1.97E+04 nc
Hydrogen Fluoride	7664-39-3		8.0440771							1.95E+06	4.02E+06	1.31E+06	1.31E+06 nc
Hydrogen Selenide	77830-70-5												
Hydrogen Sulfate	12143-45-2												
Hydrogen Sulfide	7783-06-4												
Hydroquinone	123-31-9		8.0440771	5.32E+04	8.79E+04	3.32E+04				1.95E+06	3.02E+06	1.18E+06	3.32E+04 ca*
Imazalil	35554-44-0		2.6143251							6.33E+05	2.91E+04	2.78E+04	2.78E+04 nc
Imazaquin	81335-37-7		50.275482							1.22E+07	1.10E+07	5.79E+06	5.79E+06 nc
Indeno[1,2,3-cd]pyrene	193-39-5			4.38E+03		4.38E+03							4.38E+03 ca
Indium	7440-74-6												
Iodide	20461-54-5												
Iodine	7553-56-2		2.0110193							4.87E+05	1.01E+06	3.28E+05	3.28E+05 nc
Iodomethane	74-88-4												
Iodopropynyl Butylcarbamate (IPBC)	55406-53-6												
Iprodione	36734-19-7		8.0440771							1.95E+06	3.87E+05	3.23E+05	3.23E+05 nc
Iron	7439-89-6		140.77135							3.41E+07	7.04E+07	2.30E+07	2.30E+07 nc

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Iron Sulfide	11126-12-8	No	No	Inorganics					1	0.001			Yes	
Isobutyl Alcohol	78-83-1	No	Yes	Organics			3.00E-01	U	1	0.00192	74.12	1	Yes	
Isodrin	465-73-6	No	Yes	Organics					1	0.293	364.92	0.6	No	
Isophorone	78-59-1	No	No	Organics	9.50E-04	U	2.00E-01	U	1	0.00354	138.21	1	Yes	14.818037
Isopropalin	33820-53-0	No	Yes	Organics			1.50E-02	U	1	0.207	309.37	0.8	Yes	
Isopropanol	67-63-0	No	Yes	Organics			2.00E+00	U	1	0.000778	60.1	1	Yes	
Isopropyl Methyl Phosphonic Acid	1832-54-8	No	No	Organics			1.00E-01	U	1	0.000396	138.1	1	Yes	
Isopropyltoluene, p-	99-87-6	No	Yes	Organics					1	0.147	134.22	1	Yes	
Isosafrole	120-58-1	No	Yes	Organics					1	0.0334	162.19	1	Yes	
Isoxaben	82558-50-7	No	No	Organics			5.00E-02	U	1	0.00887	332.4	0.9	Yes	
JP-4	50815-00-4	No	Yes	Organics					1				No	
JP-5/JP-8	8002-20-6	No	Yes	Organics					1				No	
JP-7	NA	No	Yes	Organics					1				No	
Kerb	23950-58-5	No	No	Organics			7.50E-02	U	1	0.0109	256.13	0.9	Yes	
Kerosene	8008-20-6	No	Yes	Organics					1			1	No	
Lactofen	77501-63-4	No	No	Organics			2.00E-03	U	1	0.00631	461.78	0.9	Yes	
Lactonitrile	78-97-7	No	No	Organics					1	0.000148	71.08	1	Yes	
Lanthanum	7439-91-0	No	No	Inorganics					1	0.001	138.91	1	Yes	
Lead Alkyls	NA	No	No	Organics					1				No	
Lead Chromate	7758-97-6	Yes	No	Inorganics	5.00E-01	U	2.00E-02	U	0.025	0.001	323.2	1	Yes	0.0007039
Lead Phosphate	7446-27-7	No	No	Inorganics	8.50E-03	U			1	0.001	811.5	0.8	Yes	1.6561335
Lead acetate	301-04-2	No	No	Organics	2.80E-01	U			1	0.0000208	325.29	1	Yes	0.0502755
Lead and Compounds	7439-92-1	No	No	Inorganics					1	0.0001	207.2	1	Yes	
Lead subacetate	1335-32-6	No	No	Organics	8.50E-03	U			1	1.03E-10	805.7	1	No	
Linuron	330-55-2	No	No	Organics			2.00E-03	U	1	0.00839	249.1	0.9	Yes	
Lithium	7439-93-2	No	No	Inorganics			2.00E-03	U	1	0.001	6.94	1	Yes	
Lithium Perchlorate	7791-03-9	No	No	Inorganics			7.00E-04	U	1	0.001	106.392	1	Yes	
Londax	83055-99-6	No	No	Organics			2.00E-01	U	1	0.000219	410.4	1	Yes	
Lutetium	7439-94-3	No	No	Inorganics					1	0.000237	174.97	1	Yes	
MCPA	94-74-6	No	No	Organics			5.00E-04	U	1	0.0169	200.62	1	Yes	
MCPB	94-81-5	No	No	Organics			1.00E-02	U	1	0.0173	228.68	0.9	Yes	
MCPP	93-65-2	No	No	Organics			1.00E-03	U	1	0.0131	214.65	1	Yes	
Magnesium	7439-95-4	No	No	Inorganics					1	0.001	24.305	1	Yes	
Magnesium Chlorate	10326-21-3	No	No	Inorganics					1	0.001	191.21	1	Yes	
Malathion	121-75-5	No	No	Organics			2.00E-02	U	1	0.000812	330.35	1	Yes	
Maleic Anhydride	108-31-6	No	No	Organics			1.00E-01	U	1	0.00525	98.06	1	Yes	
Maleic Hydrazide	123-33-1	No	No	Organics			5.00E-01	U	1	0.000102	112.09	1	Yes	
Malononitrile	109-77-3	No	No	Organics			1.00E-04	U	1	0.000266	66.06	1	Yes	
Mancozeb	8018-01-7	No	No	Organics			3.00E-02	U	1	0.000771	212.36	1	Yes	
Maneb	12427-38-2	No	No	Organics			5.00E-03	U	1	0.000771	212.36	1	Yes	
Manganese (Non-diet)	7439-96-5	No	No	Inorganics			2.40E-02	U	0.04	0.001	54.94	1	Yes	
Mechlorethamine	51-75-2	No	No	Organics					1	0.00107	156.06	1	Yes	
Mephosfolan	950-10-7	No	No	Organics			9.00E-05	U	1	0.000237	269.32	1	Yes	
Mepiquat Chloride	24307-26-4	No	No	Organics			3.00E-02	U	1	3.03E-06	149.67	1	No	

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Iron Sulfide	11126-12-8												
Isobutyl Alcohol	78-83-1		60.330579							1.46E+07	1.24E+07	6.70E+06	6.70E+06 nc
Isodrin	465-73-6												
Isophorone	78-59-1		40.220386	3.36E+06	1.29E+06	9.34E+05				9.73E+06	3.51E+06	2.58E+06	9.34E+05 ca**
Isopropalin	33820-53-0		3.0165289							7.30E+05	1.96E+03	1.95E+03	1.95E+03 nc
Isopropanol	67-63-0		402.20386							9.73E+07	2.11E+08	6.66E+07	6.66E+07 nc
Isopropyl Methyl Phosphonic Acid	1832-54-8		20.110193							4.87E+06	1.56E+07	3.71E+06	3.71E+06 nc
Isopropyltoluene, p-	99-87-6												
Isosafrole	120-58-1												
Isoxaben	82558-50-7		10.055096							2.43E+06	1.17E+05	1.11E+05	1.11E+05 nc
JP-4	50815-00-4												
JP-5/JP-8	8002-20-6												
JP-7	NA												
Kerb	23950-58-5		15.082645							3.65E+06	2.33E+05	2.19E+05	2.19E+05 nc
Kerosene	8008-20-6												
Lactofen	77501-63-4		0.4022039							9.73E+04	2.85E+03	2.77E+03	2.77E+03 nc
Lactonitrile	78-97-7												
Lanthanum	7439-91-0												
Lead Alkyls	NA												
Lead Chromate	7758-97-6		0.100551	6.39E+03	3.52E+02	3.34E+02				9.73E+05	5.03E+04	4.78E+04	3.34E+02 ca
Lead Phosphate	7446-27-7			3.76E+05	8.28E+05	2.58E+05							2.58E+05 ca
Lead acetate	301-04-2			1.14E+04	2.34E+05	1.09E+04							1.09E+04 ca
Lead and Compounds	7439-92-1												
Lead subacetate	1335-32-6			3.76E+05		3.76E+05							3.76E+05 ca
Linuron	330-55-2		0.4022039							9.73E+04	8.43E+03	7.76E+03	7.76E+03 nc
Lithium	7439-93-2		0.4022039							9.73E+04	2.01E+05	6.56E+04	6.56E+04 nc
Lithium Perchlorate	7791-03-9		0.1407713							3.41E+04	7.04E+04	2.30E+04	2.30E+04 nc
Londax	83055-99-6		40.220386							9.73E+06	1.03E+07	5.00E+06	5.00E+06 nc
Lutetium	7439-94-3												
MCPA	94-74-6		0.100551							2.43E+04	1.29E+03	1.22E+03	1.22E+03 nc
MCPB	94-81-5		2.0110193							4.87E+05	2.33E+04	2.23E+04	2.23E+04 nc
MCPP	93-65-2		0.2011019							4.87E+04	3.03E+03	2.86E+03	2.86E+03 nc
Magnesium	7439-95-4												
Magnesium Chlorate	10326-21-3												
Malathion	121-75-5		4.0220386							9.73E+05	4.64E+05	3.14E+05	3.14E+05 nc
Maleic Anhydride	108-31-6		20.110193							4.87E+06	1.41E+06	1.09E+06	1.09E+06 nc
Maleic Hydrazide	123-33-1		100.55096							2.43E+07	3.41E+08	2.27E+07	2.27E+07 nc
Malononitrile	109-77-3		0.0201102							4.87E+03	3.03E+04	4.19E+03	4.19E+03 nc
Mancozeb	8018-01-7		6.0330579							1.46E+06	1.57E+06	7.57E+05	7.57E+05 nc
Maneb	12427-38-2		1.0055096							2.43E+05	2.62E+05	1.26E+05	1.26E+05 nc
Manganese (Non-diet)	7439-96-5		0.1930579							1.17E+06	9.65E+04	8.92E+04	8.92E+04 nc
Mechlorethamine	51-75-2												
Mephosfolan	950-10-7		0.0180992							4.38E+03	1.06E+04	3.10E+03	3.10E+03 nc
Mepiquat Chloride	24307-26-4									1.46E+06		1.46E+06	1.46E+06 nc

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Mercuric Chloride	7487-94-7	No	No	Inorganics			3.00E-04	U	0.07	0.001	271.5	1	Yes	
Mercury (elemental)	7439-97-6	No	Yes	Inorganics					1	0.001	200.59	1	Yes	
Merphos	150-50-5	No	Yes	Organics			3.00E-05	U	1	4.15	298.5	0.3	No	
Merphos Oxide	78-48-8	No	No	Organics			3.00E-05	U	1	0.165	314.5	0.9	Yes	
Metalaxyl	57837-19-1	No	No	Organics			6.00E-02	U	1	0.00058	279.34	1	Yes	
Methacrylonitrile	126-98-7	No	Yes	Organics			1.00E-04	U	1	0.00186	67.09	1	Yes	
Methamidophos	10265-92-6	No	No	Organics			5.00E-05	U	1	0.0000744	141.13	1	Yes	
Methanol	67-56-1	No	Yes	Organics			2.00E+00	U	1	0.000319	32.04	1	Yes	
Methapyrilene	91-80-5	No	No	Organics					1	0.00432	261.39	1	Yes	
Methidathion	950-37-8	No	No	Organics			1.00E-03	U	1	0.000913	302.32	1	Yes	
Methomyl	16752-77-5	No	No	Organics			2.50E-02	U	1	0.000482	162.21	1	Yes	
Methoxy-5-nitroaniline, 2-	99-59-2	No	No	Organics	4.90E-02	U			1	0.00169	168.15	1	Yes	0.2872885
Methoxychlor	72-43-5	No	No	Organics			5.00E-03	U	1	0.0428	345.66	0.8	Yes	
Methoxyethanol Acetate, 2-	110-49-6	No	Yes	Organics			8.00E-03	U	1	0.000396	118.13	1	Yes	
Methoxyethanol, 2-	109-86-4	No	Yes	Organics			5.00E-03	U	1	0.00018	76.1	1	Yes	
Methyl Acetate	79-20-9	No	Yes	Organics			1.00E+00	U	1	0.000792	74.08	1	Yes	
Methyl Acrylate	96-33-3	No	Yes	Organics			3.00E-02	U	1	0.00175	86.09	1	Yes	
Methyl Ethyl Ketone (2-Butanone)	78-93-3	No	Yes	Organics			6.00E-01	U	1	0.000962	72.11	1	Yes	
Methyl Hydrazine	60-34-4	No	Yes	Organics			1.00E-03	U	1	0.000173	46.07	1	Yes	
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	No	Yes	Organics			8.00E-02	U	1	0.00319	100.16	1	Yes	
Methyl Isocyanate	624-83-9	No	Yes	Organics					1	0.0025	57.05	1	Yes	
Methyl Mercaptan	74-93-1	No	Yes	Organics					1	0.00276	48.1	1	Yes	
Methyl Mercury	22967-92-6	No	No	Inorganics			1.00E-04	U	1	0.001	216.6326	1	Yes	
Methyl Methacrylate	80-62-6	No	Yes	Organics			1.40E+00	U	1	0.00355	100.12	1	Yes	
Methyl Parathion	298-00-0	No	No	Organics			2.50E-04	U	1	0.00416	263.21	1	Yes	
Methyl Phosphonic Acid	993-13-5	No	No	Organics			6.00E-02	U	1	0.0000984	96.02	1	Yes	
Methyl Styrene (Mixed Isomers)	25013-15-4	No	Yes	Organics			6.00E-03	U	1	0.066	118.18	1	Yes	
Methyl dicyclohexylamine, n-	7560-83-0	No	Yes	Organics					1	0.0367	195.35	1	Yes	
Methyl methanesulfonate	66-27-3	No	No	Organics	9.90E-02	U			1	0.000138	110.13	1	Yes	0.1421933
Methyl tert-Butyl Ether (MTBE)	1634-04-4	No	Yes	Organics	1.80E-03	U			1	0.00211	88.15	1	Yes	7.8206305
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	No	No	Organics			3.00E-04	U	1	5.39E-06	195.09	1	Yes	
Methyl-2-Pentanol, 4-	108-11-2	No	Yes	Organics					1	0.00544	102.18	1	Yes	
Methyl-5-Nitroaniline, 2-	99-55-8	No	No	Organics	9.00E-03	U	2.00E-02	U	1	0.00384	152.15	1	Yes	1.5641261
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	No	No	Organics	8.30E+00	U			1	0.0000572	147.09	1	Yes	0.001696
Methylaniline Hydrochloride, 2-	636-21-5	No	No	Organics	1.30E-01	U			1	0.00296	143.62	1	Yes	0.1082857
Methylarsonic acid	124-58-3	No	No	Organics			1.00E-02	U	1	0.0000419	139.97	1	Yes	
Methylaziridine, 2-	75-55-8	No	Yes	Organics					1	0.000299	57.1	1	Yes	
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	No	No	Organics			2.00E-04	U	1		158.62864		No	
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	No	No	Organics	1.00E-01	U	3.00E-04	U	1		220.25		No	
Methylcholanthrene, 3-	56-49-5	Yes	No	Organics	2.20E+01	U			1	0.903	268.36	0.8	No	
Methylcyclohexane	108-87-2	No	Yes	Organics					1	0.11	98.19	1	Yes	
Methylcyclohexylamine, n-	100-60-7	No	Yes	Organics					1	0.00898	113.2	1	Yes	
Methylcyclopentane	96-37-7	No	Yes	Organics					1	0.0917	84.16	1	Yes	

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)	
Mercuric Chloride	7487-94-7		0.0042231							1.46E+04	2.11E+03	1.84E+03	1.84E+03	nc
Mercury (elemental)	7439-97-6													
Merphos	150-50-5									1.46E+03		1.46E+03	1.46E+03	nc
Merphos Oxide	78-48-8		0.0060331							1.46E+03	4.22E+00	4.21E+00	4.21E+00	nc
Metalaxyl	57837-19-1		12.066116							2.92E+06	2.71E+06	1.41E+06	1.41E+06	nc
Methacrylonitrile	126-98-7		0.0201102							4.87E+03	4.34E+03	2.29E+03	2.29E+03	nc
Methamidophos	10265-92-6		0.0100551							2.43E+03	4.10E+04	2.30E+03	2.30E+03	nc
Methanol	67-56-1		402.20386							9.73E+07	5.44E+08	8.26E+07	8.26E+07	nc
Methapyrilene	91-80-5													
Methidathion	950-37-8		0.2011019							4.87E+04	2.47E+04	1.64E+04	1.64E+04	nc
Methomyl	16752-77-5		5.0275482							1.22E+06	2.89E+06	8.56E+05	8.56E+05	nc
Methoxy-5-nitroaniline, 2-	99-59-2			6.52E+04	4.54E+04	2.67E+04							2.67E+04	ca
Methoxychlor	72-43-5		1.0055096							2.43E+05	2.49E+03	2.47E+03	2.47E+03	nc
Methoxyethanol Acetate, 2-	110-49-6		1.6088154							3.89E+05	1.37E+06	3.03E+05	3.03E+05	nc
Methoxyethanol, 2-	109-86-4		1.0055096							2.43E+05	2.18E+06	2.19E+05	2.19E+05	nc
Methyl Acetate	79-20-9		201.10193							4.87E+07	9.99E+07	3.27E+07	3.27E+07	nc
Methyl Acrylate	96-33-3		6.0330579							1.46E+06	1.31E+06	6.91E+05	6.91E+05	nc
Methyl Ethyl Ketone (2-Butanone)	78-93-3		120.66116							2.92E+07	4.96E+07	1.84E+07	1.84E+07	nc
Methyl Hydrazine	60-34-4		0.2011019							4.87E+04	4.88E+05	4.43E+04	4.43E+04	nc
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1		16.088154							3.89E+06	1.83E+06	1.25E+06	1.25E+06	nc
Methyl Isocyanate	624-83-9													
Methyl Mercaptan	74-93-1													
Methyl Mercury	22967-92-6		0.0201102							4.87E+03	1.01E+04	3.28E+03	3.28E+03	nc
Methyl Methacrylate	80-62-6		281.5427							6.81E+07	2.89E+07	2.03E+07	2.03E+07	nc
Methyl Parathion	298-00-0		0.0502755							1.22E+04	1.75E+03	1.53E+03	1.53E+03	nc
Methyl Phosphonic Acid	993-13-5		12.066116							2.92E+06	4.50E+07	2.74E+06	2.74E+06	nc
Methyl Styrene (Mixed Isomers)	25013-15-4		1.2066116							2.92E+05	6.56E+03	6.42E+03	6.42E+03	nc
Methyl dicyclohexylamine, n-	7560-83-0													
Methyl methanesulfonate	66-27-3			3.23E+04	3.59E+05	2.96E+04							2.96E+04	ca
Methyl tert-Butyl Ether (MTBE)	1634-04-4			1.77E+06	1.40E+06	7.83E+05							7.83E+05	ca
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2		0.0603306							1.46E+04	2.51E+06	1.45E+04	1.45E+04	nc
Methyl-2-Pentanol, 4-	108-11-2													
Methyl-5-Nitroaniline, 2-	99-55-8		4.0220386	3.55E+05	1.17E+05	8.79E+04				9.73E+05	3.00E+05	2.30E+05	8.79E+04	ca**
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7			3.85E+02	8.72E+03	3.69E+02							3.69E+02	ca
Methylaniline Hydrochloride, 2-	636-21-5			2.46E+04	1.10E+04	7.59E+03							7.59E+03	ca
Methylarsonic acid	124-58-3		2.0110193							4.87E+05	1.46E+07	4.71E+05	4.71E+05	nc
Methylaziridine, 2-	75-55-8													
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7									9.73E+03		9.73E+03	9.73E+03	nc
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9			3.19E+04		3.19E+04				1.46E+04		1.46E+04	1.46E+04	nc
Methylcholanthrene, 3-	56-49-5			1.45E+02		1.45E+02							1.45E+02	ca
Methylcyclohexane	108-87-2													
Methylcyclohexylamine, n-	100-60-7													
Methylcyclopentane	96-37-7													

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Methylene Chloride	75-09-2	Yes	Yes	Organics	2.00E-03	U	6.00E-03	U	1	0.00354	84.93	1	Yes	7.0385675
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	Yes	No	Organics	1.00E-01	U	2.00E-03	U	1	0.0197	267.16	0.9	Yes	0.1407713
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	No	No	Organics	4.60E-02	U			1	0.0844	254.38	1	Yes	0.3060247
Methylenebisbenzenamine, 4,4'-	101-77-9	No	No	Organics	1.60E+00	U			1	0.00138	198.27	1	Yes	0.0087982
Methylenediphenyl Diisocyanate	101-68-8	No	No	Organics					1	0.181	250.26	0.9	Yes	
Methylisothiocyanate	556-61-6	No	Yes	Organics					1	0.00257	73.11	1	Yes	
Methylnaphthalene	1321-94-4	No	Yes	Organics					1	0.0931	142.2	1	Yes	
Methylnaphthalene, 1-	90-12-0	No	Yes	Organics	2.90E-02	U	7.00E-02	U	1	0.0931	142.2	1	Yes	0.4854184
Methylnaphthalene, 2-	91-57-6	No	Yes	Organics			4.00E-03	U	1	0.0917	142.2	1	Yes	
Methylstyrene, Alpha-	98-83-9	No	Yes	Organics			7.00E-02	U	1	0.0699	118.18	1	Yes	
Methyltriethyl Lead	1762-28-3	No	Yes	Organics					1	0.0238	309.42	0.9	Yes	
Metolachlor	51218-45-2	No	No	Organics			1.50E-01	U	1	0.00339	283.8	1	Yes	
Metribuzin	21087-64-9	No	No	Organics			2.50E-02	U	1	0.00132	214.29	1	Yes	
Mineral oils	8012-95-1	No	Yes	Organics			3.00E+00	U	1	1.96	170.34	1	No	
Mirex	2385-85-5	No	Yes	Organics	1.80E+01	U	2.00E-04	U	1	0.0516	545.55	0.5	No	
Molinate	2212-67-1	No	No	Organics			2.00E-03	U	1	0.0189	187.3	1	Yes	
Molybdenum	7439-98-7	No	No	Inorganics			5.00E-03	U	1	0.001	95.94	1	Yes	
Monoaluminum phosphate	13530-50-2	No	No	Inorganics			4.86E+01	U	1	0.001	317.94	1	Yes	
Monoammonium phosphate	7722-76-1	No	No	Inorganics			4.86E+01	U	1	0.001	115.03	1	Yes	
Monobutyltin Compounds	NA	No	No	Organics					1				No	
Monocalcium phosphate	7758-23-8	No	No	Inorganics			4.86E+01	U	1	0.001	234.05	1	Yes	
Monochloramine	10599-90-3	No	No	Inorganics			1.00E-01	U	1	0.001	51.48	1	Yes	
Monochlorobutanes	25154-42-1	No	No	Organics					1				No	
Monochlorophenols (total)	NA	No	No	Organics					1				No	
Monocyclic aromatic hydrocarbons (total)	NA	No	No	Organics					1				No	
Monomagnesium phosphate	7757-86-0	No	No	Inorganics			4.86E+01	U	1	0.001	120.28	1	Yes	
Monomethylaniline	100-61-8	No	No	Organics			2.00E-03	U	1	0.00498	107.16	1	Yes	
Monopotassium phosphate	7778-77-0	No	No	Inorganics			4.86E+01	U	1	0.001	136.09	1	Yes	
Monosodium phosphate	7558-80-7	No	No	Inorganics			4.86E+01	U	1	0.001	119.98	1	Yes	
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	No	No	Organics			3.00E-04	U	1	0.0262	260.34	0.9	Yes	
N-Methyl dithiocarbamate	137-42-8	No	No	Organics					1	5.32E-06	129.17	1	No	
Naled	300-76-5	No	Yes	Organics			2.00E-03	U	1	0.0000944	380.79	1	Yes	
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	No	Yes	Organics			3.00E-02	U	1				No	
Naphthalene	91-20-3	No	Yes	Organics			2.00E-02	U	1	0.0466	128.18	1	Yes	
Naphthol, 2-	135-19-3	No	No	Organics					1	0.0188	144.17	1	Yes	
Naphthoquinone, 1,4-	130-15-4	No	No	Organics					1	0.00278	158.16	1	Yes	
Naphthylamine, 1-	134-32-7	No	No	Organics					1	0.0077	143.19	1	Yes	
Naphthylamine, 2-	91-59-8	No	No	Organics	1.80E+00	U			1	0.00807	143.19	1	Yes	0.0078206
Napropamide	15299-99-7	No	No	Organics			1.00E-01	U	1	0.00804	271.36	0.9	Yes	
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8	No	No	Inorganics					1	0.001	250.6	1	Yes	
Niagara Blue 4B	2429-74-5	No	No	Organics					1	3.69E-07	730.75	1	No	
Nickel Acetate	373-02-4	No	No	Organics			1.10E-02	U	1		176.78	1	Yes	
Nickel Carbonate	3333-67-3	No	No	Organics			1.10E-02	U	1		118.7	1	Yes	
Nickel Carbonyl	13463-39-3	No	Yes	Organics			1.10E-02	U	1		170.734	1	Yes	

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Methylene Chloride	75-09-2		1.2066116	1.60E+06	7.61E+05	5.16E+05				2.92E+05	1.31E+05	9.02E+04	9.02E+04 nc
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4		0.4022039	3.19E+04	1.12E+03	1.08E+03				9.73E+04	3.20E+03	3.10E+03	1.08E+03 ca**
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1			6.94E+04	5.55E+02	5.50E+02							5.50E+02 ca
Methylenebisbenzenamine, 4,4'-	101-77-9			2.00E+03	1.40E+03	8.23E+02							8.23E+02 ca
Methylenediphenyl Diisocyanate	101-68-8												
Methylisothiocyanate	556-61-6												
Methylnaphthalene	1321-94-4												
Methylnaphthalene, 1-	90-12-0		14.077135	1.10E+05	1.61E+03	1.59E+03				3.41E+06	4.68E+04	4.62E+04	1.59E+03 ca*
Methylnaphthalene, 2-	91-57-6		0.8044077							1.95E+05	2.72E+03	2.68E+03	2.68E+03 nc
Methylstyrene, Alpha-	98-83-9		14.077135							3.41E+06	7.24E+04	7.09E+04	7.09E+04 nc
Methyltriethyl Lead	1762-28-3												
Metolachlor	51218-45-2		30.165289							7.30E+06	1.13E+06	9.76E+05	9.76E+05 nc
Metribuzin	21087-64-9		5.0275482							1.22E+06	7.55E+05	4.66E+05	4.66E+05 nc
Mineral oils	8012-95-1									1.46E+08		1.46E+08	1.46E+08 nc
Mirex	2385-85-5			1.77E+02		1.77E+02				9.73E+03		9.73E+03	1.77E+02 ca*
Molinate	2212-67-1		0.4022039							9.73E+04	5.02E+03	4.77E+03	4.77E+03 nc
Molybdenum	7439-98-7		1.0055096							2.43E+05	5.03E+05	1.64E+05	1.64E+05 nc
Monoaluminum phosphate	13530-50-2		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Monoammonium phosphate	7722-76-1		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Monobutyltin Compounds	NA												
Monocalcium phosphate	7758-23-8		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Monochloramine	10599-90-3		20.110193							4.87E+06	1.01E+07	3.28E+06	3.28E+06 nc
Monochlorobutanes	25154-42-1												
Monochlorophenols (total)	NA												
Monocyclic aromatic hydrocarbons (total)	NA												
Monomagnesium phosphate	7757-86-0		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Monomethylaniline	100-61-8		0.4022039							9.73E+04	2.87E+04	2.22E+04	2.22E+04 nc
Monopotassium phosphate	7778-77-0		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Monosodium phosphate	7558-80-7		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
N,N'-Diphenyl-1,4-benzenediamine	74-31-7		0.0603306							1.46E+04	3.77E+02	3.67E+02	3.67E+02 nc
N-Methyl dithiocarbamate	137-42-8												
Naled	300-76-5		0.4022039							9.73E+04	2.89E+05	7.28E+04	7.28E+04 nc
Naphtha, High Flash Aromatic (HFAN)	64742-95-6									1.46E+06		1.46E+06	1.46E+06 nc
Naphthalene	91-20-3		4.0220386							9.73E+05	2.90E+04	2.82E+04	2.82E+04 nc
Naphthol, 2-	135-19-3												
Naphthoquinone, 1,4-	130-15-4												
Naphthylamine, 1-	134-32-7												
Naphthylamine, 2-	91-59-8			1.77E+03	2.93E+02	2.51E+02							2.51E+02 ca
Napropamide	15299-99-7		20.110193							4.87E+06	3.81E+05	3.53E+05	3.53E+05 nc
Neodymium Chloride (Stable, Nonradioactive)	10024-93-8												
Niagara Blue 4B	2429-74-5												
Nickel Acetate	373-02-4		2.2121212							5.35E+05		5.35E+05	5.35E+05 nc
Nickel Carbonate	3333-67-3		2.2121212							5.35E+05		5.35E+05	5.35E+05 nc
Nickel Carbonyl	13463-39-3		2.2121212							5.35E+05		5.35E+05	5.35E+05 nc

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Nickel Hydroxide	12054-48-7	No	No	Inorganics			1.10E-02	U	0.04	0.001	92.7081	1	Yes	
Nickel Oxide	1313-99-1	No	No	Inorganics			1.10E-02	U	0.04	0.001	74.69	1	Yes	
Nickel Refinery Dust	NA	No	No	Inorganics			1.10E-02	U	0.04	0.0002			Yes	
Nickel Soluble Salts	7440-02-0	No	No	Inorganics			2.00E-02	U	0.04	0.0002	58.69	1	Yes	
Nickel Subsulfide	12035-72-2	No	No	Inorganics	1.70E+00	U	1.10E-02	U	0.04	0.0002	240.21	1	Yes	0.0003312
Nickelocene	1271-28-9	No	No	Organics			1.10E-02	U	1		188.879	1	Yes	
Nicotinonitrile	100-54-9	No	No	Organics					1	0.000708	104.11	1	Yes	
Niobium	7440-03-1	No	No	Inorganics					1	0.001	92.91	1	Yes	
Nitrapyrin	1929-82-4	No	Yes	Organics					1	0.0146	230.91	0.9	Yes	
Nitrate	14797-55-8	No	No	Inorganics			1.60E+00	U	1	0.001	62	1	Yes	
Nitrate + Nitrite (as N)	NA	No	No	Inorganics					1	0.001			Yes	
Nitric Acid	7697-37-2	No	No	Inorganics					1	0.001	63.02	1	Yes	
Nitric Oxide	10102-43-9	No	Yes	Inorganics					1	0.001	31.01	1	Yes	
Nitrite	14797-65-0	No	No	Inorganics			1.00E-01	U	1	0.001	47.01	1	Yes	
Nitroaniline, 2-	88-74-4	No	No	Organics			1.00E-02	U	1	0.00446	138.13	1	Yes	
Nitroaniline, 3-	99-09-2	No	No	Organics					1	0.00214	138.13	1	Yes	
Nitroaniline, 4-	100-01-6	No	No	Organics	2.00E-02	U	4.00E-03	U	1	0.00221	138.13	1	Yes	0.7038567
Nitrobenzene	98-95-3	No	Yes	Organics			2.00E-03	U	1	0.00541	123.11	1	Yes	
Nitrobiphenyl, 4-	92-93-3	No	No	Organics					1	0.0382	199.21	1	Yes	
Nitrocellulose	9004-70-0	No	No	Organics			3.00E+03	U	1	9.86E-09	387.3	1	No	
Nitrodiphenylamine, 2-	119-75-5	No	No	Organics					1	0.0266	214.23	0.9	Yes	
Nitrofurantoin	67-20-9	No	No	Organics			7.00E-02	U	1	0.0000352	238.16	1	Yes	
Nitrofurazone	59-87-0	No	No	Organics	1.30E+00	U			1	0.000172	198.14	1	Yes	0.0108286
Nitrogen Dioxide	10102-44-0	No	Yes	Inorganics					1	0.001	46.01	1	Yes	
Nitroglycerin	55-63-0	No	No	Organics	1.70E-02	U	1.00E-04	U	1	0.000994	227.09	1	Yes	0.8280668
Nitroguanidine	556-88-7	No	No	Organics			1.00E-01	U	1	0.000105	104.07	1	Yes	
Nitromethane	75-52-5	No	Yes	Organics					1	0.000417	61.04	1	Yes	
Nitrophenol, 2-	88-75-5	No	Yes	Organics					1	0.00402	139.11	1	Yes	
Nitrophenol, 2-amino-4-	99-57-0	No	No	Organics					1	0.00171	154.13	1	Yes	
Nitrophenol, 3-	554-84-7	No	No	Organics					1	0.00554	139.11	1	Yes	
Nitrophenol, 4-	100-02-7	No	No	Organics					1	0.00483	139.11	1	Yes	
Nitrophenol, 4-amino-2-	119-34-6	No	No	Organics					1	0.000929	154.13	1	Yes	
Nitropropane, 2-	79-46-9	No	Yes	Organics					1	0.00206	89.09	1	Yes	
Nitropyrene, 4-	57835-92-4	No	No	Organics	1.20E+00	U			1	0.0922	247.26	0.9	Yes	0.0117309
Nitroquinoline-1-oxide. 4-	56-57-5	No	No	Organics					1	0.000712	190.16	1	Yes	
Nitroso-N-ethylurea, N-	759-73-9	Yes	No	Organics	2.70E+01	U			1	0.00049	117.11	1	Yes	0.0005214
Nitroso-N-methylurea, N-	684-93-5	Yes	No	Organics	1.20E+02	U			1	0.000395	103.08	1	Yes	0.0001173
Nitroso-di-N-butylamine, N-	924-16-3	No	Yes	Organics	5.40E+00	U			1	0.0113	158.25	1	Yes	0.0026069
Nitroso-di-N-propylamine, N-	621-64-7	No	No	Organics	7.00E+00	U			1	0.00233	130.19	1	Yes	0.002011
Nitrosodiethanolamine, N-	1116-54-7	No	No	Organics	2.80E+00	U			1	0.0000247	134.14	1	Yes	0.0050275
Nitrosodiethylamine, N-	55-18-5	Yes	No	Organics	1.50E+02	U			1	0.000872	102.14	1	Yes	0.0000938
Nitrosodimethylamine, N-	62-75-9	Yes	Yes	Organics	5.10E+01	U	8.00E-06	U	1	0.000251	74.08	1	Yes	0.000276
Nitrosodiphenylamine, N-	86-30-6	No	No	Organics	4.90E-03	U			1	0.0145	198.23	1	Yes	2.8728847
Nitrosomethylethylamine, N-	10595-95-6	No	Yes	Organics	2.20E+01	U			1	0.000533	88.11	1	Yes	0.0006399

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Nickel Hydroxide	12054-48-7		0.0884848							5.35E+05	4.42E+04	4.09E+04	4.09E+04 nc
Nickel Oxide	1313-99-1		0.0884848							5.35E+05	4.42E+04	4.09E+04	4.09E+04 nc
Nickel Refinery Dust	NA		0.0884848							5.35E+05	2.21E+05	1.57E+05	1.57E+05 nc
Nickel Soluble Salts	7440-02-0		0.1608815							9.73E+05	4.02E+05	2.85E+05	2.85E+05 nc
Nickel Subsulfide	12035-72-2		0.0884848	1.88E+03	8.28E+02	5.75E+02				5.35E+05	2.21E+05	1.57E+05	5.75E+02 ca
Nickelocene	1271-28-9		2.2121212							5.35E+05		5.35E+05	5.35E+05 nc
Nicotinonitrile	100-54-9												
Niobium	7440-03-1												
Nitrapyrin	1929-82-4												
Nitrate	14797-55-8		321.76309							7.79E+07	1.61E+08	5.25E+07	5.25E+07 nc
Nitrate + Nitrite (as N)	NA												
Nitric Acid	7697-37-2												
Nitric Oxide	10102-43-9												
Nitrite	14797-65-0		20.110193							4.87E+06	1.01E+07	3.28E+06	3.28E+06 nc
Nitroaniline, 2-	88-74-4		2.0110193							4.87E+05	1.39E+05	1.08E+05	1.08E+05 nc
Nitroaniline, 3-	99-09-2												
Nitroaniline, 4-	100-01-6		0.8044077	1.60E+05	9.83E+04	6.08E+04				1.95E+05	1.12E+05	7.12E+04	6.08E+04 ca**
Nitrobenzene	98-95-3		0.4022039							9.73E+04	2.47E+04	1.97E+04	1.97E+04 nc
Nitrobiphenyl, 4-	92-93-3												
Nitrocellulose	9004-70-0									1.46E+11		1.46E+11	1.46E+11 nc
Nitrodiphenylamine, 2-	119-75-5												
Nitrofurantoin	67-20-9		14.077135							3.41E+06	6.79E+07	3.24E+06	3.24E+06 nc
Nitrofurazone	59-87-0			2.46E+03	1.38E+04	2.09E+03							2.09E+03 ca
Nitrogen Dioxide	10102-44-0												
Nitroglycerin	55-63-0		0.0201102	1.88E+05	1.52E+05	8.40E+04				4.87E+03	3.69E+03	2.10E+03	2.10E+03 nc
Nitroguanidine	556-88-7		20.110193							4.87E+06	6.83E+07	4.54E+06	4.54E+06 nc
Nitromethane	75-52-5												
Nitrophenol, 2-	88-75-5												
Nitrophenol, 2-amino-4-	99-57-0												
Nitrophenol, 3-	554-84-7												
Nitrophenol, 4-	100-02-7												
Nitrophenol, 4-amino-2-	119-34-6												
Nitropropane, 2-	79-46-9												
Nitropyrene, 4-	57835-92-4			2.66E+03	2.26E+01	2.25E+01							2.25E+01 ca
Nitroquinoline-1-oxide. 4-	56-57-5												
Nitroso-N-ethylurea, N-	759-73-9			1.18E+02	3.61E+02	8.91E+01							8.91E+01 ca
Nitroso-N-methylurea, N-	684-93-5			2.66E+01	1.06E+02	2.13E+01							2.13E+01 ca
Nitroso-di-N-butylamine, N-	924-16-3			5.91E+02	6.40E+01	5.78E+01							5.78E+01 ca
Nitroso-di-N-propylamine, N-	621-64-7			4.56E+02	2.77E+02	1.72E+02							1.72E+02 ca
Nitrosodiethanolamine, N-	1116-54-7			1.14E+03	6.39E+04	1.12E+03							1.12E+03 ca
Nitrosodiethylamine, N-	55-18-5			2.13E+01	3.87E+01	1.37E+01							1.37E+01 ca
Nitrosodimethylamine, N-	62-75-9		0.0016088	6.26E+01	4.32E+02	5.47E+01				3.89E+02	2.52E+03	3.37E+02	5.47E+01 ca**
Nitrosodiphenylamine, N-	86-30-6			6.52E+05	4.35E+04	4.08E+04							4.08E+04 ca
Nitrosomethylethylamine, N-	10595-95-6			1.45E+02	4.53E+02	1.10E+02							1.10E+02 ca

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Nitrosomethylvinylamine, N-	4549-40-0	No	Yes	Organics					1	0.000515	86.09	1	Yes	
Nitrosomorpholine [N-]	59-89-2	No	No	Organics	6.70E+00	U			1	0.000178	116.12	1	Yes	0.0021011
Nitrosopiperidine [N-]	100-75-4	No	No	Organics	9.40E+00	U			1	0.000622	114.15	1	Yes	0.0014976
Nitrosopyrrolidine, N-	930-55-2	No	No	Organics	2.10E+00	U			1	0.000321	100.12	1	Yes	0.0067034
Nitrotoluene, 4-Amino-2-	119-32-4	No	No	Organics					1	0.00482	152.15	1	Yes	
Nitrotoluene, m-	99-08-1	No	No	Organics			1.00E-04	U	1	0.0113	137.14	1	Yes	
Nitrotoluene, o-	88-72-2	No	Yes	Organics	2.20E-01	U	9.00E-04	U	1	0.00899	137.14	1	Yes	0.063987
Nitrotoluene, p-	99-99-0	No	No	Organics	1.60E-02	U	4.00E-03	U	1	0.01	137.14	1	Yes	0.8798209
Nonachlor, trans-	39765-80-5	No	Yes	Organics					1	0.0836	444.23	0.6	No	
Nonane, n-	111-84-2	No	Yes	Organics			3.00E-04	U	1	1.7	128.26	1	No	
Nonanol, n-	143-08-8	No	Yes	Organics					1	0.0778	144.26	1	Yes	
Norflurazon	27314-13-2	No	No	Organics			4.00E-02	U	1	0.00105	303.67	1	Yes	
Nustar	85509-19-9	No	No	Organics			7.00E-04	U	1	0.00766	315.4	0.9	Yes	
OCDD	3268-87-9	No	No	Organics	3.90E+01	U	2.33E-06	U	1	1.16	459.76	0	No	
OCDF	39001-02-0	No	No	Organics	3.90E+01	U	2.33E-06	U	1	2.63	443.76	0	No	
Octabromodiphenyl Ether	32536-52-0	No	No	Organics			3.00E-03	U	1	0.0306	801.38	0.3	No	
Octachlorostyrene	29082-74-4	No	Yes	Organics					1	1.05	379.71	0	No	
Octadecanoic Acid	57-11-4	No	No	Organics					1	11.7	284.49	0.3	No	
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	No	No	Organics			5.00E-02	U	1	0.0000436	296.16	1	Yes	
Octahydrotrimethylmethylethylphenanthrenol	511-15-9	No	No	Organics					1	2.66	286.46	0.5	No	
Octamethylpyrophosphoramide	152-16-9	No	No	Organics			2.00E-03	U	1	8.30E-06	286.25	1	Yes	
Octanol, n-	111-87-5	No	Yes	Organics					1	0.0274	130.23	1	Yes	
Octanone, 2-	111-13-7	No	Yes	Organics					1	0.0112	128.22	1	Yes	
Octanone, 3-	106-68-3	No	Yes	Organics					1	0.00894	128.22	1	Yes	
Octyl Phthalate, di-N-	117-84-0	No	No	Organics			1.00E-02	U	1	2.43	390.57	0	No	
Oleic acid	112-80-1	No	Yes	Organics					1	4.87	282.47	0.5	No	
Oleum	8014-95-7	No	No	Inorganics					1	0.001			Yes	
Oryzalin	19044-88-3	No	No	Organics			5.00E-02	U	1	0.00537	346.36	0.9	Yes	
Oxadiazon	19666-30-9	No	No	Organics			5.00E-03	U	1	0.028	345.23	0.8	Yes	
Oxamyl	23135-22-0	No	No	Organics			2.50E-02	U	1	0.0000449	219.26	1	Yes	
Oxychlordane	27304-13-8	No	No	Organics					1	0.029	423.77	0.8	Yes	
Ozone	10028-15-6	No	No	Inorganics					1	0.001	48	1	Yes	
Paclobutrazol	76738-62-0	No	No	Organics			1.30E-02	U	1	0.00471	293.8	0.9	Yes	
Paraquat Dichloride	1910-42-5	No	No	Organics			4.50E-03	U	1	5.77E-08	257.16	1	No	
Parathion	56-38-2	No	No	Organics			6.00E-03	U	1	0.0128	291.26	0.9	Yes	
PeCDD, 2,3,7,8-	36088-22-9	No	No	Organics	1.30E+05	U	7.00E-10	U	1	0.241	356.42	0.7	No	
PeCDF, 1,2,3,7,8-	57117-41-6	No	No	Organics	3.90E+03	U	2.33E-08	U	1	0.627	340.42	0.4	No	
PeCDF, 2,3,4,7,8-	57117-31-4	No	No	Organics	3.90E+04	U	2.33E-09	U	1	0.627	340.42	0.4	No	
Pebulate	1114-71-2	No	Yes	Organics			5.00E-02	U	1	0.0397	203.35	1	Yes	
Pendimethalin	40487-42-1	No	No	Organics			4.00E-02	U	1	0.115	281.31	0.9	Yes	
Pentabromodiphenyl Ether	32534-81-9	No	No	Organics			2.00E-03	U	1	0.0373	564.69	0.6	No	
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	No	No	Organics			1.00E-04	U	1	0.0373	564.69	0.6	No	

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Nitrosomethylvinylamine, N-	4549-40-0												
Nitrosomorpholine [N-]	59-89-2			4.77E+02	4.02E+03	4.26E+02							4.26E+02 ca
Nitrosopiperidine [N-]	100-75-4			3.40E+02	8.26E+02	2.41E+02							2.41E+02 ca
Nitrosopyrrolidine, N-	930-55-2			1.52E+03	7.56E+03	1.27E+03							1.27E+03 ca
Nitrotoluene, 4-Amino-2-	119-32-4												
Nitrotoluene, m-	99-08-1		0.0201102							4.87E+03	5.56E+02	4.99E+02	4.99E+02 nc
Nitrotoluene, o-	88-72-2		0.1809917	1.45E+04	2.22E+03	1.93E+03				4.38E+04	6.28E+03	5.49E+03	1.93E+03 ca**
Nitrotoluene, p-	99-99-0		0.8044077	2.00E+05	2.75E+04	2.42E+04				1.95E+05	2.51E+04	2.23E+04	2.23E+04 nc
Nonachlor, trans-	39765-80-5												
Nonane, n-	111-84-2									1.46E+04		1.46E+04	1.46E+04 nc
Nonanol, n-	143-08-8												
Norflurazon	27314-13-2		8.0440771							1.95E+06	8.53E+05	5.93E+05	5.93E+05 nc
Nustar	85509-19-9		0.1407713							3.41E+04	2.11E+03	1.99E+03	1.99E+03 nc
OCDD	3268-87-9			8.19E+01		8.19E+01				1.13E+02		1.13E+02	8.19E+01 ca**
OCDF	39001-02-0			8.19E+01		8.19E+01				1.13E+02		1.13E+02	8.19E+01 ca**
Octabromodiphenyl Ether	32536-52-0									1.46E+05		1.46E+05	1.46E+05 nc
Octachlorostyrene	29082-74-4												
Octadecanoic Acid	57-11-4												
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0		10.055096							2.43E+06	2.70E+07	2.23E+06	2.23E+06 nc
Octahydrotrimethylmethylethylphenanthrenol	511-15-9												
Octamethylpyrophosphoramide	152-16-9		0.4022039							9.73E+04	6.04E+06	9.58E+04	9.58E+04 nc
Octanol, n-	111-87-5												
Octanone, 2-	111-13-7												
Octanone, 3-	106-68-3												
Octyl Phthalate, di-N-	117-84-0									4.87E+05		4.87E+05	4.87E+05 nc
Oleic acid	112-80-1												
Oleum	8014-95-7												
Oryzalin	19044-88-3		10.055096							2.43E+06	1.76E+05	1.64E+05	1.64E+05 nc
Oxadiazon	19666-30-9		1.0055096							2.43E+05	3.82E+03	3.76E+03	3.76E+03 nc
Oxamyl	23135-22-0		5.0275482							1.22E+06	2.15E+07	1.15E+06	1.15E+06 nc
Oxychlordane	27304-13-8												
Ozone	10028-15-6												
Paclobutrazol	76738-62-0		2.6143251							6.33E+05	7.32E+04	6.56E+04	6.56E+04 nc
Paraquat Dichloride	1910-42-5									2.19E+05		2.19E+05	2.19E+05 nc
Parathion	56-38-2		1.2066116							2.92E+05	1.26E+04	1.21E+04	1.21E+04 nc
PeCDD, 2,3,7,8-	36088-22-9			2.46E-02		2.46E-02				3.41E-02		3.41E-02	2.46E-02 ca**
PeCDF, 1,2,3,7,8-	57117-41-6			8.19E-01		8.19E-01				1.13E+00		1.13E+00	8.19E-01 ca**
PeCDF, 2,3,4,7,8-	57117-31-4			8.19E-02		8.19E-02				1.13E-01		1.13E-01	8.19E-02 ca**
Pebulate	1114-71-2		10.055096							2.43E+06	5.39E+04	5.27E+04	5.27E+04 nc
Pendimethalin	40487-42-1		8.0440771							1.95E+06	1.00E+04	9.95E+03	9.95E+03 nc
Pentabromodiphenyl Ether	32534-81-9									9.73E+04		9.73E+04	9.73E+04 nc
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9									4.87E+03		4.87E+03	4.87E+03 nc

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Pentachloroaniline	527-20-8	No	No	Organics					1	0.0811	265.35	0.9	Yes	
Pentachlorobenzene	608-93-5	No	Yes	Organics			8.00E-04	U	1	0.168	250.34	0.9	Yes	
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1	326.44	0.4	No	
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1.24	326.44	0.3	No	
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	0.751	326.44	0.5	No	
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	No	Yes	Organics	3.90E+00	U	2.33E-05	U	1	1	326.44	0.4	No	
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	1	326.44	0.4	No	
Pentachlorocyclopentadiene	25329-35-5	No	Yes	Organics					1	0.0609	238.33	0.9	Yes	
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	No	Yes	Organics	1.30E+05	U	7.00E-10	U	1	0.405	356.42	0.5	No	
Pentachloroethane	76-01-7	No	Yes	Organics	9.00E-02	U			1	0.0158	202.3	1	Yes	0.1564126
Pentachloronitrobenzene	82-68-8	No	Yes	Organics	2.60E-01	U	3.00E-03	U	1	0.0418	295.34	0.9	Yes	0.0541428
Pentachlorophenol	87-86-5	No	No	Organics	4.00E-01	U	5.00E-03	U	1	0.127	266.34	0.9	Yes	0.0351928
Pentaerythritol tetranitrate (PETN)	78-11-5	No	No	Organics	4.00E-03	U	2.00E-03	U	1	0.00101	316.14	1	Yes	3.5192837
Pentamethyl dipropylenetriamine	3855-32-1	No	No	Organics					1	0.000219	201.36	1	Yes	
Pentane, n-	109-66-0	No	Yes	Organics					1	0.11	72.15	1	Yes	
Pentyl Alcohol, N-	71-41-0	No	Yes	Organics					1	0.00506	88.15	1	Yes	
Perchlorate and Perchlorate Salts	14797-73-0	No	No	Inorganics			7.00E-04	U	1	0.001	117.49	1	Yes	
Perfluorobutane Sulfonate	375-73-5	No	Yes	Organics			2.00E-02	U	1	0.0013	300.1	1	Yes	
Perfluorooctane Sulphonic Acid	1763-23-1	No	Yes	Organics					1	0.0362	500.13	0.6	No	
Perfluorooctanoic acid	335-67-1	No	Yes	Organics					1	0.114	414.07	0.7	No	
Permethrin	52645-53-1	No	No	Organics			5.00E-02	U	1	0.208	391.3	0.6	No	
Perylene	198-55-0	No	No	Organics					1	0.856	252.32	0.9	No	
Pesticides (total)	NA	No	No	Organics					1				No	
Pesticides, organochlorinated (each)	NA	No	No	Organics					1				No	
Pesticides, organochlorinated (total)	NA	No	No	Organics					1				No	
Phenacetin	62-44-2	No	No	Organics	2.20E-03	U			1	0.00173	179.22	1	Yes	6.3986977
Phenanthrene	85-01-8	No	Yes	Organics					1	0.144	178.24	1	Yes	
Phenmedipham	13684-63-4	No	No	Organics			2.50E-01	U	1	0.00786	300.32	0.9	Yes	
Phenol	108-95-2	No	No	Organics			3.00E-01	U	1	0.00434	94.11	1	Yes	
Phenothiazine	92-84-2	No	No	Organics			5.00E-04	U	1	0.0683	199.27	1	Yes	
Phenyl Isothiocyanate	103-72-0	No	Yes	Organics					1	0.0413	135.18	1	Yes	
Phenylenediamine, m-	108-45-2	No	No	Organics			6.00E-03	U	1	0.000234	108.14	1	Yes	
Phenylenediamine, o-	95-54-5	No	No	Organics	4.70E-02	U			1	0.000487	108.14	1	Yes	0.2995135
Phenylenediamine, p-	106-50-3	No	No	Organics			1.90E-01	U	1	0.000245	108.14	1	Yes	
Phenylmercuric Acetate	62-38-4	No	No	Organics			8.00E-05	U	1	0.0000599	336.74	1	Yes	
Phenylphenol, 2-	90-43-7	No	No	Organics	1.94E-03	U			1	0.0196	170.21	1	Yes	7.2562551
Phorate	298-02-2	No	No	Organics			2.00E-04	U	1	0.0126	260.37	0.9	Yes	
Phosmet	732-11-6	No	No	Organics			2.00E-02	U	1	0.00183	317.32	1	Yes	
Phosphine	7803-51-2	No	Yes	Inorganics			3.00E-04	U	1	0.001	34	1	Yes	
Phosphoric Acid	7664-38-2	No	No	Inorganics			4.86E+01	U	1	0.001	98	1	Yes	
Phosphorus (total)	NA	No	No	Inorganics					1	0.001			Yes	
Phosphorus pentoxide	1314-56-3	No	No	Inorganics					1	0.001	141.94	1	Yes	
Phosphorus, White	7723-14-0	No	Yes	Inorganics			2.00E-05	U	1	0.001	30.974	1	Yes	
Phthalates (total)	NA	No	No	Organics					1				No	

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Pentachloroaniline	527-20-8												
Pentachlorobenzene	608-93-5		0.1608815							3.89E+04	1.67E+02	1.66E+02	1.66E+02 nc
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0			8.19E+02		8.19E+02				1.13E+03		1.13E+03	8.19E+02 ca**
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
Pentachlorocyclopentadiene	25329-35-5												
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4			2.46E-02		2.46E-02				3.41E-02		3.41E-02	2.46E-02 ca**
Pentachloroethane	76-01-7			3.55E+04	2.12E+03	2.00E+03							2.00E+03 ca
Pentachloronitrobenzene	82-68-8		0.6033058	1.23E+04	1.69E+02	1.67E+02				1.46E+05	1.88E+03	1.86E+03	1.67E+02 ca*
Pentachlorophenol	87-86-5		1.0055096	7.98E+03	4.36E+01	4.34E+01				2.43E+05	1.25E+03	1.24E+03	4.34E+01 ca*
Pentaerythritol tetranitrate (PETN)	78-11-5		0.4022039	7.98E+05	3.58E+05	2.47E+05				9.73E+04	4.09E+04	2.88E+04	2.88E+04 nc
Pentamethyl dipropylenetriamine	3855-32-1												
Pentane, n-	109-66-0												
Pentyl Alcohol, N-	71-41-0												
Perchlorate and Perchlorate Salts	14797-73-0		0.1407713							3.41E+04	7.04E+04	2.30E+04	2.30E+04 nc
Perfluorobutane Sulfonate	375-73-5		4.0220386							9.73E+05	3.53E+05	2.59E+05	2.59E+05 nc
Perfluorooctane Sulphonic Acid	1763-23-1												
Perfluorooctanoic acid	335-67-1												
Permethrin	52645-53-1									2.43E+06		2.43E+06	2.43E+06 nc
Perylene	198-55-0												
Pesticides (total)	NA												
Pesticides, organochlorinated (each)	NA												
Pesticides, organochlorinated (total)	NA												
Phenacetin	62-44-2			1.45E+06	9.19E+05	5.63E+05							5.63E+05 ca
Phenanthrene	85-01-8												
Phenmedipham	13684-63-4		50.275482							1.22E+07	8.09E+05	7.58E+05	7.58E+05 nc
Phenol	108-95-2		60.330579							1.46E+07	5.17E+06	3.82E+06	3.82E+06 nc
Phenothiazine	92-84-2		0.100551							2.43E+04	3.21E+02	3.17E+02	3.17E+02 nc
Phenyl Isothiocyanate	103-72-0												
Phenylenediamine, m-	108-45-2		1.2066116							2.92E+05	1.81E+06	2.51E+05	2.51E+05 nc
Phenylenediamine, o-	95-54-5			6.80E+04	2.16E+05	5.17E+04							5.17E+04 ca
Phenylenediamine, p-	106-50-3		38.209366							9.25E+06	5.48E+07	7.91E+06	7.91E+06 nc
Phenylmercuric Acetate	62-38-4		0.0160882							3.89E+03	2.42E+04	3.35E+03	3.35E+03 nc
Phenylphenol, 2-	90-43-7			1.65E+06	9.75E+04	9.20E+04							9.20E+04 ca
Phorate	298-02-2		0.0402204							9.73E+03	5.22E+02	4.96E+02	4.96E+02 nc
Phosmet	732-11-6		4.0220386							9.73E+05	2.24E+05	1.82E+05	1.82E+05 nc
Phosphine	7803-51-2		0.0603306							1.46E+04	3.02E+04	9.84E+03	9.84E+03 nc
Phosphoric Acid	7664-38-2		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Phosphorus (total)	NA												
Phosphorus pentoxide	1314-56-3												
Phosphorus, White	7723-14-0		0.004022							9.73E+02	2.01E+03	6.56E+02	6.56E+02 nc
Phthalates (total)	NA												

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Phthalic Acid, P-	100-21-0	No	No	Organics			1.00E+00	U	1	0.00391	166.13	1	Yes	
Phthalic Acid, m-	121-91-5	No	No	Organics					1	0.00232	166.13	1	Yes	
Phthalic Acid, o-	88-99-3	No	No	Organics					1	0.000559	166.13	1	Yes	
Phthalic Anhydride	85-44-9	No	No	Organics			2.00E+00	U	1	0.00267	148.12	1	Yes	
Picloram	1918-02-1	No	No	Organics			7.00E-02	U	1	0.00127	241.46	1	Yes	
Picoline, 2-	109-06-8	No	Yes	Organics					1	0.00257	93.13	1	Yes	
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	No	No	Organics			1.00E-04	U	1	0.000496	199.12	1	Yes	
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	No	No	Organics					1	0.000621	229.11	1	Yes	
Piperidine	110-89-4	No	Yes	Organics					1	0.00189	85.15	1	Yes	
Pirimiphos, Methyl	29232-93-7	No	No	Organics			1.00E-02	U	1	0.0187	305.33	0.9	Yes	
Polybrominated Biphenyls	59536-65-1	No	No	Organics	3.00E+01	U	7.00E-06	U	1				No	
Polychlorinated Biphenyls (low risk)	1336-36-3	No	Yes	Organics	4.00E-01	U			1	0.545	291.99	0.7	No	
Polycyclic aromatic hydrocarbons (PAH), Total	NA	No	No	Organics					1				No	
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA	No	No	Organics					1				No	
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA	No	No	Organics					1				No	
Polycyclic chlorinated hydrocarbons (total)	NA	No	No	Organics					1				No	
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	No	No	Organics					1	18.6	512.53	0	No	
Polyphosphoric acid	8017-16-1	No	No	Inorganics			4.86E+01	U	1	0.001	257.96	1	Yes	
Potassium	7440-09-7	No	No	Inorganics					1	0.002	39.1	1	Yes	
Potassium Cyanide	151-50-8	No	No	Inorganics			2.00E-03	U	1	0.002	65.12	1	Yes	
Potassium Perchlorate	7778-74-7	No	No	Inorganics			7.00E-04	U	1	0.002	138.55	1	Yes	
Potassium Perfluorobutane Sulfonate	29420-49-3	No	No	Organics			2.00E-02	U	1	0.0000297	338.19	1	Yes	
Potassium Silver Cyanide	506-61-6	No	No	Inorganics			5.00E-03	U	0.04	0.002	199	1	Yes	
Potassium chlorate	3811-04-9	No	No	Inorganics					1	0.001	122.55	1	Yes	
Potassium tripolyphosphate	13845-36-8	No	No	Inorganics			4.86E+01	U	1	0.001	448.40679	0.9	Yes	
Praseodymium	7440-10-0	No	No	Inorganics					1	0.001	140.91	1	Yes	
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2	No	No	Inorganics					1	0.001	247.27	1	Yes	
Prochloraz	67747-09-5	No	No	Organics	1.50E-01	U	9.00E-03	U	1	0.0064	376.67	0.9	Yes	0.0938476
Profluralin	26399-36-0	No	Yes	Organics			6.00E-03	U	1	0.09	347.3	0.8	Yes	
Promethium	7440-12-2	No	No	Inorganics					1	0.001	145	1	Yes	
Prometon	1610-18-0	No	No	Organics			1.50E-02	U	1	0.00827	225.3	1	Yes	
Prometryn	7287-19-6	No	No	Organics			4.00E-03	U	1	0.0149	241.36	0.9	Yes	
Propachlor	1918-16-7	No	No	Organics			1.30E-02	U	1	0.00286	211.69	1	Yes	
Propanil	709-98-8	No	No	Organics			5.00E-03	U	1	0.0103	218.08	1	Yes	
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5	No	No	Organics					1	0.0000512	235.07	1	Yes	
Propargite	2312-35-8	No	No	Organics			2.00E-02	U	1	0.0356	350.48	0.8	Yes	
Propargyl Alcohol	107-19-7	No	Yes	Organics			2.00E-03	U	1	0.000424	56.06	1	Yes	
Propazine	139-40-2	No	No	Organics			2.00E-02	U	1	0.00713	229.71	1	Yes	
Propham	122-42-9	No	No	Organics			2.00E-02	U	1	0.00826	179.22	1	Yes	
Propiconazole	60207-90-1	No	No	Organics			1.30E-02	U	1	0.00558	342.23	0.9	Yes	

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Phthalic Acid, P-	100-21-0		201.10193							4.87E+07	1.39E+07	1.08E+07	1.08E+07 nc
Phthalic Acid, m-	121-91-5												
Phthalic Acid, o-	88-99-3												
Phthalic Anhydride	85-44-9		402.20386							9.73E+07	4.41E+07	3.04E+07	3.04E+07 nc
Picloram	1918-02-1		14.077135							3.41E+06	1.84E+06	1.20E+06	1.20E+06 nc
Picoline, 2-	109-06-8												
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3		0.0201102							4.87E+03	8.86E+03	3.14E+03	3.14E+03 nc
Picric Acid (2,4,6-Trinitrophenol)	88-89-1												
Piperidine	110-89-4												
Pirimiphos, Methyl	29232-93-7		2.0110193							4.87E+05	1.32E+04	1.28E+04	1.28E+04 nc
Polybrominated Biphenyls	59536-65-1			1.06E+02		1.06E+02				3.41E+02		3.41E+02	1.06E+02 ca**
Polychlorinated Biphenyls (low risk)	1336-36-3			7.98E+03		7.98E+03							7.98E+03 ca
Polycyclic aromatic hydrocarbons (PAH), Total	NA												
Polycyclic aromatic hydrocarbons (PAH), Total (high molecular weight)	NA												
Polycyclic aromatic hydrocarbons (PAH), Total (low molecular weight)	NA												
Polycyclic chlorinated hydrocarbons (total)	NA												
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9												
Polyphosphoric acid	8017-16-1		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Potassium	7440-09-7												
Potassium Cyanide	151-50-8		0.4022039							9.73E+04	1.01E+05	4.95E+04	4.95E+04 nc
Potassium Perchlorate	7778-74-7		0.1407713							3.41E+04	3.52E+04	1.73E+04	1.73E+04 nc
Potassium Perfluorobutane Sulfonate	29420-49-3		4.0220386							9.73E+05	1.21E+07	9.01E+05	9.01E+05 nc
Potassium Silver Cyanide	506-61-6		0.0402204							2.43E+05	1.01E+04	9.66E+03	9.66E+03 nc
Potassium chlorate	3811-04-9												
Potassium tripolyphosphate	13845-36-8		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Praseodymium	7440-10-0												
Praseodymium Chloride (Stable, Nonradioactive)	10361-79-2												
Prochloraz	67747-09-5		1.8099174	2.13E+04	1.13E+03	1.08E+03				4.38E+05	2.19E+04	2.08E+04	1.08E+03 ca*
Profluralin	26399-36-0		1.2066116							2.92E+05	1.41E+03	1.40E+03	1.40E+03 nc
Promethium	7440-12-2												
Prometon	1610-18-0		3.0165289							7.30E+05	6.73E+04	6.16E+04	6.16E+04 nc
Prometryn	7287-19-6		0.8044077							1.95E+05	9.98E+03	9.50E+03	9.50E+03 nc
Propachlor	1918-16-7		2.6143251							6.33E+05	1.84E+05	1.43E+05	1.43E+05 nc
Propanil	709-98-8		1.0055096							2.43E+05	1.89E+04	1.75E+04	1.75E+04 nc
Propanoic acid, 2-(2,4-dichlorophenoxy)-	120-36-5												
Propargite	2312-35-8		4.0220386							9.73E+05	1.16E+04	1.15E+04	1.15E+04 nc
Propargyl Alcohol	107-19-7		0.4022039							9.73E+04	3.90E+05	7.79E+04	7.79E+04 nc
Propazine	139-40-2		4.0220386							9.73E+05	1.01E+05	9.17E+04	9.17E+04 nc
Propham	122-42-9		4.0220386							9.73E+05	1.21E+05	1.08E+05	1.08E+05 nc
Propiconazole	60207-90-1		2.6143251							6.33E+05	4.52E+04	4.22E+04	4.22E+04 nc

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Propionaldehyde	123-38-6	No	Yes	Organics					1	0.00182	58.08	1	Yes	
Propionitrile	107-12-0	No	Yes	Organics					1	0.000982	55.08	1	Yes	
Propionitrile, 3-(NN-dimethylamino)	1738-25-6	No	Yes	Organics					1	0.000222	98.15	1	Yes	
Propyl Alcohol, n-	71-23-8	No	Yes	Organics					1	0.00106	60.1	1	Yes	
Propyl benzene	103-65-1	No	Yes	Organics			1.00E-01	U	1	0.0939	120.2	1	Yes	
Propylene	115-07-1	No	Yes	Organics					1	0.0136	42.08	1	Yes	
Propylene Glycol	57-55-6	No	No	Organics			2.00E+01	U	1	0.000143	76.1	1	Yes	
Propylene Glycol Dinitrate	6423-43-4	No	No	Organics					1	0.00208	166.09	1	Yes	
Propylene Glycol Monoethyl Ether	1569-02-4	No	Yes	Organics			7.00E-01	U	1	0.000409	104.15	1	Yes	
Propylene Glycol Monomethyl Ether	107-98-2	No	Yes	Organics			7.00E-01	U	1	0.000372	90.12	1	Yes	
Propylene Oxide	75-56-9	No	Yes	Organics	2.40E-01	U			1	0.000774	58.08	1	Yes	0.0586547
Prussian Blue (Ferric Ferrocyanide)	14038-43-8	No	No	Organics					1		859.229		No	
Pursuit	81335-77-5	No	No	Organics			2.50E-01	U	1	0.002	289.34	1	Yes	
Pydrin	51630-58-1	No	No	Organics			2.50E-02	U	1	0.0938	419.91	0.7	No	
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2	No	No	Organics					1	0.00109	248.24	1	Yes	
Pyrene	129-00-0	No	Yes	Organics			3.00E-02	U	1	0.201	202.26	1	Yes	
Pyridine	110-86-1	No	Yes	Organics			1.00E-03	U	1	0.00152	79.1	1	Yes	
Quinalphos	13593-03-8	No	No	Organics			5.00E-04	U	1	0.0296	298.3	0.9	Yes	
Quinoline	91-22-5	No	No	Organics	3.00E+00	U			1	0.00659	129.16	1	Yes	0.0046924
Resmethrin	10453-86-8	No	No	Organics			3.00E-02	U	1	0.238	338.45	0.7	Yes	
Resorcinol	108-46-3	No	No	Organics					1	0.00128	110.11	1	Yes	
Ronnel	299-84-3	No	Yes	Organics			5.00E-02	U	1	0.043	321.54	0.8	Yes	
Rotenone	83-79-4	No	No	Organics			4.00E-03	U	1	0.00509	394.43	0.9	Yes	
Safrole	94-59-7	Yes	No	Organics	2.20E-01	U			1	0.0113	162.19	1	Yes	0.063987
Samarium Chloride (Stable, Nonradioactive)	10361-82-7	No	No	Inorganics					1	0.001	256.72	1	Yes	
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8	No	No	Inorganics					1	0.001	336.38	1	Yes	
Savey	78587-05-0	No	No	Organics			2.50E-02	U	1	0.0828	352.88	0.8	Yes	
Scandium	7440-20-2	No	No	Inorganics					1	0.001	44.96	1	Yes	
Selenious Acid	7783-00-8	No	No	Inorganics			5.00E-03	U	1	0.001	128.97	1	Yes	
Selenite	14124-67-5	No	No	Inorganics					1	0.001	128.97	1	Yes	
Selenium	7782-49-2	No	No	Inorganics			5.00E-03	U	1	0.001	78.96	1	Yes	
Selenium Sulfide	7446-34-6	No	No	Inorganics			5.00E-03	U	1	0.001	111.02	1	Yes	
Selenourea	630-10-4	No	No	Organics					1		123.02	1	No	
Sethoxydim	74051-80-2	No	No	Organics			9.00E-02	U	1	0.0185	327.49	0.9	Yes	
Silica (crystalline, respirable)	7631-86-9	No	No	Inorganics					1	0.001	60.08	1	Yes	
Silicon	7440-21-3	No	No	Inorganics					1	0.001	28.086	1	Yes	
Silver	7440-22-4	No	No	Inorganics			5.00E-03	U	0.04	0.0006	107.87	1	Yes	
Silver Cyanide	506-64-9	No	No	Inorganics			1.00E-01	U	0.04	0.001	133.89	1	Yes	
Simazine	122-34-9	No	No	Organics	1.20E-01	U	5.00E-03	U	1	0.00325	201.66	1	Yes	0.1173095
Sodium	7440-23-5	No	No	Inorganics					1	0.001	22.99	1	Yes	
Sodium Acifluorfen	62476-59-9	No	No	Organics			1.30E-02	U	1	0.0000195	383.65	1	Yes	
Sodium Azide	26628-22-8	No	No	Inorganics			4.00E-03	U	1	0.001	65.01	1	Yes	
Sodium Chlorate	7775-09-9	No	No	Inorganics					1	0.001	106.44	1	Yes	
Sodium Cyanide	143-33-9	No	No	Inorganics			1.00E-03	U	1	0.001	49.01	1	Yes	

Site-specific

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ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Propionaldehyde	123-38-6												
Propionitrile	107-12-0												
Propionitrile, 3-(NN-dimethylamino)	1738-25-6												
Propyl Alcohol, n-	71-23-8												
Propyl benzene	103-65-1		20.110193							4.87E+06	7.69E+04	7.57E+04	7.57E+04 nc
Propylene	115-07-1												
Propylene Glycol	57-55-6		4022.0386							9.73E+08	1.10E+10	8.94E+08	8.94E+08 nc
Propylene Glycol Dinitrate	6423-43-4												
Propylene Glycol Monoethyl Ether	1569-02-4		140.77135							3.41E+07	1.23E+08	2.67E+07	2.67E+07 nc
Propylene Glycol Monomethyl Ether	107-98-2		140.77135							3.41E+07	1.42E+08	2.75E+07	2.75E+07 nc
Propylene Oxide	75-56-9			1.33E+04	3.10E+04	9.31E+03							9.31E+03 ca
Prussian Blue (Ferric Ferrocyanide)	14038-43-8												
Pursuit	81335-77-5		50.275482							1.22E+07	3.07E+06	2.45E+06	2.45E+06 nc
Pydrin	51630-58-1									1.22E+06		1.22E+06	1.22E+06 nc
Pyrazinyl phosphorothioate, O,O-diethyl O-2-	297-97-2												
Pyrene	129-00-0		6.0330579							1.46E+06	6.43E+03	6.40E+03	6.40E+03 nc
Pyridine	110-86-1		0.2011019							4.87E+04	5.14E+04	2.50E+04	2.50E+04 nc
Quinalphos	13593-03-8		0.100551							2.43E+04	4.35E+02	4.28E+02	4.28E+02 nc
Quinoline	91-22-5			1.06E+03	2.31E+02	1.90E+02							1.90E+02 ca
Resmethrin	10453-86-8		6.0330579							1.46E+06	3.22E+03	3.22E+03	3.22E+03 nc
Resorcinol	108-46-3												
Ronnel	299-84-3		10.055096							2.43E+06	2.90E+04	2.87E+04	2.87E+04 nc
Rotenone	83-79-4		0.8044077							1.95E+05	1.09E+04	1.03E+04	1.03E+04 nc
Safrole	94-59-7			1.45E+04	1.57E+03	1.42E+03							1.42E+03 ca
Samarium Chloride (Stable, Nonradioactive)	10361-82-7												
Samarium Nitrate (Stable, Nonradioactive)	10361-83-8												
Savey	78587-05-0		5.0275482							1.22E+06	6.15E+03	6.12E+03	6.12E+03 nc
Scandium	7440-20-2												
Selenious Acid	7783-00-8		1.0055096							2.43E+05	5.03E+05	1.64E+05	1.64E+05 nc
Selenite	14124-67-5												
Selenium	7782-49-2		1.0055096							2.43E+05	5.03E+05	1.64E+05	1.64E+05 nc
Selenium Sulfide	7446-34-6		1.0055096							2.43E+05	5.03E+05	1.64E+05	1.64E+05 nc
Selenourea	630-10-4												
Sethoxydim	74051-80-2		18.099174							4.38E+06	1.04E+05	1.01E+05	1.01E+05 nc
Silica (crystalline, respirable)	7631-86-9												
Silicon	7440-21-3												
Silver	7440-22-4		0.0402204							2.43E+05	3.35E+04	2.95E+04	2.95E+04 nc
Silver Cyanide	506-64-9		0.8044077							4.87E+06	4.02E+05	3.72E+05	3.72E+05 nc
Simazine	122-34-9		1.0055096	2.66E+04	7.76E+03	6.01E+03				2.43E+05	6.65E+04	5.22E+04	6.01E+03 ca**
Sodium	7440-23-5												
Sodium Acifluorfen	62476-59-9		2.6143251							6.33E+05	8.92E+06	5.91E+05	5.91E+05 nc
Sodium Azide	26628-22-8		0.8044077							1.95E+05	4.02E+05	1.31E+05	1.31E+05 nc
Sodium Chlorate	7775-09-9												
Sodium Cyanide	143-33-9		0.2011019							4.87E+04	1.01E+05	3.28E+04	3.28E+04 nc

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater
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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Sodium Dichromate	10588-01-9	Yes	No	Inorganics	5.00E-01	U	2.00E-02	U	0.025	0.001	261.968	1	Yes	0.0007039
Sodium Diethyldithiocarbamate	148-18-5	No	No	Organics	2.70E-01	U	3.00E-02	U	1	0.0000192	171.25	1	Yes	0.0521375
Sodium Fluoride	7681-49-4	No	No	Inorganics			5.00E-02	U	1	0.001	41.99	1	Yes	
Sodium Fluoroacetate	62-74-8	No	No	Organics			2.00E-05	U	1	1.32E-06	100.03	1	No	
Sodium Hydroxide	1310-73-2	No	No	Inorganics					1	0.001	40	1	Yes	
Sodium Metavanadate	13718-26-8	No	No	Inorganics			1.00E-03	U	1	0.001	121.93	1	Yes	
Sodium Perchlorate	7601-89-0	No	No	Inorganics			7.00E-04	U	1	0.001	122.44	1	Yes	
Sodium acid pyrophosphate	7758-16-9	No	No	Inorganics			4.86E+01	U	1	0.001	221.94	1	Yes	
Sodium aluminum phosphate (acidic)	7785-88-8	No	No	Inorganics			4.86E+01	U	1	0.001	144.94267	1	Yes	
Sodium aluminum phosphate (anhydrous)	10279-59-1	No	No	Inorganics			4.86E+01	U	1	0.001			Yes	
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	No	No	Inorganics			4.86E+01	U	1	0.001	949.88	0.8	Yes	
Sodium hexametaphosphate	10124-56-8	No	No	Inorganics			4.86E+01	U	1	0.001	611.17	0.9	Yes	
Sodium polyphosphate	68915-31-1	No	No	Inorganics			4.86E+01	U	1	0.001	359.92	1	Yes	
Sodium trimetaphosphate	7785-84-4	No	No	Inorganics			4.86E+01	U	1	0.001	305.89	1	Yes	
Sodium tripolyphosphate	7758-29-4	No	No	Inorganics			4.86E+01	U	1	0.001	367.86	1	Yes	
Stearyl Acetate	822-23-1	No	Yes	Organics					1	17.3	312.54	0	No	
Stirofos (Tetrachlorovinphos)	961-11-5	No	No	Organics	2.40E-02	U	3.00E-02	U	1	0.00307	365.97	0.9	Yes	0.5865473
Strontium Chromate	7789-06-2	Yes	No	Inorganics	5.00E-01	U	2.00E-02	U	0.025	0.001	203.61	1	Yes	0.0007039
Strontium, Stable	7440-24-6	No	No	Inorganics			6.00E-01	U	1	0.001	87.62	1	Yes	
Strychnine	57-24-9	No	No	Organics			3.00E-04	U	1	0.000399	334.42	1	Yes	
Styrene	100-42-5	No	Yes	Organics			2.00E-01	U	1	0.0372	104.15	1	Yes	
Styrene-Acrylonitrile (SAN) Trimer	NA	No	No	Organics			3.00E-03	U	1	0.0119	210	1	Yes	
Sulfate	14808-79-8	No	No	Inorganics					1	0.001	98.07	1	Yes	
Sulfide	18496-25-8	No	No	Inorganics					1	0.001	34.08	1	Yes	
Sulfolane	126-33-0	No	No	Organics			1.00E-03	U	1	0.000102	120.17	1	Yes	
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	No	No	Organics			8.00E-04	U	1	0.0149	287.16	0.9	Yes	
Sulfur	7704-34-9	No	No	Inorganics					1	0.001	32.065	1	Yes	
Sulfur Dioxide	7446-09-5	No	Yes	Inorganics					1	0.001	64.06	1	Yes	
Sulfur Mustard	505-60-2	No	Yes	Organics					1	0.00448	159.07	1	Yes	
Sulfur Trioxide	7446-11-9	No	Yes	Inorganics					1	0.001	80.063	1	Yes	
Sulfuric Acid	7664-93-9	No	No	Inorganics					1	0.001	98.07	1	Yes	
Systhane	88671-89-0	No	No	Organics			2.50E-02	U	1	0.00337	288.78	0.9	Yes	
TCDD, 2,3,7,8-	1746-01-6	No	Yes	Organics	1.30E+05	U	7.00E-10	U	1	0.808	321.98	0.5	No	
TCDF, 2,3,7,8-	51207-31-9	No	Yes	Organics	1.30E+04	U	7.00E-09	U	1	0.657	305.98	0.6	No	
TCMTB	21564-17-0	No	No	Organics			3.00E-02	U	1	0.0112	238.34	0.9	Yes	
Tebuthiuron	34014-18-1	No	No	Organics			7.00E-02	U	1	0.00127	228.31	1	Yes	
Technetium	7440-26-8	No	No	Inorganics					1	0.001	97.91	1	Yes	
Tellurium	13494-80-9	No	No	Inorganics					1	0.001	127.6	1	Yes	
Temephos	3383-96-8	No	No	Organics			2.00E-02	U	1	0.0345	466.46	0.7	No	
Terbacil	5902-51-2	No	No	Organics			1.30E-02	U	1	0.00172	216.67	1	Yes	
Terbufos	13071-79-9	No	Yes	Organics			2.50E-05	U	1	0.0358	288.42	0.9	Yes	
Terbutryn	886-50-0	No	No	Organics			1.00E-03	U	1	0.0212	241.36	0.9	Yes	
Tetrabutyl Lead	1920-90-7	No	Yes	Organics					1	4.04	435.67	0	No	
Tetrachloroaniline, 2,3,5,6-	3481-20-7	No	No	Organics					1	0.0421	230.91	0.9	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Sodium Dichromate	10588-01-9		0.100551	6.39E+03	3.52E+02	3.34E+02				9.73E+05	5.03E+04	4.78E+04	3.34E+02 ca
Sodium Diethyldithiocarbamate	148-18-5		6.0330579	1.18E+04	7.10E+05	1.16E+04				1.46E+06	8.22E+07	1.43E+06	1.16E+04 ca
Sodium Fluoride	7681-49-4		10.055096							2.43E+06	5.03E+06	1.64E+06	1.64E+06 nc
Sodium Fluoroacetate	62-74-8									9.73E+02		9.73E+02	9.73E+02 nc
Sodium Hydroxide	1310-73-2												
Sodium Metavanadate	13718-26-8		0.2011019							4.87E+04	1.01E+05	3.28E+04	3.28E+04 nc
Sodium Perchlorate	7601-89-0		0.1407713							3.41E+04	7.04E+04	2.30E+04	2.30E+04 nc
Sodium acid pyrophosphate	7758-16-9		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium aluminum phosphate (acidic)	7785-88-8		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium aluminum phosphate (anhydrous)	10279-59-1		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium aluminum phosphate (tetrahydrate)	10305-76-7		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium hexametaphosphate	10124-56-8		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium polyphosphate	68915-31-1		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium trimetaphosphate	7785-84-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Sodium tripolyphosphate	7758-29-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Stearyl Acetate	822-23-1												
Stirofos (Tetrachlorovinphos)	961-11-5		6.0330579	1.33E+05	1.58E+04	1.41E+04				1.46E+06	1.63E+05	1.46E+05	1.41E+04 ca*
Strontium Chromate	7789-06-2		0.100551	6.39E+03	3.52E+02	3.34E+02				9.73E+05	5.03E+04	4.78E+04	3.34E+02 ca
Strontium, Stable	7440-24-6		120.66116							2.92E+07	6.03E+07	1.97E+07	1.97E+07 nc
Strychnine	57-24-9		0.0603306							1.46E+04	1.38E+04	7.10E+03	7.10E+03 nc
Styrene	100-42-5		40.220386							9.73E+06	4.05E+05	3.89E+05	3.89E+05 nc
Styrene-Acrylonitrile (SAN) Trimer	NA		0.6033058							1.46E+05	1.03E+04	9.65E+03	9.65E+03 nc
Sulfate	14808-79-8												
Sulfide	18496-25-8												
Sulfolane	126-33-0		0.2011019							4.87E+04	6.59E+05	4.53E+04	4.53E+04 nc
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9		0.1608815							3.89E+04	1.49E+03	1.43E+03	1.43E+03 nc
Sulfur	7704-34-9												
Sulfur Dioxide	7446-09-5												
Sulfur Mustard	505-60-2												
Sulfur Trioxide	7446-11-9												
Sulfuric Acid	7664-93-9												
Systhane	88671-89-0		5.0275482							1.22E+06	2.03E+05	1.74E+05	1.74E+05 nc
TCDD, 2,3,7,8-	1746-01-6			2.46E-02		2.46E-02				3.41E-02		3.41E-02	2.46E-02 ca**
TCDF, 2,3,7,8-	51207-31-9			2.46E-01		2.46E-01				3.41E-01		3.41E-01	2.46E-01 ca**
TCMTB	21564-17-0		6.0330579							1.46E+06	1.02E+05	9.50E+04	9.50E+04 nc
Tebuthiuron	34014-18-1		14.077135							3.41E+06	2.01E+06	1.26E+06	1.26E+06 nc
Technetium	7440-26-8												
Tellurium	13494-80-9												
Temephos	3383-96-8									9.73E+05		9.73E+05	9.73E+05 nc
Terbacil	5902-51-2		2.6143251							6.33E+05	2.97E+05	2.02E+05	2.02E+05 nc
Terbufos	13071-79-9		0.0050275							1.22E+03	1.92E+01	1.89E+01	1.89E+01 nc
Terbutryn	886-50-0		0.2011019							4.87E+04	1.75E+03	1.69E+03	1.69E+03 nc
Tetrabutyl Lead	1920-90-7												
Tetrachloroaniline, 2,3,5,6-	3481-20-7												

Site-specific

Recreator Screening Levels (RSL) for Surface Water - Modified for Utility Worker Exposure to Groundwater
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Tetrachlorobenzene, 1,2,3,4-	634-66-2	No	Yes	Organics					1	0.11	215.89	1	Yes	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	No	Yes	Organics			3.00E-04	U	1	0.117	215.89	1	Yes	
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	No	No	Organics	1.30E+01	U	7.00E-06	U	1	0.917	291.99	0.6	No	
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	No	Yes	Organics	3.90E+01	U	2.33E-06	U	1	0.584	291.99	0.7	No	
Tetrachloroethane, 1,1,1,2-	630-20-6	No	Yes	Organics	2.60E-02	U	3.00E-02	U	1	0.0159	167.85	1	Yes	0.5414283
Tetrachloroethane, 1,1,2,2-	79-34-5	No	Yes	Organics	2.00E-01	U	2.00E-02	U	1	0.00694	167.85	1	Yes	0.0703857
Tetrachloroethylene	127-18-4	No	Yes	Organics	2.10E-03	U	6.00E-03	U	1	0.0334	165.83	1	Yes	6.7033976
Tetrachlorophenol, 2,3,4,5-	4901-51-3	No	No	Organics					1	0.0491	231.89	0.9	Yes	
Tetrachlorophenol, 2,3,4,6-	58-90-2	No	No	Organics			3.00E-02	U	1	0.071	231.89	0.9	Yes	
Tetrachlorophenols (total)	25167-83-3	No	No	Organics					1	0.071	231.89	0.9	Yes	
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0	No	No	Organics					1	0.000808	303.91	1	Yes	
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	No	Yes	Organics	2.00E+01	U			1	0.0836	229.92	0.9	Yes	0.0007039
Tetraethyl Dithiopyrophosphate	3689-24-5	No	No	Organics			5.00E-04	U	1	0.0109	322.31	0.9	Yes	
Tetraethyl Lead	78-00-2	No	Yes	Organics			1.00E-07	U	1	0.0137	323.45	0.9	Yes	
Tetrafluoroethane, 1,1,1,2-	811-97-2	No	Yes	Organics					1	0.00548	102.03	1	Yes	
Tetrahydrofuran	109-99-9	No	Yes	Organics			9.00E-01	U	1	0.00125	72.11	1	Yes	
Tetrahydrothiophene	110-01-0	No	Yes	Organics					1	0.00775	88.17	1	Yes	
Tetramethyl Lead	75-74-1	No	Yes	Organics					1	0.00466	267.34	1	Yes	
Tetramethylcyclohexane	30501-43-0	No	Yes	Organics					1		140.2658		No	
Tetrapotassium phosphate	7320-34-5	No	No	Inorganics			4.86E+01	U	1	0.001	330.34	1	Yes	
Tetrapropyl Lead	3440-75-3	No	Yes	Organics					1	0.412	379.56	0.4	No	
Tetrasodium pyrophosphate	7722-88-5	No	No	Inorganics			4.86E+01	U	1	0.001	265.9	1	Yes	
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	No	No	Organics			2.00E-03	U	1	0.000474	287.15	1	Yes	
Thallic Oxide	1314-32-5	No	No	Inorganics					1	0.001	456.765	0.9	Yes	
Thallium (I) Nitrate	10102-45-1	No	No	Inorganics			7.00E-06	U	1	0.001	266.39	1	Yes	
Thallium (Soluble Salts)	7440-28-0	No	No	Inorganics			1.00E-05	U	1	0.001	204.38	1	Yes	
Thallium Acetate	563-68-8	No	No	Organics			6.00E-06	U	1		263.427	1	Yes	
Thallium Carbonate	6533-73-9	No	No	Organics			2.00E-05	U	1	0.001	468.78	0.9	Yes	
Thallium Chloride	7791-12-0	No	No	Inorganics			6.00E-06	U	1	0.001	239.84	1	Yes	
Thallium Selenite	12039-52-0	No	No	Inorganics					1	0.001	283.34	1	Yes	
Thallium Sulfate	7446-18-6	No	No	Inorganics			2.00E-05	U	1	0.001	504.82	0.9	Yes	
Thiobencarb	28249-77-6	No	No	Organics			1.00E-02	U	1	0.0102	257.78	0.9	Yes	
Thiocyanates	NA	No	No	Inorganics			2.00E-04	U	1	0.001			Yes	
Thiocyanic Acid	463-56-9	No	Yes	Inorganics			2.00E-04	U	1	0.001	59.09	1	Yes	
Thiodiglycol	111-48-8	No	No	Organics			7.00E-02	U	1	0.000123	122.18	1	Yes	
Thiofanox	39196-18-4	No	No	Organics			3.00E-04	U	1	0.00627	218.32	1	Yes	
Thiophanate, Methyl	23564-05-8	No	No	Organics			8.00E-02	U	1	0.00016	342.39	1	Yes	
Thiophene	110-02-1	No	Yes	Organics					1	0.00843	84.14	1	Yes	
Thiram	137-26-8	No	No	Organics			5.00E-03	U	1	0.00099	240.42	1	Yes	
Thorium	NA	No	No	Inorganics					1	0.001	232.038	1	Yes	
Thymol	89-83-8	No	No	Organics					1	0.0373	150.22	1	Yes	
Tin	7440-31-5	No	No	Inorganics			6.00E-01	U	1	0.001	118.71	1	Yes	
Titanium	7440-32-6	No	No	Inorganics					1	0.001	47.87	1	Yes	
Titanium Tetrachloride	7550-45-0	No	Yes	Inorganics					1	0.001	189.679	1	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Tetrachlorobenzene, 1,2,3,4-	634-66-2												
Tetrachlorobenzene, 1,2,4,5-	95-94-3		0.0603306							1.46E+04	1.01E+02	1.00E+02	1.00E+02 nc
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3			2.46E+02		2.46E+02				3.41E+02		3.41E+02	2.46E+02 ca**
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4			8.19E+01		8.19E+01				1.13E+02		1.13E+02	8.19E+01 ca**
Tetrachloroethane, 1,1,1,2-	630-20-6		6.0330579	1.23E+05	9.10E+03	8.48E+03				1.46E+06	1.01E+05	9.48E+04	8.48E+03 ca*
Tetrachloroethane, 1,1,2,2-	79-34-5		4.0220386	1.60E+04	2.71E+03	2.32E+03				9.73E+05	1.55E+05	1.34E+05	2.32E+03 ca*
Tetrachloroethylene	127-18-4		1.2066116	1.52E+06	5.44E+04	5.25E+04				2.92E+05	9.78E+03	9.47E+03	9.47E+03 nc
Tetrachlorophenol, 2,3,4,5-	4901-51-3												
Tetrachlorophenol, 2,3,4,6-	58-90-2		6.0330579							1.46E+06	1.67E+04	1.65E+04	1.65E+04 nc
Tetrachlorophenols (total)	25167-83-3												
Tetrachloroterephthalate, 2,3,5,6-	2136-79-0												
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1			1.60E+02	1.68E+00	1.66E+00							1.66E+00 ca
Tetraethyl Dithiopyrophosphate	3689-24-5		0.100551							2.43E+04	1.01E+03	9.72E+02	9.72E+02 nc
Tetraethyl Lead	78-00-2		0.0000201							4.87E+00	1.60E-01	1.55E-01	1.55E-01 nc
Tetrafluoroethane, 1,1,1,2-	811-97-2												
Tetrahydrofuran	109-99-9		180.99174							4.38E+07	5.73E+07	2.48E+07	2.48E+07 nc
Tetrahydrothiophene	110-01-0												
Tetramethyl Lead	75-74-1												
Tetramethylcyclohexane	30501-43-0												
Tetrapotassium phosphate	7320-34-5		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Tetrapropyl Lead	3440-75-3												
Tetrasodium pyrophosphate	7722-88-5		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Tetryl (Trinitrophenylmethylnitramine)	479-45-8		0.4022039							9.73E+04	1.05E+05	5.05E+04	5.05E+04 nc
Thallic Oxide	1314-32-5												
Thallium (I) Nitrate	10102-45-1		0.0014077							3.41E+02	7.04E+02	2.30E+02	2.30E+02 nc
Thallium (Soluble Salts)	7440-28-0		0.002011							4.87E+02	1.01E+03	3.28E+02	3.28E+02 nc
Thallium Acetate	563-68-8		0.0012066							2.92E+02		2.92E+02	2.92E+02 nc
Thallium Carbonate	6533-73-9		0.004022							9.73E+02	1.72E+02	1.46E+02	1.46E+02 nc
Thallium Chloride	7791-12-0		0.0012066							2.92E+02	6.03E+02	1.97E+02	1.97E+02 nc
Thallium Selenite	12039-52-0												
Thallium Sulfate	7446-18-6		0.004022							9.73E+02	2.01E+03	6.56E+02	6.56E+02 nc
Thiobencarb	28249-77-6		2.0110193							4.87E+05	3.28E+04	3.07E+04	3.07E+04 nc
Thiocyanates	NA		0.0402204							9.73E+03	2.01E+04	6.56E+03	6.56E+03 nc
Thiocyanic Acid	463-56-9		0.0402204							9.73E+03	2.01E+04	6.56E+03	6.56E+03 nc
Thiodiglycol	111-48-8		14.077135							3.41E+06	3.79E+07	3.13E+06	3.13E+06 nc
Thiofanox	39196-18-4		0.0603306							1.46E+04	1.86E+03	1.65E+03	1.65E+03 nc
Thiophanate, Methyl	23564-05-8		16.088154							3.89E+06	8.72E+06	2.69E+06	2.69E+06 nc
Thiophene	110-02-1												
Thiram	137-26-8		1.0055096							2.43E+05	1.70E+05	1.00E+05	1.00E+05 nc
Thorium	NA												
Thymol	89-83-8												
Tin	7440-31-5		120.66116							2.92E+07	6.03E+07	1.97E+07	1.97E+07 nc
Titanium	7440-32-6												
Titanium Tetrachloride	7550-45-0												

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Toluene	108-88-3	No	Yes	Organics			8.00E-02	U	1	0.0311	92.14	1	Yes	
Toluene-2,5-diamine	95-70-5	No	No	Organics	1.80E-01	U	2.00E-04	U	1	0.00041	122.17	1	Yes	0.0782063
Toluenediamine, 2,3-	2687-25-4	No	No	Organics					1	0.000952	122.17	1	Yes	
Toluenediamine, 3,4-	496-72-0	No	No	Organics					1	0.000887	122.17	1	Yes	
Toluidine, p-	106-49-0	No	No	Organics	3.00E-02	U	4.00E-03	U	1	0.00329	107.16	1	Yes	0.4692378
Total Petroleum Hydrocarbons (Aliphatic High)	NA	No	Yes	Organics			3.00E+00	U	1	1.96	170.34	1	No	
Total Petroleum Hydrocarbons (Aliphatic Low)	NA	No	Yes	Organics					1	0.201	86.18	1	Yes	
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA	No	Yes	Organics			1.00E-02	U	1	1.7	128.26	1	No	
Total Petroleum Hydrocarbons (Aromatic High)	NA	No	No	Organics			4.00E-02	U	1	0.308	202.26	1	No	
Total Petroleum Hydrocarbons (Aromatic Low)	NA	No	Yes	Organics			4.00E-03	U	1	0.0149	78.11	1	Yes	
Total Petroleum Hydrocarbons (Aromatic Medium)	NA	No	Yes	Organics			4.00E-03	U	1	0.0692	135.19	1	Yes	
Toxaphene	8001-35-2	No	No	Organics	1.10E+00	U			1	0.0518	413.82	0.8	Yes	0.0127974
Tralomethrin	66841-25-6	No	No	Organics			7.50E-03	U	1	0.0305	665.02	0.5	No	
Tri-n-butyltin	688-73-3	No	Yes	Organics			3.00E-04	U	1	0.0193	291.07	0.9	Yes	
Triacetin	102-76-1	No	No	Organics			8.00E+01	U	1	0.000137	218.21	1	Yes	
Triallate	2303-17-5	No	Yes	Organics			1.30E-02	U	1	0.0349	304.66	0.9	Yes	
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	No	No	Inorganics			4.86E+01	U	1	0.001	887.89584	0.8	Yes	
Triasulfuron	82097-50-5	No	No	Organics			1.00E-02	U	1	0.0000469	401.83	1	Yes	
Triaziquone	68-76-8	No	No	Organics					1	0.0000101	231.26	1	Yes	
Tribromobenzene, 1,2,4-	615-54-3	No	Yes	Organics			5.00E-03	U	1	0.0337	314.8	0.9	Yes	
Tribromochloromethane	594-15-0	No	Yes	Organics					1	0.00243	287.18	1	Yes	
Tribromodiphenyl Ether	49690-94-0	No	Yes	Organics					1	0.0659	406.9	0.7	Yes	
Tribromophenol, 2,4,6-	118-79-6	No	No	Organics					1	0.0121	330.8	0.9	Yes	
Tributyl Phosphate	126-73-8	No	No	Organics	9.00E-03	U	1.00E-02	U	1	0.0228	266.32	0.9	Yes	1.5641261
Tributyltin	56573-85-4	No	Yes	Organics					1	0.034	325.51	0.8	Yes	
Tributyltin Compounds	NA	No	No	Organics			3.00E-04	U	1				No	
Tributyltin Oxide	56-35-9	No	No	Organics			3.00E-04	U	1	0.000252	596.12	1	Yes	
Tributyltin chloride	1461-22-9	No	Yes	Organics					1	0.034	325.51	0.8	Yes	
Tributyltin fluoride	1983-10-4	No	Yes	Organics					1	0.0238	309.06	0.9	Yes	
Tributyltin linoleate	24124-25-2	No	Yes	Organics					1	12.2	569.51	0	No	
Tributyltin methacrylate	2155-70-6	No	Yes	Organics					1	0.00693	375.14	0.9	Yes	
Tributyltin naphthenate	85409-17-2	No	No	Organics					1				No	
Tricaine Methanesulfonate	886-86-2	No	No	Organics					1	0.0029	165.19	1	Yes	
Tricalcium phosphate	7758-87-4	No	No	Inorganics			4.86E+01	U	1	0.001	310.18	1	Yes	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	No	Yes	Organics			3.00E+01	U	1	0.0175	187.38	1	Yes	
Trichloro-2'-hydroxydiphenylether	3380-34-5	No	No	Organics					1	0.0541	289.55	0.9	Yes	
Trichloroacetic Acid	76-03-9	No	No	Organics	7.00E-02	U	2.00E-02	U	1	0.00145	163.39	1	Yes	0.2011019
Trichloroaniline HCl, 2,4,6-	33663-50-2	No	No	Organics	2.90E-02	U			1	0.0000276	232.93	1	Yes	0.4854184
Trichloroaniline, 2,4,5-	636-30-6	No	No	Organics					1	0.0243	196.46	1	Yes	
Trichloroaniline, 2,4,6-	634-93-5	No	No	Organics	7.00E-03	U	3.00E-05	U	1	0.027	196.46	1	Yes	2.0110193
Trichlorobenzene	12002-48-1	No	Yes	Organics					1	0.0915	181.45	1	Yes	

Site-specific

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Toluene	108-88-3		16.088154							3.89E+06	2.02E+05	1.92E+05	1.92E+05 nc
Toluene-2,5-diamine	95-70-5		0.0402204	1.77E+04	6.33E+04	1.39E+04				9.73E+03	3.25E+04	7.49E+03	7.49E+03 nc
Toluenediamine, 2,3-	2687-25-4												
Toluenediamine, 3,4-	496-72-0												
Toluidine, p-	106-49-0		0.8044077	1.06E+05	5.05E+04	3.43E+04				1.95E+05	8.66E+04	5.99E+04	3.43E+04 ca**
Total Petroleum Hydrocarbons (Aliphatic High)	NA									1.46E+08		1.46E+08	1.46E+08 nc
Total Petroleum Hydrocarbons (Aliphatic Low)	NA												
Total Petroleum Hydrocarbons (Aliphatic Medium)	NA									4.87E+05		4.87E+05	4.87E+05 nc
Total Petroleum Hydrocarbons (Aromatic High)	NA									1.95E+06		1.95E+06	1.95E+06 nc
Total Petroleum Hydrocarbons (Aromatic Low)	NA		0.8044077							1.95E+05	2.15E+04	1.94E+04	1.94E+04 nc
Total Petroleum Hydrocarbons (Aromatic Medium)	NA		0.8044077							1.95E+05	3.77E+03	3.70E+03	3.70E+03 nc
Toxaphene	8001-35-2			2.90E+03	1.69E+01	1.68E+01							1.68E+01 ca
Tralomethrin	66841-25-6									3.65E+05		3.65E+05	3.65E+05 nc
Tri-n-butyltin	688-73-3		0.0603306							1.46E+04	4.20E+02	4.08E+02	4.08E+02 nc
Triacetin	102-76-1		16088.154							3.89E+09	2.27E+10	3.32E+09	3.32E+09 nc
Triallate	2303-17-5		2.6143251							6.33E+05	9.21E+03	9.08E+03	9.08E+03 nc
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Triasulfuron	82097-50-5		2.0110193							4.87E+05	2.54E+06	4.08E+05	4.08E+05 nc
Triaziquone	68-76-8												
Tribromobenzene, 1,2,4-	615-54-3		1.0055096							2.43E+05	3.44E+03	3.39E+03	3.39E+03 nc
Tribromochloromethane	594-15-0												
Tribromodiphenyl Ether	49690-94-0												
Tribromophenol, 2,4,6-	118-79-6												
Tributyl Phosphate	126-73-8		2.0110193	3.55E+05	1.08E+04	1.05E+04				4.87E+05	1.39E+04	1.35E+04	1.05E+04 ca**
Tributyltin	56573-85-4												
Tributyltin Compounds	NA									1.46E+04		1.46E+04	1.46E+04 nc
Tributyltin Oxide	56-35-9		0.0603306							1.46E+04	4.05E+03	3.17E+03	3.17E+03 nc
Tributyltin chloride	1461-22-9												
Tributyltin fluoride	1983-10-4												
Tributyltin linoleate	24124-25-2												
Tributyltin methacrylate	2155-70-6												
Tributyltin naphthenate	85409-17-2												
Tricaine Methanesulfonate	886-86-2												
Tricalcium phosphate	7758-87-4		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1		6033.0579							1.46E+09	8.13E+07	7.70E+07	7.70E+07 nc
Trichloro-2'-hydroxydiphenylether	3380-34-5												
Trichloroacetic Acid	76-03-9		4.0220386	4.56E+04	3.82E+04	2.08E+04				9.73E+05	7.63E+05	4.28E+05	2.08E+04 ca*
Trichloroaniline HCl, 2,4,6-	33663-50-2			1.10E+05	3.09E+06	1.06E+05							1.06E+05 ca
Trichloroaniline, 2,4,5-	636-30-6												
Trichloroaniline, 2,4,6-	634-93-5		0.0060331	4.56E+05	1.66E+04	1.60E+04				1.46E+03	4.97E+01	4.80E+01	4.80E+01 nc
Trichlorobenzene	12002-48-1												

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF (mg/kg-day)$^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Trichlorobenzene, 1,2,3-	87-61-6	No	Yes	Organics			8.00E-04	U	1	0.0738	181.45	1	Yes	
Trichlorobenzene, 1,2,4-	120-82-1	No	Yes	Organics	2.90E-02	U	1.00E-02	U	1	0.0705	181.45	1	Yes	0.4854184
Trichloroethane, 1,1,1-	71-55-6	No	Yes	Organics			2.00E+00	U	1	0.0126	133.41	1	Yes	
Trichloroethane, 1,1,2-	79-00-5	No	Yes	Organics	5.70E-02	U	4.00E-03	U	1	0.00504	133.41	1	Yes	0.2469673
Trichloroethylene	79-01-6	Yes	Yes	Organics	4.60E-02	U	5.00E-04	U	1	0.0116	131.39	1	Yes	0.3041995
Trichlorofluoromethane	75-69-4	No	Yes	Organics			3.00E-01	U	1	0.0127	137.37	1	Yes	
Trichlorophenol, 2,4,5-	95-95-4	No	No	Organics			1.00E-01	U	1	0.0362	197.45	1	Yes	
Trichlorophenol, 2,4,6-	88-06-2	No	No	Organics	1.10E-02	U	1.00E-03	U	1	0.0346	197.45	1	Yes	1.2797395
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	No	No	Organics			1.00E-02	U	1	0.00914	255.49	0.9	Yes	
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA	No	No	Organics					1				No	
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	No	No	Organics			8.00E-03	U	1	0.0161	269.51	0.9	Yes	
Trichloropropane, 1,1,2-	598-77-6	No	Yes	Organics			5.00E-03	U	1	0.0096	147.43	1	Yes	
Trichloropropane, 1,2,3-	96-18-4	Yes	Yes	Organics	3.00E+01	U	4.00E-03	U	1	0.00752	147.43	1	Yes	0.0004692
Trichloropropene, 1,2,3-	96-19-5	No	Yes	Organics			3.00E-03	U	1	0.0169	145.42	1	Yes	
Trichlorotoluene, 2,3,6-	2077-46-5	No	Yes	Organics					1	0.118	195.48	1	Yes	
Trichlorotoluene, alpha 2,6-	2014-83-7	No	Yes	Organics					1	0.0648	195.48	1	Yes	
Triclorophenols (total)	NA	No	No	Organics					1				No	
Tricresyl Phosphate (TCP)	1330-78-5	No	No	Organics			2.00E-02	U	1	0.0334	368.37	0.8	Yes	
Tridiphane	58138-08-2	No	No	Organics			3.00E-03	U	1	0.0689	320.43	0.8	Yes	
Tridymite	15468-32-3	Yes	No	Inorganics					1	0.001			Yes	
Triethyl Lead	5224-23-7	No	Yes	Organics					1	0.0125	294.39	0.9	Yes	
Triethyl phosphorothioate [O,O,O-]	126-68-1	No	Yes	Organics					1	0.00684	198.22	1	Yes	
Triethylamine	121-44-8	No	Yes	Organics					1	0.0039	101.19	1	Yes	
Triethylene Glycol	112-27-6	No	No	Organics			2.00E+00	U	1	0.0000155	150.18	1	Yes	
Trifluralin	1582-09-8	No	Yes	Organics	7.70E-03	U	7.50E-03	U	1	0.0728	335.29	0.8	Yes	1.8281993
Trimagnesium phosphate	7757-87-1	No	No	Inorganics			4.86E+01	U	1	0.001	262.86	1	Yes	
Trimethyl Lead	7442-13-9	No	Yes	Organics					1	0.00226	252.31	1	Yes	
Trimethyl Phosphate	512-56-1	No	No	Organics	2.00E-02	U	1.00E-02	U	1	0.0000948	140.08	1	Yes	0.7038567
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1	No	Yes	Organics					1	1.22	210.32	1	No	
Trimethylbenzene, 1,2,3-	526-73-8	No	Yes	Organics					1	0.0897	120.2	1	Yes	
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes	Organics					1	0.0857	120.2	1	Yes	
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	Organics			1.00E-02	U	1	0.0621	120.2	1	Yes	
Trimethylethyl Lead	1762-26-1	No	Yes	Organics					1	0.0157	281.37	0.9	Yes	
Trimethylpentane, 2,2,4-	540-84-1	No	Yes	Organics					1	0.186	114.23	1	Yes	
Trinitrobenzene, 1,3,5-	99-35-4	No	No	Organics			3.00E-02	U	1	0.000607	213.11	1	Yes	
Trinitrotoluene, 2,4,6-	118-96-7	No	No	Organics	3.00E-02	U	5.00E-04	U	1	0.000963	227.13	1	Yes	0.4692378
Triphenylphosphine Oxide	791-28-6	No	No	Organics			2.00E-02	U	1	0.00327	278.29	1	Yes	
Triphenyltin	668-34-8	No	Yes	Organics					1	0.00356	351.04	0.9	Yes	
Tripotassium phosphate	7778-53-2	No	No	Inorganics			4.86E+01	U	1	0.001	212.27	1	Yes	
Tripropyl Lead	6618-03-7	No	Yes	Organics					1	0.0693	336.47	0.8	Yes	
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	No	No	Organics			2.00E-02	U	1	0.00159	430.91	0.9	Yes	
Tris(1-chloro-2-propyl)phosphate	13674-84-5	No	No	Organics			1.00E-02	U	1	0.0012	327.57	1	Yes	
Tris(2,3-dibromopropyl)phosphate	126-72-7	No	Yes	Organics	2.30E+00	U			1	0.000135	697.62	1	No	

Site-specific

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Trichlorobenzene, 1,2,3-	87-61-6		0.1608815							3.89E+04	5.34E+02	5.27E+02	5.27E+02 nc
Trichlorobenzene, 1,2,4-	120-82-1		2.0110193	1.10E+05	1.69E+03	1.66E+03				4.87E+05	6.99E+03	6.89E+03	1.66E+03 ca**
Trichloroethane, 1,1,1-	71-55-6		402.20386							9.73E+07	1.02E+07	9.22E+06	9.22E+06 nc
Trichloroethane, 1,1,2-	79-00-5		0.8044077	5.60E+04	1.55E+04	1.22E+04				1.95E+05	5.06E+04	4.01E+04	1.22E+04 ca**
Trichloroethylene	79-01-6		0.100551	6.90E+04	8.44E+03	7.52E+03				2.43E+04	2.79E+03	2.50E+03	2.50E+03 nc
Trichlorofluoromethane	75-69-4		60.330579							1.46E+07	1.49E+06	1.35E+06	1.35E+06 nc
Trichlorophenol, 2,4,5-	95-95-4		20.110193							4.87E+06	1.23E+05	1.20E+05	1.20E+05 nc
Trichlorophenol, 2,4,6-	88-06-2		0.2011019	2.90E+05	8.17E+03	7.95E+03				4.87E+04	1.28E+03	1.25E+03	1.25E+03 nc
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5		2.0110193							4.87E+05	3.71E+04	3.45E+04	3.45E+04 nc
Trichlorophenoxyacetic acid, 2,4,5- Amine Salts, PARENT (2,4,5-T)	NA												
Trichlorophenoxypropionic acid, -2,4,5	93-72-1		1.6088154							3.89E+05	1.54E+04	1.48E+04	1.48E+04 nc
Trichloropropane, 1,1,2-	598-77-6		1.0055096							2.43E+05	3.09E+04	2.75E+04	2.75E+04 nc
Trichloropropane, 1,2,3-	96-18-4		0.8044077	1.06E+02	1.84E+01	1.57E+01				1.95E+05	3.16E+04	2.72E+04	1.57E+01 ca
Trichloropropene, 1,2,3-	96-19-5		0.6033058							1.46E+05	1.07E+04	9.98E+03	9.98E+03 nc
Trichlorotoluene, 2,3,6-	2077-46-5												
Trichlorotoluene, alpha 2,6-	2014-83-7												
Triclorophenols (total)	NA												
Tricresyl Phosphate (TCP)	1330-78-5		4.0220386							9.73E+05	1.10E+04	1.09E+04	1.09E+04 nc
Tridiphane	58138-08-2		0.6033058							1.46E+05	1.09E+03	1.09E+03	1.09E+03 nc
Tridymite	15468-32-3												
Triethyl Lead	5224-23-7												
Triethyl phosphorothioate [O,O,O-]	126-68-1												
Triethylamine	121-44-8												
Triethylene Glycol	112-27-6		402.20386							9.73E+07	7.50E+09	9.61E+07	9.61E+07 nc
Trifluralin	1582-09-8		1.5082645	4.15E+05	2.85E+03	2.83E+03				3.65E+05	2.35E+03	2.34E+03	2.34E+03 nc
Trimagnesium phosphate	7757-87-1		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Trimethyl Lead	7442-13-9												
Trimethyl Phosphate	512-56-1		2.0110193	1.60E+05	2.26E+06	1.49E+05				4.87E+05	6.47E+06	4.53E+05	1.49E+05 ca**
Trimethyl-4-Propenylnaphthalene, 1,2,3-	26137-53-1												
Trimethylbenzene, 1,2,3-	526-73-8												
Trimethylbenzene, 1,2,4-	95-63-6												
Trimethylbenzene, 1,3,5-	108-67-8		2.0110193							4.87E+05	1.15E+04	1.12E+04	1.12E+04 nc
Trimethylethyl Lead	1762-26-1												
Trimethylpentane, 2,2,4-	540-84-1												
Trinitrobenzene, 1,3,5-	99-35-4		6.0330579							1.46E+06	1.98E+06	8.41E+05	8.41E+05 nc
Trinitrotoluene, 2,4,6-	118-96-7		0.100551	1.06E+05	8.89E+04	4.84E+04				2.43E+04	1.90E+04	1.07E+04	1.07E+04 nc
Triphenylphosphine Oxide	791-28-6		4.0220386							9.73E+05	1.61E+05	1.38E+05	1.38E+05 nc
Triphenyltin	668-34-8												
Tripotassium phosphate	7778-53-2		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Tripropyl Lead	6618-03-7												
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8		4.0220386							9.73E+05	1.38E+05	1.21E+05	1.21E+05 nc
Tris(1-chloro-2-propyl)phosphate	13674-84-5		2.0110193							4.87E+05	1.60E+05	1.20E+05	1.20E+05 nc
Tris(2,3-dibromopropyl)phosphate	126-72-7			1.39E+03		1.39E+03							1.39E+03 ca

Site-specific

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Chemical	CAS Number	Mutagen?	VOC?	Chemical Type	Ingestion SF $(mg/kg\text{-}day)^{-1}$	SFO Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	RAGSe GIABS (unitless)	K_p (cm/hr)	MW	fa	In EPD?	DAeventc
Tris(2-chloroethyl)phosphate	115-96-8	No	No	Organics	2.00E-02	U	7.00E-03	U	1	0.000355	285.49	1	Yes	0.7038567
Tris(2-ethylhexyl)phosphate	78-42-2	No	No	Organics	3.20E-03	U	1.00E-01	U	1	11.6	434.65	0	No	
Trisbutoxyethyl Phosphate	78-51-3	No	No	Organics					1	0.00282	398.48	0.9	Yes	
Trisodium phosphate	7601-54-9	No	No	Inorganics			4.86E+01	U	1	0.001	163.94	1	Yes	
Trithion	786-19-6	No	No	Organics					1	0.065	342.86	0.8	Yes	
Tungsten	7440-33-7	No	No	Inorganics					1	0.001	183.84	1	Yes	
Uranium (Soluble Salts)	NA	No	No	Inorganics			3.00E-03	U	1	0.001	238.03	1	Yes	
Urea	57-13-6	No	No	Organics					1	0.0000286	60.06	1	No	
Urethane	51-79-6	Yes	No	Organics	1.00E+00	U			1	0.000394	89.09	1	Yes	0.0140771
Vanadium Pentoxide	1314-62-1	No	No	Inorganics			9.00E-03	U	0.026	0.001	181.88	1	Yes	
Vanadium Sulfate	36907-42-3	No	No	Inorganics					0.026	0.001	273.111	1	Yes	
Vanadium and Compounds	7440-62-2	No	No	Inorganics			5.04E-03	U	0.026	0.001	50.94	1	Yes	
Vanadyl Sulfate	27774-13-6	No	No	Inorganics					1	0.001	164.01	1	Yes	
Vernolate	1929-77-7	No	Yes	Organics			1.00E-03	U	1	0.0403	203.35	1	Yes	
Vinclozolin	50471-44-8	No	No	Organics			2.50E-02	U	1	0.00446	286.12	0.9	Yes	
Vinyl Acetate	108-05-4	No	Yes	Organics			1.00E+00	U	1	0.00157	86.09	1	Yes	
Vinyl Bromide	593-60-2	No	Yes	Organics					1	0.00435	106.95	1	Yes	
Vinyl Chloride	75-01-4	Yes	Yes	Organics	7.20E-01	U	3.00E-03	U	1	0.00838	62.5	1	Yes	0.0195516
Warfarin	81-81-2	No	No	Organics			3.00E-04	U	1	0.00182	308.34	1	Yes	
Xylene, P-	106-42-3	No	Yes	Organics			2.00E-01	U	1	0.0493	106.17	1	Yes	
Xylene, m-	108-38-3	No	Yes	Organics			2.00E-01	U	1	0.0532	106.17	1	Yes	
Xylene, o-	95-47-6	No	Yes	Organics			2.00E-01	U	1	0.0471	106.17	1	Yes	
Xylenes	1330-20-7	No	Yes	Organics			2.00E-01	U	1	0.05	106.17	1	Yes	
Ytterbium	7440-64-4	No	No	Inorganics					1	0.001	173.04	1	Yes	
Yttrium	7440-65-5	No	No	Inorganics					1	0.001	88.91	1	Yes	
Zinc Cyanide	557-21-1	No	No	Inorganics			5.00E-02	U	1	0.0006	117.43	1	Yes	
Zinc Phosphide	1314-84-7	No	No	Inorganics			3.00E-04	U	1	0.0006	258.175	1	Yes	
Zinc and Compounds	7440-66-6	No	No	Inorganics			3.00E-01	U	1	0.0006	65.38	1	Yes	
Zineb	12122-67-7	No	No	Organics			5.00E-02	U	1	0.000325	275.74	1	Yes	
Zirconium	7440-67-7	No	No	Inorganics			8.00E-05	U	1	0.001	91.22	1	Yes	

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Chemical	CAS Number	DAeventnc	DAeventna	Ingestion SL TR=1.0E-6 (µg/L)	Dermal SL TR=1.0E-6 (µg/L)	Carcinogenic SL TR=1.0E-6 (µg/L)	Ingestion SL (Child) HQ=1 (µg/L)	Dermal SL (Child) HQ=1 (µg/L)	Noncarcinogenic SL (Child) HQ=1 µ(g/L)	Ingestion SL (Adult) HQ=1 (µg/L)	Dermal SL (Adult) HQ=1 (µg/L)	Noncarcinogenic SL (Adult) HQ=1 (µg/L)	Screening Level (µg/L)
Tris(2-chloroethyl)phosphate	115-96-8		1.4077135	1.60E+05	2.48E+05	9.72E+04				3.41E+05	4.97E+05	2.02E+05	9.72E+04 ca**
Tris(2-ethylhexyl)phosphate	78-42-2			9.98E+05		9.98E+05				4.87E+06		4.87E+06	9.98E+05 ca**
Trisbutoxyethyl Phosphate	78-51-3												
Trisodium phosphate	7601-54-9		9773.5537							2.37E+09	4.89E+09	1.59E+09	1.59E+09 nc
Trithion	786-19-6												
Tungsten	7440-33-7												
Uranium (Soluble Salts)	NA		0.6033058							1.46E+05	3.02E+05	9.84E+04	9.84E+04 nc
Urea	57-13-6												
Urethane	51-79-6			3.19E+03	1.34E+04	2.58E+03							2.58E+03 ca
Vanadium Pentoxide	1314-62-1		0.0470579							4.38E+05	2.35E+04	2.23E+04	2.23E+04 nc
Vanadium Sulfate	36907-42-3												
Vanadium and Compounds	7440-62-2		0.0263524							2.45E+05	1.32E+04	1.25E+04	1.25E+04 nc
Vanadyl Sulfate	27774-13-6												
Vernolate	1929-77-7		0.2011019							4.87E+04	1.06E+03	1.04E+03	1.04E+03 nc
Vinclozolin	50471-44-8		5.0275482							1.22E+06	1.56E+05	1.38E+05	1.38E+05 nc
Vinyl Acetate	108-05-4		201.10193							4.87E+07	4.87E+07	2.43E+07	2.43E+07 nc
Vinyl Bromide	593-60-2												
Vinyl Chloride	75-01-4		0.6033058		9.59E+02	9.59E+02				1.46E+05	2.96E+04	2.46E+04	9.59E+02 ca*
Warfarin	81-81-2		0.0603306							1.46E+04	3.58E+03	2.88E+03	2.88E+03 nc
Xylene, P-	106-42-3		40.220386							9.73E+06	3.07E+05	2.98E+05	2.98E+05 nc
Xylene, m-	108-38-3		40.220386							9.73E+06	2.86E+05	2.77E+05	2.77E+05 nc
Xylene, o-	95-47-6		40.220386							9.73E+06	3.21E+05	3.10E+05	3.10E+05 nc
Xylenes	1330-20-7		40.220386							9.73E+06	3.03E+05	2.94E+05	2.94E+05 nc
Ytterbium	7440-64-4												
Yttrium	7440-65-5												
Zinc Cyanide	557-21-1		10.055096							2.43E+06	8.38E+06	1.89E+06	1.89E+06 nc
Zinc Phosphide	1314-84-7		0.0603306							1.46E+04	5.03E+04	1.13E+04	1.13E+04 nc
Zinc and Compounds	7440-66-6		60.330579							1.46E+07	5.03E+07	1.13E+07	1.13E+07 nc
Zineb	12122-67-7		10.055096							2.43E+06	4.13E+06	1.53E+06	1.53E+06 nc
Zirconium	7440-67-7		0.0160882							3.89E+03	8.04E+03	2.62E+03	2.62E+03 nc

Calculations of Preliminary Remediation Goals (PRGs)

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09 **EDIT RED CELLS**

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
$PbB_{fetal,\ 0.95}$	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.330	0.330
$AF_{S,\ D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S,\ D}$	Exposure frequency (same for soil and dust)	days/yr	30	30
$AT_{S,\ D}$	Averaging time (same for soil and dust)	days/yr	365	365
PRG		**ppm**	**2,477**	**1,366**

Calculations of Preliminary Remediation Goals (PRGs)

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09 **EDIT RED CELLS**

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
$PbB_{fetal,\ 0.95}$	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
$AF_{S,\ D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S,\ D}$	Exposure frequency (same for soil and dust)	days/yr	50	50
$AT_{S,\ D}$	Averaging time (same for soil and dust)	days/yr	365	365
PRG		**ppm**	**9,810**	**5,410**

Calculations of Preliminary Remediation Goals (PRGs)

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09 **EDIT RED CELLS**

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
$PbB_{fetal,\ 0.95}$	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100
$AF_{S,\ D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S,\ D}$	Exposure frequency (same for soil and dust)	days/yr	50	50
$AT_{S,\ D}$	Averaging time (same for soil and dust)	days/yr	365	365
PRG		**ppm**	**4,905**	**2,705**

APPENDIX C
FEASIBILITY STUDY COST ESTIMATE

APPENDIX C
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Table of Contents

C.1A Remedial Alternatives Cost Summary
C.1B Specific Response Actions Cost Summary
C.2 Specific Response Action 1 - No Action: Cost Breakdown
C.3 Specific Response Action 1 - No Action: Present Value
C.4 Specific Response Action 1 - No Action: Periodic Cost Breakdown
C.5 Specific Response Action 2 - Land Use Controls: Cost Breakdown
C.6 Specific Response Action 2 - Land Use Controls: Present Value
C.7 Specific Response Action 2 - Land Use Controls: Periodic Cost Breakdown
C.8 Attachments for Specific Response Action 2 - LUCs and Groundwater Monitoring
C.9 Specific Response Action 3 - Excavation: Cost Breakdown
C.10 Specific Response Action 3 - Excavation: Present Value
C.11 Specific Response Action 3 - Excavation: Periodic Cost Breakdown
C.12 Attachments for Specific Response Action 3 - Excavation and Off-Site Disposal
C.13 Specific Response Action 4 - Landfill Cover: Cost Breakdown
C.14 Attachments for Specific Response Action 4 - Soil Cover Cost Breakdown

Table C.1A
REMEDIAL ALTERNATIVES COST SUMMARY
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Remedial Alternative	Description	Capital Cost	Annual Operations and Maintenance Cost [a/]	Periodic Cost [b/]	Non-Discounted Constant Dollar Cost [c/]	TPV at 1.9% Discount Rate [d/]
1	No Action	$28,000	$0	$0	$28,000	$28,000
2	Landfill Cover, Limited Soil Removal, Land Use Controls (LUCs)	$2,512,000	$4,000	$350,000	$2,973,000	$2,858,000

NOTES

[a/] Highest annual operations and maintenance (O&M) costs for remedial alternatives shown. Some costs decrease after a period of operation.

[b/] Highest annual periodic costs for remedial alternatives shown. Periodic costs may be less during a specific year.

[c/] Non-discounted constant dollar cost provided to show impact of discount rate on total present value (TPV).

[d/] TPV cost estimates are considered accurate to within -30% to +50% of actual costs. Discount rate and calculation is shown below.

Other Notes/Assumptions

1. Design and construction contingencies have been added to capital and O&M costs based on USEPA (2000) and professional judgment.

USEPA. 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study.* USEPA 540-R-00-002. July.

		Source
Discount Rate	1.90%	

Table C.1B
SPECIFIC RESPONSE ACTIONS COST SUMMARY
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Specific Response Action	Description	Capital Cost	Annual Operations and Maintenance Cost [a/]	Periodic Cost [b/]	Non-Discounted Constant Dollar Cost [c/]	TPV at 1.9% Discount Rate [d/]
1	**No Action**	$28,000	$0	$0	$28,000	$28,000
2	**Land Use Controls (30 Year Duration)**	$69,000	$4,000	$350,000	$530,000	$415,000
3	**Limited Soil Removal**	$894,000	$0	$0	$894,000	$894,000
4	**Landfill Cover**	$1,549,000	$0	$0	$1,549,000	$1,549,000

NOTES

[a/] Highest annual operations and maintenance (O&M) costs for remedial alternatives shown. Some costs decrease after a period of operation.

[b/] Highest annual periodic costs for remedial alternatives shown. Periodic costs may be less during a specific year.

[c/] Non-discounted constant dollar cost provided to show impact of discount rate on total present value (TPV).

[d/] TPV cost estimates are considered accurate to within -30% to +50% of actual costs.

Other Notes/Assumptions

1. Design and construction contingencies have been added to capital and O&M costs based on USEPA (2000) and professional judgment.

	Source
Discount Rate	1.90%

Table C.2
SPECIFIC RESPONSE ACTION 1
NO ACTION
COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Item	Quantity	Unit	Unit Cost	Quantity	Extended
Capital					
Well Abandonment Work Plan / Health & Safety Plan	1	Lump Sum	$ 6,000	1	$ 6,000
Field Oversight - Well Abandonments - per well	16	Hour	$ 80	2	$ 2,560
Well Abandonment Reports	1	Lump Sum	$ 7,600	1	$ 7,600
Well Abandonment	16	Lump Sum	$ 400	1	$ 6,400
				Sub-Total	$ 22,560
Contingency (design + construction)	25%				$ 5,600
				Capital Total	**$ 28,160**

Assumptions:
1) This SRA includes abandonment of 16 existing wells.

Table C.3
SPECIFIC RESPONSE ACTION 1
NO ACTION
PRESENT VALUE
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Capital Cost ($)	Annual O&M ($)	Periodic Costs ($)	Total Cost	Discount Factor at 1.9%	Present Value at 1.9%
0	$ 28,160	$ -	$ -	$ 28,160	1.000	$ 28,160
TOTALS	**$ 28,200**	**$ -**	**$ -**	**$ 28,200**		**$ 28,200**

Table C.4
SPECIFIC RESPONSE ACTION 1
NO ACTION
PERIODIC COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Annual O&M Cost Breakdown ($)	Periodic Cost Breakdown ($)
0	$ -	$ -
TOTALS	**$ -**	**$ -**

Table C.5
SPECIFIC RESPONSE ACTION 2
LAND USE CONTROLS
COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Item	Units		Unit Cost	Extended
Capital				
Implementation of Land Use Controls (See Table C.8, Attachment 1)	1	Lump Sum	$ 55,000	$ 55,000
			Sub-Total	$ 55,000
Contingency (design + construction)	25%			$ 13,800
			Capital Total	**$ 68,800**
Annual Operation and Maintenance				
Land Use Controls (30 Years)	1	each	$ 3,200	$ 3,200
Contingency	25%			$ 800
			Annual Total	**$ 4,000**
Periodic Costs				
Groundwater Sampling, 14 wells, with QA/QC Samples - Table C.8, Attachment 2)	14	Well	$ 781	$ 10,940
Reporting (Table C.8, Attachment 3)	1	each	$ 9,360	$ 9,360

Asssumptions:
1) A 30-year duration is assumed for costs.
2) Groundwater will be sampled for 30 years.
3) Four samples can be collected each day.
4) Wells will be sampled biannually until the 30th year, and then twice that year.

Table C.6
SPECIFIC RESPONSE ACTION 2
LAND USE CONTROLS
PRESENT VALUE
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Capital Cost ($)	Annual O&M ($) (LUCs)	Periodic Costs ($)	Total Cost	Discount Factor at 1.9%	Present Value at 1.9%
Annual Cost for Remedial Alternatives with Source Control - Anticipated 30-Year Duration						
0	$ 68,800	$ -	$ -	$ 68,800	1.000	$ 68,800
1	$ -	$ 4,000	$ 20,300	$ 24,300	0.981	$ 23,847
2	$ -	$ 4,000	$ -	$ 4,000	0.963	$ 3,853
3	$ -	$ 4,000	$ 20,300	$ 24,300	0.945	$ 22,966
4	$ -	$ 4,000	$ -	$ 4,000	0.927	$ 3,710
5	$ -	$ 4,000	$ 20,300	$ 24,300	0.910	$ 22,118
6	$ -	$ 4,000	$ -	$ 4,000	0.893	$ 3,573
7	$ -	$ 4,000	$ 20,300	$ 24,300	0.877	$ 21,301
8	$ -	$ 4,000	$ -	$ 4,000	0.860	$ 3,441
9	$ -	$ 4,000	$ 20,300	$ 24,300	0.844	$ 20,514
10	$ -	$ 4,000	$ -	$ 4,000	0.828	$ 3,314
11	$ -	$ 4,000	$ 20,300	$ 24,300	0.813	$ 19,756
12	$ -	$ 4,000	$ -	$ 4,000	0.798	$ 3,192
13	$ -	$ 4,000	$ 20,300	$ 24,300	0.783	$ 19,026
14	$ -	$ 4,000	$ -	$ 4,000	0.768	$ 3,074
15	$ -	$ 4,000	$ 20,300	$ 24,300	0.754	$ 18,323
16	$ -	$ 4,000	$ -	$ 4,000	0.740	$ 2,960
17	$ -	$ 4,000	$ 20,300	$ 24,300	0.726	$ 17,646
18	$ -	$ 4,000	$ -	$ 4,000	0.713	$ 2,851
19	$ -	$ 4,000	$ 20,300	$ 24,300	0.699	$ 16,994
20	$ -	$ 4,000	$ -	$ 4,000	0.686	$ 2,746
21	$ -	$ 4,000	$ 20,300	$ 24,300	0.674	$ 16,366
22	$ -	$ 4,000	$ -	$ 4,000	0.661	$ 2,644
23	$ -	$ 4,000	$ 20,300	$ 24,300	0.649	$ 15,762
24	$ -	$ 4,000	$ -	$ 4,000	0.637	$ 2,547
25	$ -	$ 4,000	$ 20,300	$ 24,300	0.625	$ 15,180
26	$ -	$ 4,000	$ -	$ 4,000	0.613	$ 2,453
27	$ -	$ 4,000	$ 20,300	$ 24,300	0.602	$ 14,619
28	$ -	$ 4,000	$ -	$ 4,000	0.590	$ 2,362
29	$ -	$ 4,000	$ 20,300	$ 24,300	0.579	$ 14,079
30	$ -	$ 4,000	$ 40,599	$ 44,599	0.569	$ 25,358
TOTALS	**$ 68,800**	**$ 120,000**	**$ 345,094**	**$ 533,900**		**$ 415,400**

Table C.7
SPECIFIC RESPONSE ACTION 2
LAND USE CONTROLS
PERIODIC COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Annual O&M Cost Breakdown ($) (LUCs)	Periodic Cost Breakdown ($) Groundwater sampling and reporting	
Anticipated 30-Year Duration			
0	$ -	$ -	$ -
1	$ 4,000	$ 10,940	$ 9,360
2	$ 4,000	$ -	$ -
3	$ 4,000	$ 10,940	$ 9,360
4	$ 4,000	$ -	$ -
5	$ 4,000	$ 10,940	$ 9,360
6	$ 4,000	$ -	$ -
7	$ 4,000	$ 10,940	$ 9,360
8	$ 4,000	$ -	$ -
9	$ 4,000	$ 10,940	$ 9,360
10	$ 4,000	$ -	$ -
11	$ 4,000	$ 10,940	$ 9,360
12	$ 4,000	$ -	$ -
13	$ 4,000	$ 10,940	$ 9,360
14	$ 4,000	$ -	$ -
15	$ 4,000	$ 10,940	$ 9,360
16	$ 4,000	$ -	$ -
17	$ 4,000	$ 10,940	$ 9,360
18	$ 4,000	$ -	$ -
19	$ 4,000	$ 10,940	$ 9,360
20	$ 4,000	$ -	$ -
21	$ 4,000	$ 10,940	$ 9,360
22	$ 4,000	$ -	$ -
23	$ 4,000	$ 10,940	$ 9,360
24	$ 4,000	$ -	$ -
25	$ 4,000	$ 10,940	$ 9,360
26	$ 4,000	$ -	$ -
27	$ 4,000	$ 10,940	$ 9,360
28	$ 4,000	$ -	$ -
29	$ 4,000	$ 10,940	$ 9,360
30	$ 4,000	$ 21,879	$ 18,720
TOTALS	**$ 120,000**	**$ 185,973**	**$ 159,120**

Table C.8
ATTACHMENTS FOR SPECIFIC RESPONSE ACTION 2
LUCS AND GROUNDWATER MONITORING
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Attachment 1 - Implementation of Land Use Controls					
Subtask Description, Labor	**Quantity**	**Unit**	**Unit Cost**	**Cost**	**Source**
LUC Implementation Plan (including CEA)	1	Lump Sum	$ 30,000	$ 30,000	Prof. Judgment
Delineate Area onto Master Planning Maps/GIS	1	Lump Sum	$ 25,000	$ 25,000	Prof. Judgment
			Total	**$ 55,000**	

Attachment 2 - Groundwater Monitoring, Sample Collection, and Analysis (per well)					
Equipment / Laboratory / Rentals	**Quantity**	**Unit**	**Unit Cost**	**Cost**	**Source**
Pickup Truck	0.25	Day	$ 109	$ 27	Vendor Pricing
Water Level meter	0.25	Day	$ 31	$ 8	Vendor Pricing
Groundwater Pump	0.25	Day	$ 18	$ 5	Vendor Pricing
Groundwater Quality Meter	0.25	Day	$ 60	$ 15	Vendor Pricing
Turbidity Meter	0.25	Day	$ 16	$ 4	Vendor Pricing
Laboratory Analyses (includes 10% QC Samples)					
Metals Analysis (6020)	1	Sample	$ 135	$ 135	Lab Pricing
Pump	1	Sample	$ 8	$ 8	Vendor Pricing
Water Disposal (non-hazardous)	1	Drum	$ 125	$ 125	Est. Vendor Pricing
Tubing	15	Feet	$ 1	$ 15	Vendor Pricing
Sample Shipping	0.25	Cooler	$ 200	$ 50	Est. Vendor Pricing
Labor					
Env. Tech 1	3	Hour	$ 55	$ 165	Estimated
Env. Tech 2	3	Hour	$ 75	$ 225	Estimated
			Total	**$ 781**	

Attachment 3 - Reporting - Annual					
Labor	**Quantity**	**Unit**	**Unit Cost**	**Cost**	**Source**
Project Manager	4	Hour	$ 130	$ 520	Estimated
Engineer/Geologist	60	Hour	$ 110	$ 6,600	Estimated
CADD/GIS	8	Hour	$ 80	$ 640	Estimated
Chemist, Senior	16	Hour	$ 100	$ 1,600	Estimated
			Total	**$ 9,360**	

Table C.9
SPECIFIC RESPONSE ACTION 3
LIMITED SOIL REMOVAL
COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Item	Units		Unit Cost		Extended
Capital					
Excavation (see Table C.12 Attachments 1 and 2)	1	Lump Sum	$ 715,000	$	715,000
			Sub-Total	$	715,000
Contingency (design + construction)	25%			$	178,800
			Capital Total	**$**	**893,800**
Periodic Costs					
			Annual Total	**$**	-

Table C.10
SPECIFIC RESPONSE ACTION 3
LIMITED SOIL REMOVAL
PRESENT VALUE
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Capital Cost ($)	Annual O&M ($) (LUCs)	Periodic Costs ($)	Total Cost	Discount Factor at 1.9%	Present Value at 1.64%
Annual Cost for Removal - Anticipated 2-Year Duration						
0	$ 893,800	$ -	$ -	$ 893,800	1.000	$ 893,800
1	$ -	$ -	$ -	$ -	0.984	$ -
2	$ -	$ -	$ -	$ -	0.968	$ -
TOTALS	**$ 893,800**	**$ -**	**$ -**	**$ 893,800**		**$ 893,800**

Table C.11
SPECIFIC RESPONSE ACTION 3
LIMITED SOIL REMOVAL
PERIODIC COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Year	Annual O&M Cost Breakdown ($) (LUCs)	Periodic Cost Breakdown ($)	
Anticipated 2-Year Duration			
0		$ -	$ -
1		$ -	$ -
2		$ -	$ -
TOTALS	**$ -**	**$ -**	$ -

Table C.12
ATTACHMENT FOR SPECIFIC RESPONSE ACTION 3
LIMITED SOIL REMOVAL
COST BREAKDOWN
FEASIBILITY STUDY COST SUMMARY
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Attachment 1 - Pre-Design Investigation					
Item	Quantity	Units	Unit Cost	Extended	Comments
Capital					
Investigation to determine lateral and vertical extent of PCB					
Mobilization	1	LS	$ 1,000.00	$ 1,000	Prof. Judgement
Geoprobe Drilling (Soil Borings)	10	/rig/day	$ 2,000.00	$ 20,000	Prof. Judgement
Boring Abandonment	240	per foot	$ 3.00	$ 720	Prof. Judgement
Drums	15	/drum	$ 65.00	$ 975	Prof. Judgement
Shelby tube	20	each	$ 100.00	$ 2,000	Vendor Pricing
Laboratory analysis - PCB	160	each	$ 165	$ 26,400	Lab Pricing
			Sub-Total	**$ 51,095**	

Attachment 2 - Excavation Off-Site Disposal of PCB-Impacted Soil					
Item	Quantity	Units	Unit Cost	Extended	Comments
Capital					
Excavation Off-Site Disposal of PCB-Impacted Soil					
Remedial Action Work Plan	1	Lump Sum	$ 20,000.00	$ 20,000	Prof. Judgement
Mobilization and demobilization	1	Lump Sum	$ 12,000.00	$ 12,000	Prof. Judgement
Vegetative clearing	1	Lump Sum	$ 2,500.00	$ 2,500	Prof. Judgement
Excavate impacted soil (40 cy/Hr)	3	Day	$ 11,800	$ 29,869	40 CY/Hr
Transport and disposal of impacted material at non-haz landfill	810	Tons	$ 110	$ 89,100	Contractor Procing
Transport and disposal of impacted material at haz landfill	1215	Tons	$ 275	$ 334,125	Contractor Procing
Laboratory confirmation samples	16	each	$ 165	$ 2,640	Method SW8082
Certified clean off-site fill for impacted soil makeup	972	CY	$ 19	$ 18,468	Assumes 20% more than disposed of off-site
Backfill and compact stockpiled overburden and off-site soil	7	Day	$ 7,600	$ 53,200	R.S. Means
Erosion and dust control	4	week	$ 1,750	$ 7,000	R.S. Means
Street sweeper	23	Days	$ 163	$ 3,738	Based on excavation and backfill time
Pickup truck	23	Day	$ 109	$ 2,498	Hertz.com + 2 gal gas @ $4.35/gal
Surveying	1	Lump Sum	$ 6,000	$ 6,000	Estimated
			Sub-Total	**$ 581,137**	
Design & Construction Oversite					
Labor					
Engineer/Geologist	200	Hour	$ 110	$ 22,000	Estimated
CAD/GIS	40	Hour	$ 24	$ 960	Estimated
Site Supervisor	200	Hour	$ 110	$ 22,000	One week set up and mob/one week field work
Project Manager	40	Hour	$ 130	$ 5,200	Estimated
			Sub-Total	**$ 50,160**	

Attachment 3 - Well Abandonment and Replacement					
	Quantity	Unit	***Unit Cost***	**Extended Cost**	Notes
Well Abandonment Work Plan/ Health and Safety Plan	1	Lump Sum	6000	$ 6,000	Estimated
Field Oversight - Well Abandonment and Replacement	1	Well	500	$ 500	Estimated
Well Abandonment Reports	1	Lump Sum	7600	$ 7,600	Estimated
Well Abandonment	1	Lump Sum	400	$ 400	Estimated
Well Replacement	1	Lump Sum	2000	$ 2,000	Estimated
			Sub-Total	**$ 16,500**	

Attachment 4 - Dewatering and Groundwater Treatment					
	Quantity	**Unit**	**Unit Cost**	**Extended Cost**	**Notes**
Groundwater Treatment -					
Groundwater production rate	6000	Gallon	$ 1.15	$ 6,900	1200 gallons per day for 12 days (estimate)
Frac tank mob/demob	1	Lump Sum	$ 1,600	$ 1,600	contractor quote
Pump decon	1	Lump Sum	$ 5,000	$ 5,000	Prof. Judgement
Frac tank Rental	1	week	$ 2,200	$ 2,200	contractor quote for 2 weeks
			Subtotal - Dewatering and Treatment:	**$ 15,700.00**	
			Capital Total	**$ 715,000**	

Assumptions:
1) Area extent of impacted material is pproximately 2,800 square feet. PCB results greater than 25 ppm were separated into 3 excavation areas ranging from 900 SF to 1,000 SF.
2) Excavated material is 60% hazardous and 40% nonhazardous.
3) Average depth interval of impacted material is from 0 to 4 feet.
4) Total volume of impacted soil is approximately 810 CY.
5) Unit density of impacted material is 2.5 tons per CY (1995. Pocket Ref. Thomas J. Glover).
6) All impacted material will be transported to off-site landfill for disposal.
7) Confirmation samples will be collected at a rate of one per every 30 feet of sidewall and one per every 900 square feet of excavation base. http://www.state.nj.us/dep/srp/guidance/srra/soil_inv_si_ri_ra.pdf
8) Dewatering will consist of placement of an electric submersible pump in the bottom of the excavation and pumping to a Frac tank.
9) Groundwater will enter the excavation at a rate of 1,200 gallons per day and will be transported off-site for treatment/disposal.

Table C.13
SPECIFIC RESPONSE ACTION 4
LANDFILL COVER
COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Item	Units		Unit Cost	Extended
Capital				
Soil Cover Installation (see Table C.13 Attachment 1)	1	Lump Sum	$ 1,233,000	$ 1,233,000
Geotechnical borings (see Table C.13 Attachment 2)	1	Lump Sum	$ 6,445	$ 6,445
			Sub-Total	$ 1,239,445
Contingency (design + construction)	25%			$ 309,900
			Capital Total	**$ 1,549,345**

Table C.14
ATTACHMENTS FOR SPECIFIC RESPONSE ACTION 4
SOIL COVER
COST BREAKDOWN
FEASIBILITY STUDY COST ESTIMATE
SITE FTMM-08
FORT MONMOUTH, NEW JERSEY

Attachment 1 - Landfill Cover

Item	Quantity	Units	Unit Cost	Extended	Comments
Capital					
Landfill Soil Cover Installation					
Mobilization and site preparation	1	Lump Sum	$ 10,000.00	$ 10,000	Prof. Judgement
Clearing and grubbing	7.2	acre	$ 2,900.00	$ 20,880	Contractor Quote
Subgrad preparation and compaction	7.2	acre	$ 4,250.00	$ 30,600	Contractor Quote
Soil Cover material	7.2	acre	$ 55,000	$ 396,000	Contractor Quote
Placement of soil cover material	7.2	acre	$ 11,000	$ 79,200	Contractor Quote
Placement of vegetative layer material	7.2	acre	$ 3,800	$ 27,360	Contractor Quote
Seeding of soil caps	7.2	acre	$ 5,000	$ 36,000	Contractor Quote
Temporary erosion and sediment controls	900	LF	$10	$ 9,000	Contractor Quote
Permanent stormwater features	900	LF	$ 30	$ 27,000	Contractor Quote
Demobilization	1	Lump Sum	$ 4,000	$ 4,000	Contractor Quote
Subgrade material	14545	tons	$ 15	$ 218,182	Contractor Quote
Placement of Subgrade material	14545	tons	$ 6	$ 87,273	Contractor Quote
			Sub-Total	**$ 945,495**	
Design & Construction Oversite					
Labor					
Design & Construction Oversite Labor	3200	Hour	$ 90	$ 288,000	Prof. Judgement
				$ 288,000	
		Sub-Total: Landfill Soil Cap Installation		**$ 1,233,000**	

Attachment 2 - Geotechnical Borings

	Quantity	**Unit**	**Unit Cost**	**Extended Cost**	**Notes**
Capital					
Geotechnical Borings -					
Mobilization	1	LS	$ 1,500.00	$ 1,500	Contractor Quote
hand clearing	2	/boring	$ 50.00	$ 100	Contractor Quote
HAS Drilling	1	/rig/day	$ 1,850.00	$ 1,850	Contractor Quote
Geoprobe Drilling (Soil Boring)	1	/rig/day	$ 1,850.00	$ 1,850	Contractor Quote
Boring Abandonment	100	per foot	$ 3.00	$ 300	Contractor Quote
Drums	13	/drum	$ 65.00	$ 845	Contractor Quote
Shelby tube	2	each	100	$ 200	Contractor Quote
	Sub-Total - Geotechnical borings:			**$6,445**	

Assumptions:
1) Area extent of impacted material is 7.2 acres.
2) Area to reseed is 7.2 acres.
3) Two geotechnical borings will be advanced at the site.
4) Soil cover is 2' in thickness (18" soil with 6" vegetative layer).